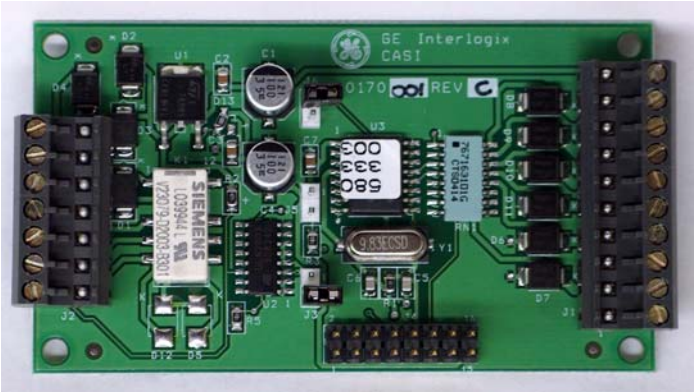


# Wiegand Interface Unit Two-State (WIU-2) Installation Manual



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**Intended use** Use this product only for the purpose it was designed for; refer to the data sheet and user documentation. For the latest product information, contact your local supplier or visit us online at [www.gesecurity.com](http://www.gesecurity.com).

**FCC compliance** 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.

You are cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Regulatory**



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## Introduction

The Wiegand Interface Unit - Two State (WIU-2) board is installed between a GE microcontroller and an access control reader. When users present their credential (card, key fob, fingerprint, etc.) to the reader, the WIU-2 converts Wiegand badge identification (BID) data into the GE F/2F protocol and sends it to the microcontroller. The GE access control system then grants or denies access to the secure location.

The Wiegand Interface Unit-Two State (WIU-2) board features a Wiegand data converter, which can accommodate both conventional and proprietary Wiegand reader protocols, and includes a 2 Amp relay for door strike control (entrance/exit) activity. With the WIU-2 card, any organization can quickly add a wide range of Magnetic Stripe, Wiegand, Proximity, Mifare<sup>®</sup>, and Biometric readers to any GE access control system.

To minimize installation efforts, the door contact and request-to-exit (REX) input circuitry connects directly to the WIU-2 to avoid the high cost of home-running cables back to the controller.

## Safety

### Radio interference



**WARNING:** This is an FCC Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take adequate measures.

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### Electrostatic discharge (ESD) precaution



**WARNING:** Circuit board components are vulnerable to damage by electrostatic discharge (ESD). ESD can cause immediate or subtle damage to sensitive electronic parts. An electrostatic charge can build up on the human body and then discharge when you touch a board. A discharge can be produced when walking across a carpet and touching a board, for example. Before handling any board, make sure you dissipate your body's charge by touching ground. This discharges any static electricity build-up.

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## Product features

The WIU-2 is designed to provide the following functions:

- Supports a wide range of Magnetic Stripe, Wiegand, Proximity, Mifare, and Biometric readers that employ Wiegand data formats
- Converts both traditional and custom Wiegand BID formats to GE F/2F supervised protocol
- Centralizes wiring connections for remote access control readers, door strike hardware, door contact, and request-to-exit (REX) circuitry
- Includes a heavy-duty 2 Amp door strike relay
- Supports up to 24 VAC or 30 VDC door strikes
- Connector compatible with popular 2-state interface adapters
- Supports custom Wiegand formats (up to 55 bits)

**Note:** The WIU-2 does not support keypad reader output formats.

# System requirements

For UL compliant installation notes, refer to *“UL Listed Installations” on page 17*

Host software	<ul style="list-style-type: none"><li>• Secure Perfect® Edition 3.0 or later</li><li>• Picture Perfect™ 1.7 or later</li></ul>
Microcontrollers	<ul style="list-style-type: none"><li>• Micro/5-PX with 2RP or 8RP</li><li>• Micro/5-PXN with 2RP or 8RP</li><li>• M5PXNplus with 2RP or 8RP</li><li>• Micro/PX-2000</li><li>• Micro/PXN-2000</li><li>• M2000PXNplus</li><li>• M3000PXNplus with 2RP or 8RP</li></ul>
Readers	Any traditional or custom Wiegand data output (up to 55 bits)
Wiegand data formats	<ul style="list-style-type: none"><li>• 26-bit</li><li>• 32-bit</li><li>• 35-bit Corporate 1000</li><li>• 37-bit</li><li>• 40-bit GE formats</li><li>• Custom Wiegand formats up to 55 bits</li></ul>



# Technical specifications

For UL compliant installation notes, refer to *"UL" on page 17*.

