

## OPTW-200 Manual - Product Overview

Some new RFID readers have a hybrid data interface, supporting both Wiegand and OSDP data connections using the same two wires. However, when operating in Wiegand mode, the Wiegand interface may not be standard Wiegand. This creates issues when paralleling multiple Wiegand readers together, or possibly communicating with a standard Wiegand access controller. The OPTW-200 is designed to convert these hybrid Wiegand/OSDP interfaces into standard Wiegand.

These hybrid Wiegand/OSDP interfaces do not generate Wiegand signals following the established Wiegand signaling protocol. In these hybrid readers the Data 0 and Data 1 lines are driven to 5V through a transistor and a 10 Ohm resistor, or similar circuit. While the high side is driven, standard Wiegand readers in parallel with a non-standard, or standard Wiegand reader cannot properly output data. Additionally, some Wiegand access controllers are not compatible with the non-standard Wiegand interface.

Additional hardware, such as the OPTW-200, is required to parallel hybrid data interface readers with a standard Wiegand interface or connect a non-standard Wiegand reader with an incomplete Wiegand access controller. Wiegand readers are typically paralleled at vehicle gate with high/low readers or at property/building entrances with in/out readers.

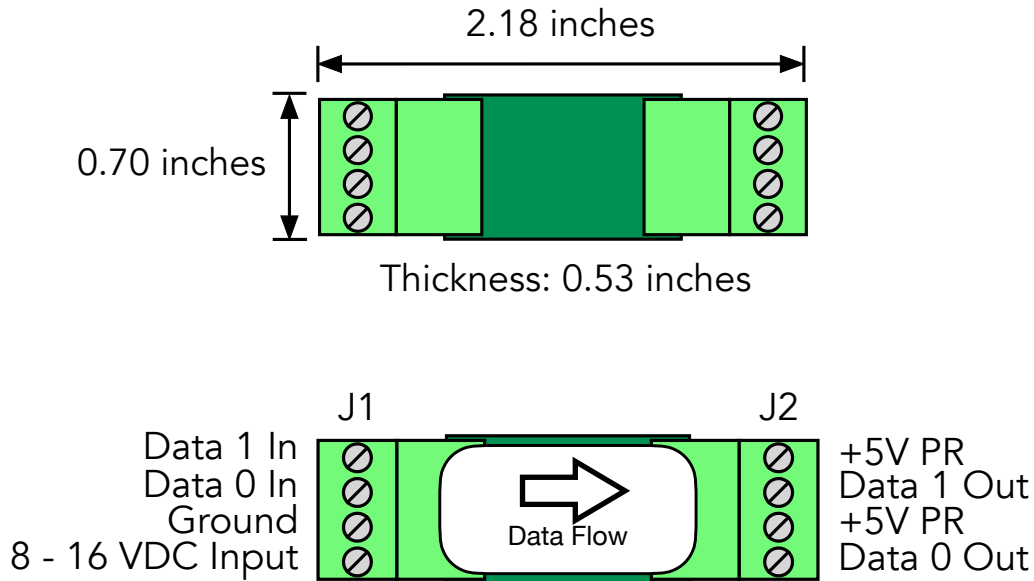
Included in the packaging is the OPTW-200, Cypress Warranty, and the Quick Start Guide.

| Specifications   |                                                                                                                    |                                        |                                                  |
|------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------------------|
| Product          | OPTW-200                                                                                                           | UPC: 816684004995                      | Wiegand Signal Standardizer                      |
| Physical         | Dimensions                                                                                                         |                                        | 2.18" x 0.70" x 0.53" (55.37 x 17.78 x 13.46 mm) |
|                  | Weight                                                                                                             |                                        | 0.0250 pounds (0.4 ounce) (11.34 grams)          |
| Environmental    | Storage Temperature                                                                                                |                                        | -55°C to 150°C                                   |
|                  | Operating Temperature                                                                                              |                                        | -40°C to 100°C                                   |
| Electrical       | J2 Header Input Voltage                                                                                            |                                        | 5-16 Vdc (12V Typical) @ 20mA                    |
|                  | Wiegand Input Signal Voltage Rating                                                                                |                                        | 5-24 Vdc                                         |
|                  | Wiegand Output Signal Voltage Rating                                                                               |                                        | 5-24 Vdc                                         |
| Range            | Wiegand                                                                                                            | Typical 500 foot Wiegand limit (152 m) |                                                  |
| Applications     | When paralleling non-standard Wiegand readers at high / low readers at vehicle gates                               |                                        |                                                  |
|                  | When paralleling non-standard Wiegand readers in / out readers at building entrances                               |                                        |                                                  |
|                  | When a Wiegand reader with a non-standard interface cannot properly communicate with the Wiegand access controller |                                        |                                                  |
| Related products | CVX-OPTS Intelligent Wiegand Splitter                                                                              |                                        |                                                  |
|                  | OPTW-100 Wiegand Isolator                                                                                          |                                        |                                                  |

