



## IRXO/IRXPO Reader Instructions

**Part Number(s):** IRXO-1B, IRXO-1B-BLE, IRXO-1S, IRXO-1S-BLE, IRXO-2B, IRXO-2B-BLE, IRXO-2S, IRXO-2S-BLE, IRXPO-1B, IRXPO-1B-BLE, IRXPO-1S, IRXPO-1S-BLE, IRXPO-2B, IRXPO-2B-BLE, IRXPO-2S, IRXPO-2S-BLE

**Output:** Jumper selectable OSDP Secure Channel compatible format, default unit 0, & 9600 baud, or Wiegand open format.

**Operating Voltage:** 5V DC +/-10% or 12 VDC +/-10%, 250mA, Max (3W)

**Transmit Frequency:** IRXO ➤ 13.56MHz  
IRXPO ➤ 13.56MHz + 125kHz

**Current Draw:** 90mA Standby 300mA Peak

**Operating Temperature:** -35° C to +65° C (-31° F to +149° F)

### Wire connections

| Wire Color | Description;  |
|------------|---|
| Red        | 5V or 12V   |
| Black      | Ground  |
| Orange     | RS485 B   |
| Violet     | RS485 A   |
| Green      | User Output 0 in OSDP mode or D0 in Wiegand Mode  |
| White      | D1 in Wiegand Mode  |
| Brown      | User Input 0 in OSDP mode or LED toggle, (use open collector drive only), in Wiegand Mode |
| Yellow     | Audio toggle, (use open collector drive only)   |

### The following card formats are supported.

#### For IRXPO & IRXO models;

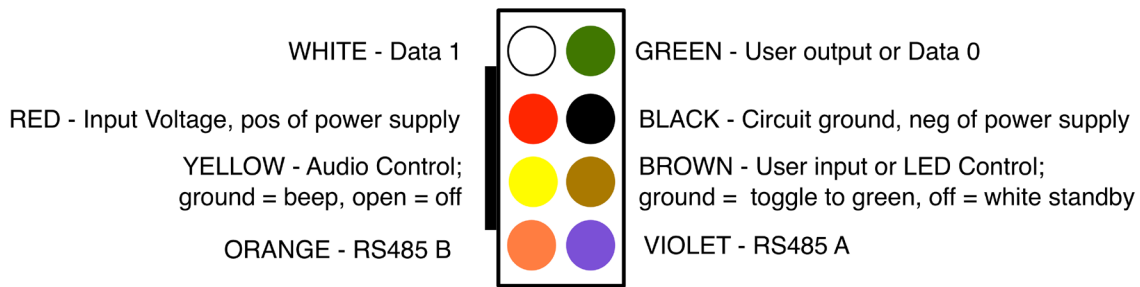
iCLASS®  
iCLASS SE®/SR  
iCLASS® Seos®  
MIFARE® Classic 1K/4K & SE  
MIFARE® DESfire® EV1/EV2

### The following Proximity technologies are supported.

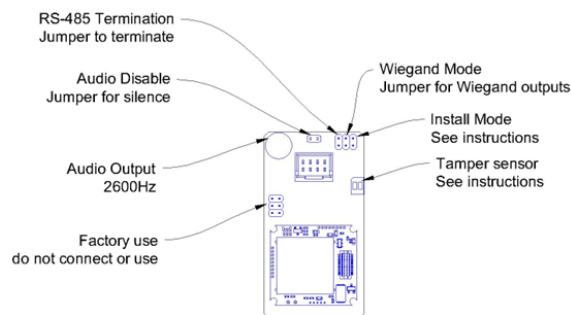
#### For IRXPO Models only;

HID Prox T5557  
Indala Prox FDX-B  
EM4100 EM4450  
EM4102 EM4305  
EM4200 AWID Prox

For other formats, contact Essex Electronics for details.