Operating temperature range	+14 F (-10 C) to +150 F (+66 C)
Relative humidity	5% to 95% (non-condensing)
Physical dimensions (HxWxD)	3.25" (82.55 mm) x 1.85" (46.99 mm) x 0.644" (16.35 mm)
Index of protection	IP00
Input voltage range	9 to 16 VDC
Power consumption	25 mA @ 12 VDC (no reader attached)
Cable specifications <sup>a</sup>	Belden 8725 or equivalent, 20 AWG minimum
Maximum cabling distance WIU-2 to Micro: <sup>b</sup> WIU-2 to Reader: <sup>c</sup>	1000 ft (304.8 m) @ 12 VDC with 20 AWG cable 250 ft (76.2 m) @ 12 VDC with 20 AWG cable
Door strike relay <sup>d</sup>	2.0 A @ 30 VDC maximum
Agency approvals	FCC Class A part 15
	CE
	UL 294

- GE recommends using shielded cable for all installations.
- WIU-2 to Micro: The maximum cabling distance of 1,000 ft (304.8 meters) is influenced by wire gauge, reader power requirements, and the 12 VDC level from the microcontroller.
- WIU-2 to Reader: The maximum cabling distance of 250 ft (76.20 meters) is influenced by wire gauge, reader power requirements, minimum input voltage at the reader when using the 12 VDC from the WIU-2 (originally from the micro), and the cabling between the WIU-2 and micro.
- The life of the relay decreases as the current switched by the contacts is increased. Use low current door strikes to maximize the relay life. Use an external relay for high current or high traffic applications.

## Parts list

- WIU-2
- Mounting hardware kit
- Installation manual

Refer to the GE product catalog for part numbers and ordering information.

## Installation overview

The following is the general sequence of steps to follow when installing the Wiegand Interface Unit-2. Each step is explained in further detail in the sections that follow:

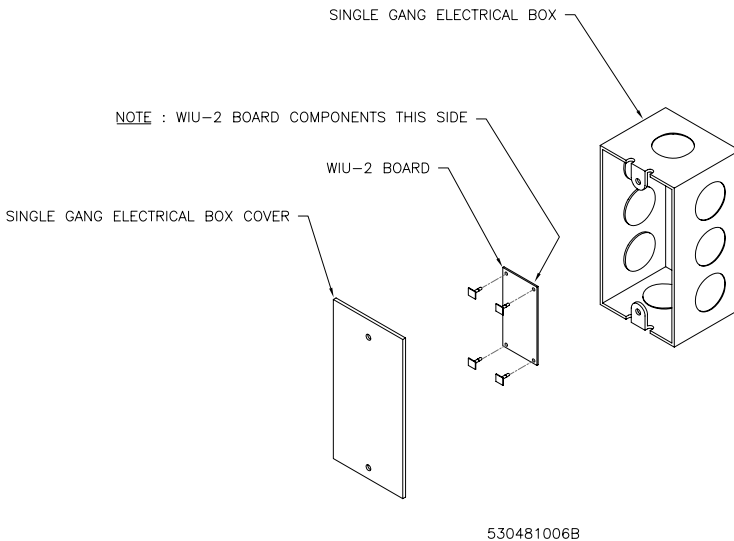
1. Mount the WIU-2.  
*Refer to Mounting the WIU-2 on page 7.*

**Note:** The WIU-2 must be mounted indoors, in a protective enclosure or standard 1-gang electrical box (installer supplied) as shown in *Figure 1*.