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## OPTW-200 Manual - Physical Dimensions & Pin Designations



### J1 Header:

**Data 1 IN** - Wiegand Data Input 5-24 VDC  
**Data 0 IN** - Wiegand Data Input 5-24 VDC  
**Ground** - Power and Common Data Ground  
**+8-16 VDC** - Power Input, 12 VDC @ 20mA

### J2 Header:

**+5V PR** - Connection to pull-up resistor, 1.5K @ 5VDC  
**Data 1 OUT** - Wiegand Data Output 5 VDC  
**+5V PR** - Connection to pull-up resistor, 1.5K @ 5VDC  
**Data 0 OUT** - Wiegand Data Output 5 VDC

## OPTW-200 Manual - Bench Testing

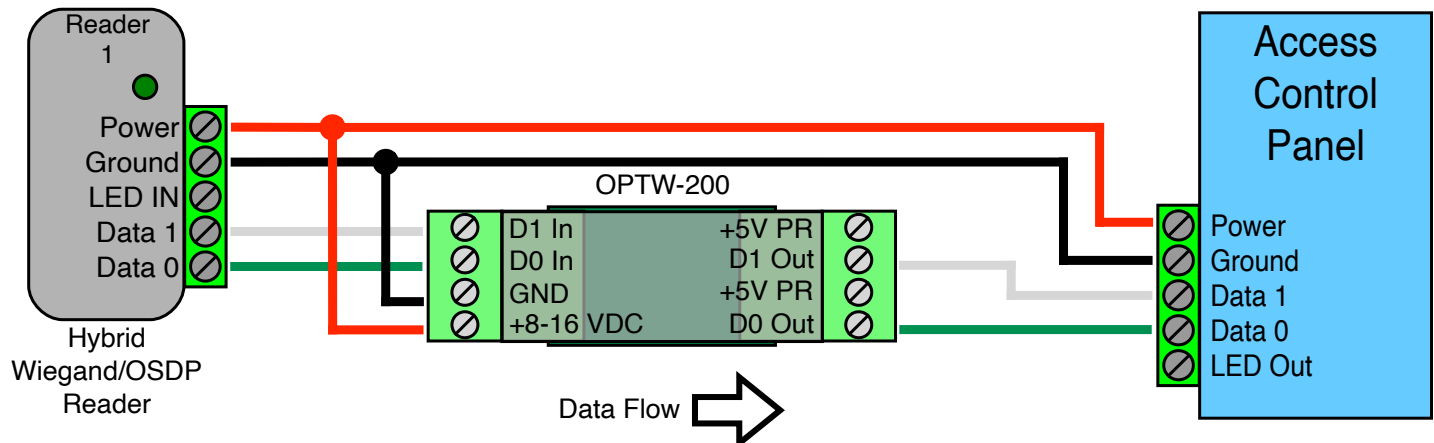
When installing the OPTW-200 with new access control equipment, bench testing is recommended. Refer to the wiring diagrams on pages 5, 6, and 7; find the wiring diagram that matches your application and set up a bench test accordingly.

In many applications, the access control equipment is already installed and a bench test is not practical. In these applications, install the OPTW-200 with the existing access control equipment and test the system thoroughly.

