SCHLAGE®

WRI400
Wireless Reader Interface

Instructions for WRI400

Contents

UL294 Access Control Levels tested to: Destructive Attack - Level 1; Line Security - Level 1; Endurance - Level 4; Standby Power - Level 1.

The Schlage Wireless Reader Interface (WRI400) is an open architecture Wireless Access Point Module (WAPM) designed to interface with third-party panels through a Panel Interface Module (PIM400-TD2, PIM400-485) by using radio frequency (RF) communication.

- Interfaces credential readers and portal access control with third-party panels.
- May be used with up to two (2) credential readers that use wiegand or clock and data outputs.
- Supports five (5) optional inputs: Reader 1 Tamper and Reader 2 Tamper, Request to Enter, Request to Exit and Door Position (Portal Status).
- Supports two (2) Form C, dry contact relays intended for strike and auxiliary outputs (i.e., door installations with magnetic locks or strikes).
- Externally powered using a UL 294 for UL, and ULC S318 / ULC S319 for cUL listed Class 2 power supply (not included) capable of sourcing at least 500 mA @ 12 or 24 VDC, (example: Schlage models PS902, PS904, PS906).
- Suitable for outdoor use, ambient temperature range -35C to +66C (-31F to +151F).
- The WRI400 is listed under UL294 as an access control system accessory.
- Access equipment manufactured and/or sold by Allegion LLC, is not rated for, or intended for use in life safety installations. UL listed panic hardware must be used to allow emergency exit from the protected area.
- The WRI400 has not been evaluated to UL325 or UL508.
- The ANT400 antennas have not been evaluated to UL294 and are not for use in UL installations.
- This product has been evaluated for ULC-S319 Class I.
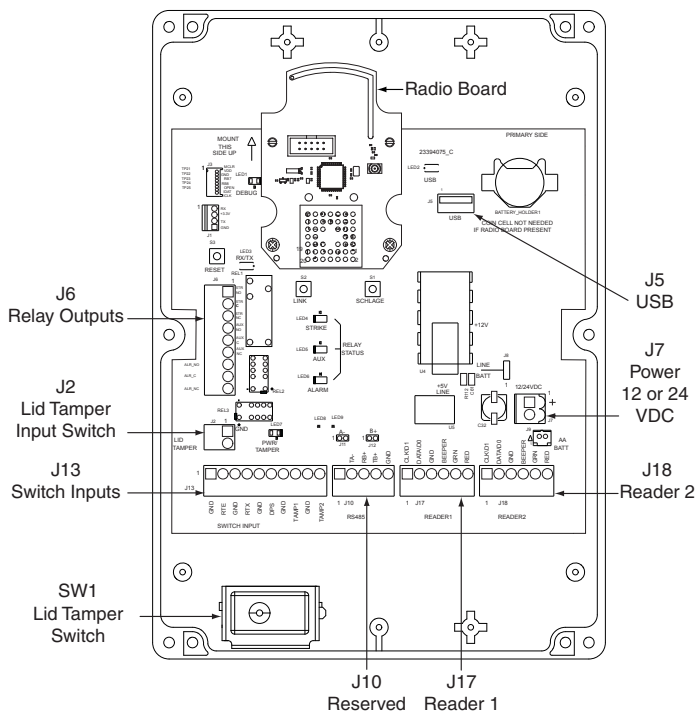
Follow these steps when setting up a WRI400 with an access portal.

Before installing the Schlage WRI400, read all documentation for all products in the installation.

1. Familiarize yourself with the information contained in this user guide.
2. To operate at optimum efficiency, cable runs should be kept as short as possible.
3. Install the UL listed lock. See the installation guide that came with the lock or visit www.allegion.com/us for more information to install Schlage locks.
4. Install the UL listed reader(s).
5. Install the WRI400.
6. Install a UL/ULC listed power supply for the WRI400 and the readers. The power supply must be compatible with all components and must have the capacity to power the WRI400 **and** the readers. (The WRI400 requires a power supply capable of sourcing at least 500 mA @ 12 or 24 VDC.)

ⓘ **If preferred, separate UL listed power sources for the WRI400 and the readers is an acceptable alternative.**

7. Install the Panel Interface Module (PIM400-TD2 or PIM400-485). See the installation guide that came with the PIM or visit www.allegion.com/us for more information.
8. If a remote antenna is necessary, make sure it is properly located. As with all radio systems, interference may be a problem. Refer to *Remote antenna* on page 5.
9. Make sure power is properly connected to all components in the system.
10. Link the WRI400 to its PIM400.
11. Test operation of the WRI400 with the access portal and UL listed access control system.

ⓘ *For compliance with UL 294, product must be used with a UL 294 Listed access control panel or unit. For compliance with ULC S319, product must be used with a ULC S319 Listed access control panel or unit.*

Save this user guide for future reference.
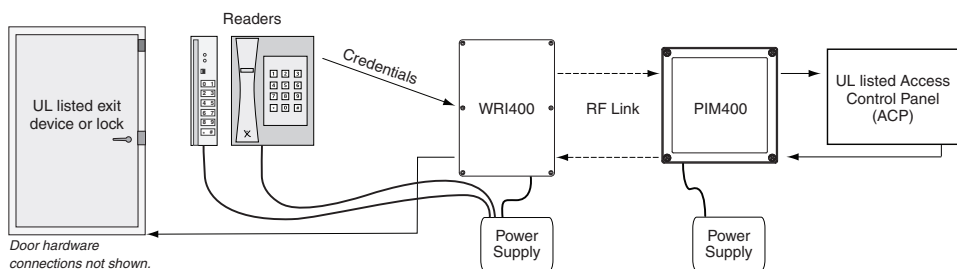
Typical Access Point Configuration