2. Configure the WIU-2.  
*Refer to Configuring the WIU-2 on page 8.*
3. Connect the WIU-2.  
*Refer to Connecting the WIU-2 on page 12.*
4. Test the WIU-2.  
*Refer to Testing the WIU-2 on page 15.*

## Mounting the WIU-2

Figure 1. Mounting instructions



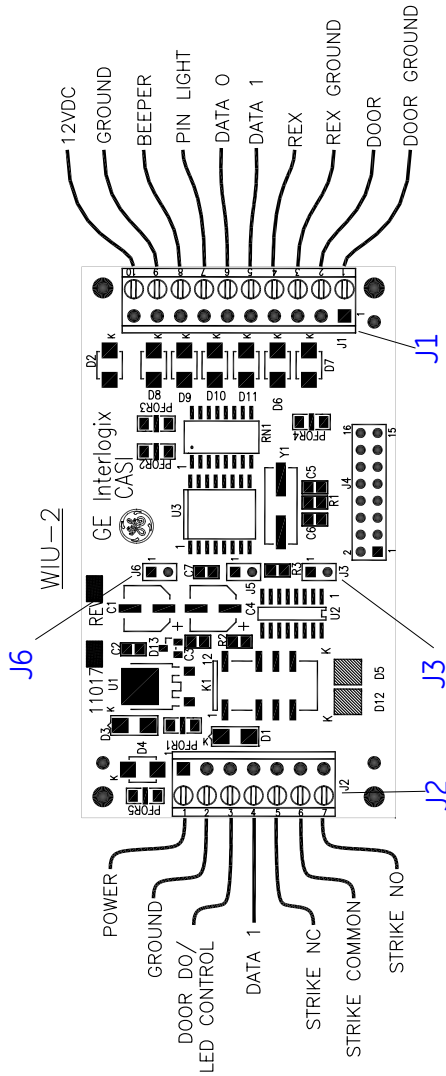
1. To mount the WIU-2 board in the single gang electrical box, first remove the electrical box cover and clean it with the alcohol wipes provided in the mounting hardware kit.
2. Apply the four standoffs, provided in the mounting hardware kit, to the four corners of the WIU-2 board, as shown in [Figure 1](#).
3. Remove the adhesive liner on the standoffs and attach the WIU-2 board to the electrical box cover, making sure the WIU-2 board does not interfere with or touch the sides of the electrical box.

## Configuring the WIU-2

The following connectors and jumpers make up the Wiegand Interface Unit-2

- **J1:** Reader Interface Connector
- **J2:** Micro Interface Connector
- **J3:** 2-State Reporting Connector
- **J5:** Reserved
- **J6:** HID<sup>™</sup> Reader Supervision

Figure 2. WIU-2 connectors and jumpers



## J1: Reader interface connector

The 10 pin connector J1 is the reader interface connector. J1 is used to connect a Wiegand output device to the WIU-2

Table 1. J1: Reader interface connector

PIN	Description
1	Door ground (return)
2	Door input
3	REX ground (return)
4	REX input
5	Wiegand Data 1
6	Wiegand Data 0
7	Door DO/LED control Used to control door strike and activate green LED
8	Beeper Signal switches to ground to activate the beeper
9	Ground
10	12 VDC fused power, 250 mA maximum

## J2: Micro interface connector

The 7-pin connector J2 is the Micro interface connector. J2 is used to connect microcontroller power and data signals to the WIU-2.

Table 2. J2: Micro interface connector

PIN	Description
1	12 VDC power for WIU-2
2	Ground
3	Door DO/LED control Used to control door strike and activate green LED
4	Reader F/2F Data
5	Strike NC
6	Strike Common
7	Strike NO

## J3: Two-state reporting connector

The 2-pin connector J3 is the 2-state reporting connector. By default, this connector is jumpered to enable 2-state reporting. Remove the jumper to disable 2-state reporting.

## J5: Reserved

The 2-pin connector J5 is reserved.

## J6: HID reader supervision

The 2-pin connector J6 is the HID reader supervision connector. By default, this connector is not jumpered and HID reader supervision is disabled. Place a jumper over this connector to enable HID reader supervision.

## Connecting the WIU-2

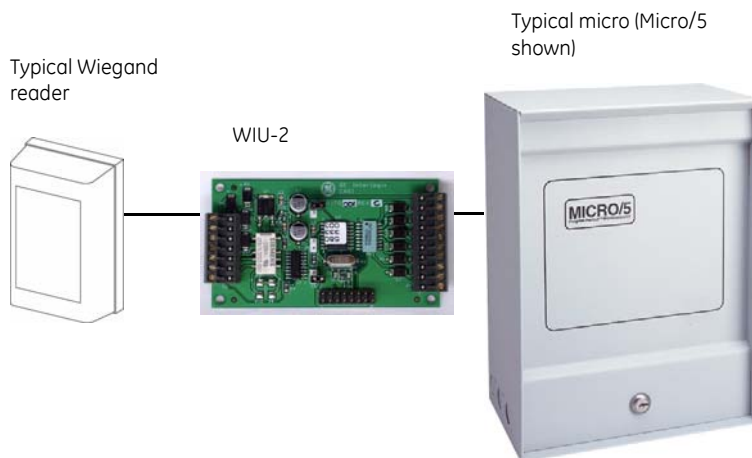
Connect the WIU-2 between the GE microcontroller and access control reader as indicated in [Figure 3](#).