# OPTW-200 Manual - Wiring Diagrams

## 1 Hybrid Wiegand/OSDP Reader to a Panel Wiring Diagram

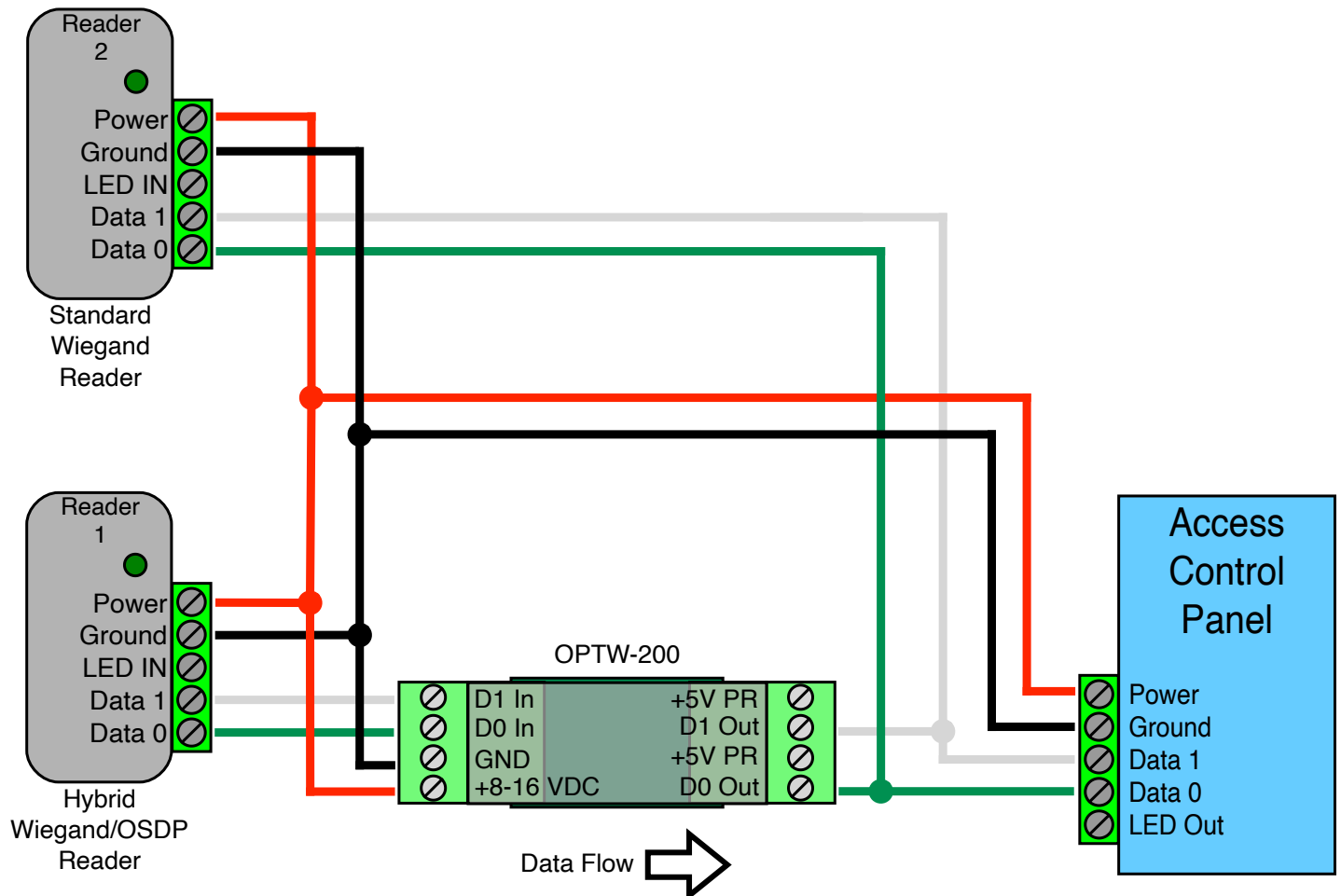
The wiring diagram below shows how to connect one hybrid Wiegand/OSDP reader to one access control panel. The OPTW-200 is used to standardize the hybrid Wiegand interface; this is needed when the non-standard Wiegand reader cannot communicate with the access control panel.