**CAUTION:** Do NOT run this low voltage wiring in conduit with or adjacent to line voltage wiring.



## Modes

This reader has two modes of operation; Wiegand open format or OSDP with secure channel. There are jumpers on the reader as shown in the illustration above. The reader is shipped in Wiegand mode, with the jumper on both pins. For OSDP mode, remove this jumper (or place on one pin).

## Wiegand Mode

The reader is shipped from the factory in this mode with the jumper on both pins. Use this mode for control panels that require a Wiegand data stream.

In this mode, the yellow wire will control the audio when it is grounded. The brown wire will toggle the LEDs from off color, default is red, to on color, default is green.

## OSDP Mode

The reader is placed in this mode when the jumper on Wiegand Mode is not installed. Use this mode for control panels that require OSDP inputs from the reader. Install mode jumper is used to install a secure key through the controller.

The unit supports the standard OSDP version 2.1.7 commands that are appropriate for readers and keypads. It supports clear channel and secure channel communications. Install mode is available using a jumper during power up and must be initiated within 30 seconds of power on. Install mode allows the installation of a new SCBK.

The new version 2.2 commands ACURXSIZE, KEEPACTIVE, ABORT, PIVDATA, GENAUTH, CRAUTH, FILETRANSFER and XWR are not supported at this time.

### Secure Channel

The standard installation procedure is used (commands CHLNG, SCRYPT, KEYSET). When an encryption key, other than the default, is installed, it must be used, and secure channel communications are required. In the secure channel mode, certain OSDP commands are available on a clear channel. These are Poll, ID, CAP, CHLNG, and SCRYPT. Other commands will be answered with a NAK code 6 (encryption required).

In the OSDP mode, the brown input is a general-purpose active low reported on the OSDP ISTATR command. The Wiegand D0 line becomes a general-purpose output line, osdp\_OUT command.

The tamper function is not available in the Wiegand mode but is only reported through the reader status. If tamper is required by the installation, a target will need to be placed within 10mm of the tamper detection. See the mullion template for location of this tamper, for placement of the target.

### **Communications modes**

The system can be in four different modes, three of which are for normal communications.

1. No custom key installed. No default security setup. All commands are available except the command to install the custom key. This mode is not recommended except for special circumstances since the communication is no more secure than Wiegand.
2. No custom key installed. Default key security enabled. All commands are available in secure mode except the install custom key command is only available when the install mode jumper is installed, and the key is installed within 30 seconds of power on. This mode makes it difficult to snoop the communications unless the attacker has access to the communication line from the power startup. Communications lost for more than 8 seconds will cancel secure setup.
3. Custom key installed. Power up or communication restored. The secure channel must be setup using the CHLNG and CCYRPT commands. This is done in unsecured mode. No other commands are available. After the secure channel is setup, the communication moves to item 4 below.
4. Custom key installed, and security enabled. All commands are available except the install custom key command is only available when the install mode jumper is installed, and the key is installed within 30 seconds of power on. This is not vulnerable to attackers even with access to the communications line at powerup. Security with the default key is not allowed if a custom key is installed.

Note: If the custom key is lost, the custom key cannot be changed without factory assistance

### **Installation of Mobile access key.**

Using the mobile access key, as purchased or obtained from HID Global. This should be card part number SEC9X-CRD-E-MKYD ordered with your customer's mobile access key as maintained by HID Global's ORIGO page.

On powering up the reader, within 30 seconds, present the key card to the reader and wait for the reader to accept and configure itself to that key.

Any mobile access enabled phone, with BLE capacity, and with an assigned mobile access credential may now present to the reader, with a "tap" which will send the credential to the reader BLE receiver, which will send this credential to the access control panel.

We recommend that the installer and/or user become familiar with HID Global's Mobile Access usage.

<https://www.hidglobal.com/solutions/mobile-access-solutions>

<https://www.hidglobal.com/documents/hid-mobile-access-solutions-datasheet>

<https://www.hidglobal.com/mobile-access-compatible-devices>

**Note:** For optimum performance on the mullion reader, add optional spacer ring (Essex part number SP-1)