It is important to ensure all connections are made prior to applying power.

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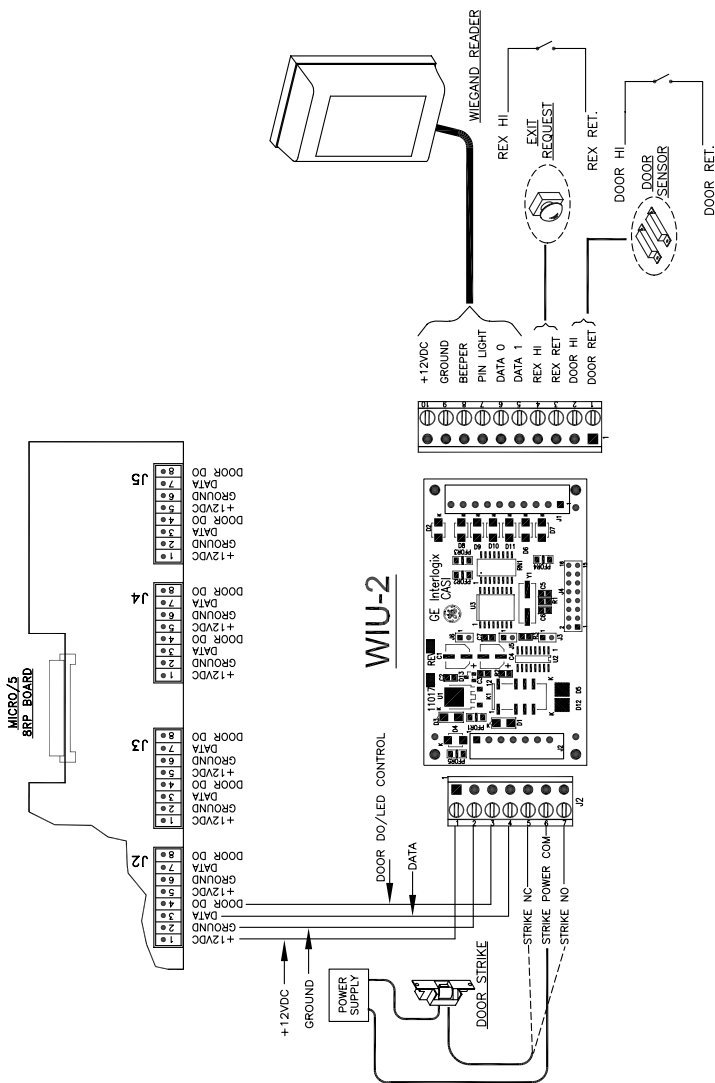
*Figure 3. Sample WIU-2 configuration*