## OPTW-200 Manual - Wiring Diagrams (cont.)

### 1 Hybrid Wiegand/OSDP Reader and 1 Standard Wiegand Reader to a Panel Wiring Diagram

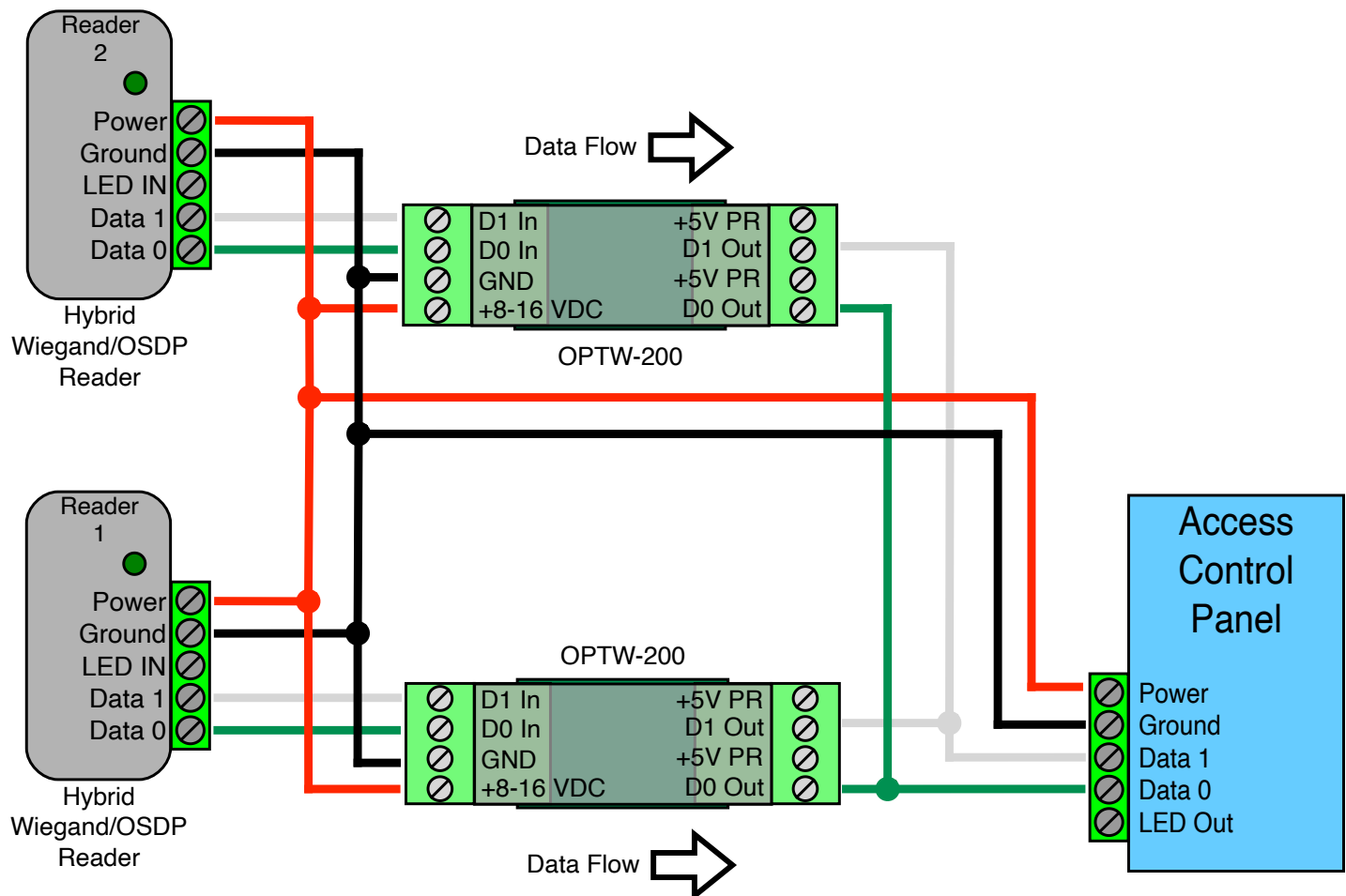
The wiring diagram below shows how to connect in parallel one hybrid Wiegand/OSDP reader and one standard Wiegand reader to one Wiegand port on the access control panel. The OPTW-200 is used to standardize the hybrid Wiegand interface.



## OPTW-200 Manual - Wiring Diagrams (cont.)

### 2 Hybrid Wiegand/OSDP Readers to a Panel Wiring Diagram

The wiring diagram below shows how to connect two hybrid Wiegand/OSDP reader to one access control panel. The OPTW-200 is used to standardize the hybrid Wiegand/OSDP interfaces. This setup may be used in applications such as high/low readers at vehicle gates, and in/out readers at building entrances.



## OPTW-200 Manual - Troubleshooting

If Wiegand signals are unable to be passed through the OPTW-200, check the following:

*The troubleshooting steps below assume 5VDC Wiegand devices*

### **Common ground connections:**

- The OPTW-200 must have a common ground with the Wiegand reader and Wiegand access controller.
- The common ground is landed on the Ground (GND) pin on the J1 header.
- If the OPTW-100 and Wiegand devices share a power supply, then the DC negative is the common ground.
- Wiegand data may not transmit properly when no common ground is present. Improper data transmission can either be no data or garbage data.

### **Wiegand input data voltage levels:**

- Measure DC voltage between Data 0 IN and Ground, and again between Data 1 IN and Ground on the J1 header. Normally the voltage levels should be at 5VDC or equivalent high voltage if using Wiegand devices that operate at higher voltages.
- The hybrid Wiegand interfaces are not open collector. Therefore, connecting Data 0 IN and Data 1 IN to the +5V PR pins will have no effect.
- If the voltage level for a Wiegand data line is below 1VDC, then the line is clamped to ground and cannot be recovered.

### **Wiegand output data voltage levels:**

- Measure DC voltage between Data 0 OUT and Ground, and again between Data 1 OUT and Ground on the J1 header. Normally the voltage levels should be at 5VDC or equivalent high voltage if using Wiegand devices that operate at higher voltages.
- If the voltage levels are below 4.4VDC, then disconnect the Wiegand device(s) and measure the voltage of the Wiegand lines on each device separately (including the OPTW-200 J2 header).
- If the voltage is between 4.4VDC and 1VDC then reconnect the Wiegand device(s) to the J2 header and jumper the +5V PR pin. This will pull the voltage back up to 5VDC and allow Wiegand data to be passed.
- If the voltage is below 1VDC on any of the Wiegand devices, then that line is clamped to ground and cannot be recovered.