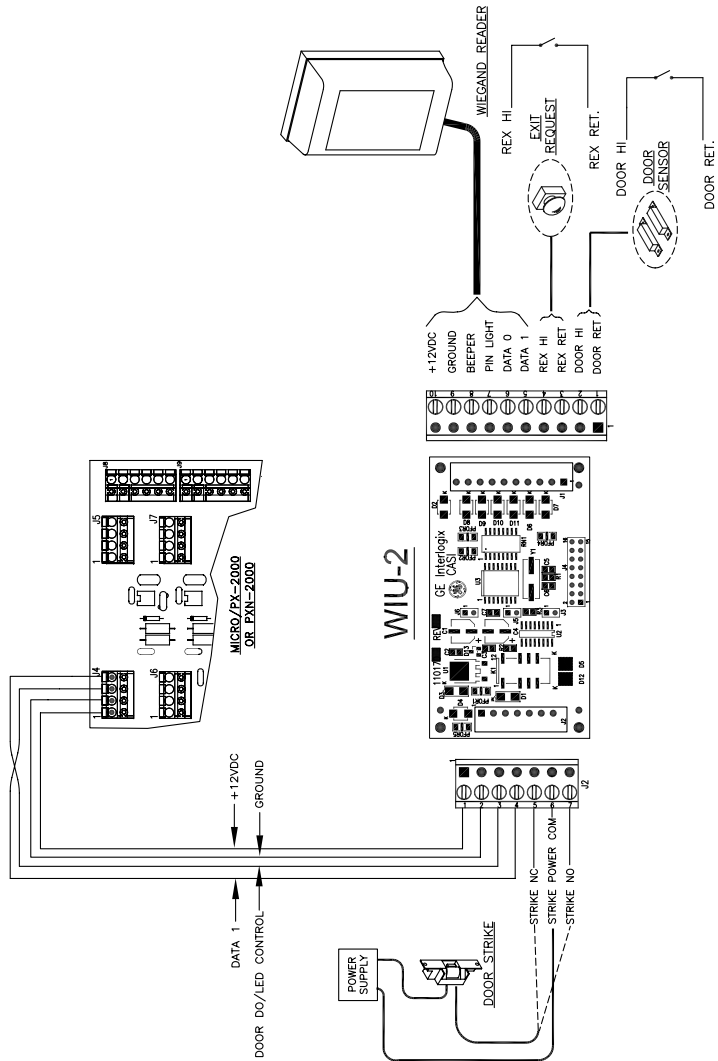
# Wiring diagrams

Figure 4. WIU-2 to Micro/5 8RP interface



530481004C

Figure 5. WIU-2 to Micro/PX-2000 or PXN-2000 interface



## Testing the WIU-2

1. Verify the reader (J1) and micro (J2) connections are properly wired.
2. Verify that jumpers J3, J5, and J6 are set properly.
3. If a communications error occurs, when connected to a supervised HID reader, verify that jumper J6 has been removed.
4. If an incorrect badge ID (BID) displays on the host, check for crossed lines between the WIU-2 and the reader.  
*See Figure 4, “WIU-2 to Micro/5 8RP interface,” on page 13. or Figure 5, “WIU-2 to Micro/PX-2000 or PXN-2000 interface,” on page 14., as appropriate.*
5. If the door strike activates when a pin is requested, ensure that the door DO/LED control (located on connector J2-pin3) and the pin light (located on connector J1-pin7) are not connected to the same reader input.

## Troubleshooting the WIU-2

If the operation of a component is in doubt, substitute a known good component and retry the system.

Always verify wiring against the wiring diagrams before powering up the system.

## Regulatory approvals

### UL



### UL Listed Installations

The following are the results of the UL evaluation of the WIU-2 readers:

- Operating temperature range: +32 F (+0 C) to +120 F (+49 C)
- Relative humidity: 85%
- For UL Listed installations, the WIU-2 must be mounted within the protected area of a protective enclosure.

CE



**Manufacturers**  
**Declaration of Conformity**  
**For**



**Product Identification:** 430187001  
**Model/type:** WIU-2

BOM revision level:A

**Category (description):** Interface Unit  
**Brand:** GE Security  
**Manufacturer:** GE Security  
Suite 100  
791 Park of Commerce Blvd.  
Boca Raton, Florida 33487  
USA

**EU Representative:** GE Security B.V.  
Kelvinstraat 7  
6003 DH Weert  
The Netherlands

Concerning	R&TTE	Safety	Radio
	EMC		
<b>A sample of the product has been tested by:</b>	PSE 12955 Bellamy Brothers Blvd. Dade City, FL 33525		PSE 12955 Bellamy Brothers Blvd. Dade City, FL 33525
Test report reference	03F246I		03F246C
Applied standards	EN50130-4(1998)		EN55022:1998

**Equipment class identifier** (*RF products falling under the scope of R&TTE*)

☒ Not Applicable      ☐ None (class 1 product)      ☐ (class 2 product)

**Means of Conformity:**

We declare under our sole responsibility that this product is in conformity with Directive 93/68/EEC (Marking) and/or complies with the essential requirements and all other relevant provisions of the 1999/5/EC (R&TTE) based on test results using harmonized standards in accordance with the Directives mentioned.

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