Install the WRI400

PIM400 and WRI400 location

Proper mounting location of the PIM400 and WRI400 ensures reliable RF communication. Refer to the PIM400 user guide to determine the best location for the PIM400.
- Locate the WRI400 on the secured side of the access portal.
- For optimized radio performance, orient the WRI400 vertically with the radio board at the top of the enclosure.
- The maximum distance indoors between a PIM400 and a WRI400 is 200 feet (61 meters) when installed on the same floor in a building that uses normal construction materials.
- If a remote antenna is used with the WRI400, the maximum distance between the WRI400 and the antenna is 15 cable feet (4.5 meters).
- Do not locate the WRI400 and remote antenna, or the PIM400 (and it's remote antenna, if used) on separate floors within a building. The maximum distance for a line-of-sight installation is 1000 feet (305 meters)[1].
- RF signals are diminished by walls, distance, metal objects or barriers. If metal walls or metal mesh (stucco) walls are between the WRI400 and the PIM400, mount the PIM400 away from the UL listed access control panel. Use a Remote Antenna Module (ANT400) with the PIM400, and choose a location that is free of obstacles which may cause a reduction in signal power at the receiver.
The distance between the PIM400 and its antenna should not exceed 15 cable feet (4.5 meters).

1 Use of high-gain antenna (ANT400-REM I/O +6dB) will improve range.

Remote antenna
ⓘ **If the installation requires a remote antenna, refer to the optional remote antenna module (ANT400) user guide for complete instructions and information on the following antenna models.**

Antenna model	Application
ANT400-REM-CEILING	Intended for indoor applications.
ANT400-REM-HALL	
ANT400-REM-I/O	Intended for indoor or outdoor applications.
ANT400-REM-I/O+6dB	

Antenna location and safety
- Locate within 15 cable feet (4.5 meters) of the PIM400 or the WRI400.
- Locate for best RF line-of-sight path with the WRI400 that will be linked to the PIM400.
- Do not locate the WRI400 and antenna or the antenna and PIM400 on separate floors of a building.
- Outside antenna systems should not be located near overhead power lines or other electric circuits, or where the antenna can fall into such power lines or circuits. Extreme care should be taken to keep the antenna from touching any power line or circuit.

WARNING! Antenna contact with electric power lines or close proximity to a high voltage electrical field may cause serious or fatal injury.

Antenna grounding

National Electrical Code (NEC) requires that every antenna installation be properly grounded. Local electrical codes may have additional requirements.

- A grounding block is recommended for all antenna installations. Consult the NEC and local electrical codes, and the local Authority Having Jurisdiction (AHJ) for information on proper grounding of the antenna system.
- A grounding block kit compatible with all of the previously mentioned antenna models is available as a kit (sold separately, part number MGB + MCA5). Be sure to consider the length of the grounding block cable when locating the antenna.

For more information, refer to *Accessories* in the Optional Remote Antenna Module (ANT400) user guide.

Terminate the coax whip at the WRI400

ⓘ **Only applicable to installations using an optional remote antenna.**

ⓘ **To avoid damage to electronics inside the enclosure when drilling, use light pressure so that the bit does not penetrate very far when it breaks through the enclosure, or remove electronics from the enclosure before drilling.**

1. Drill a ½" (13 mm) hole in the top of the WRI400 enclosure as shown to accommodate the mounting of the coax whip to be connected to the WRI400 radio board.
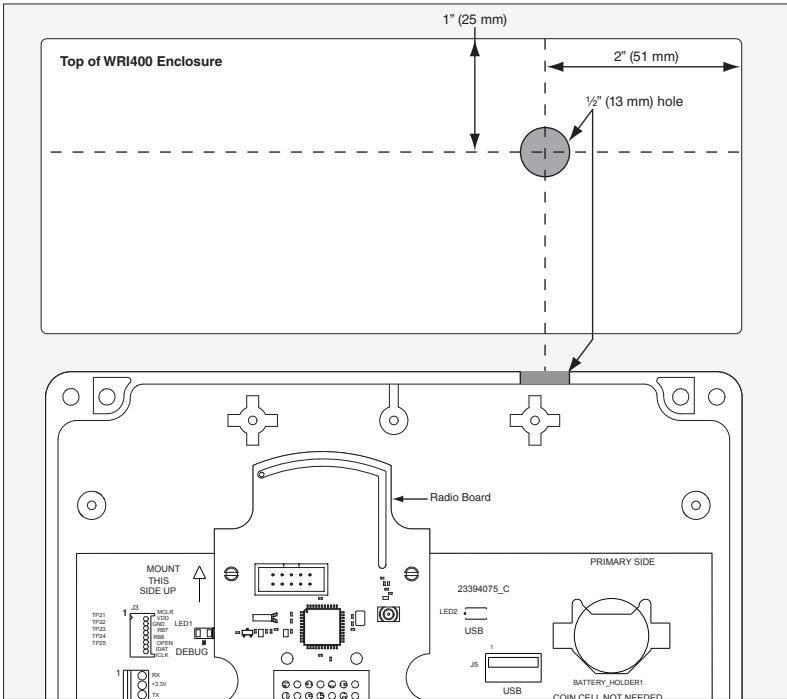
2. Refer to the Optional Remote Antenna Module (ANT400) user guide for complete coax connection instructions.
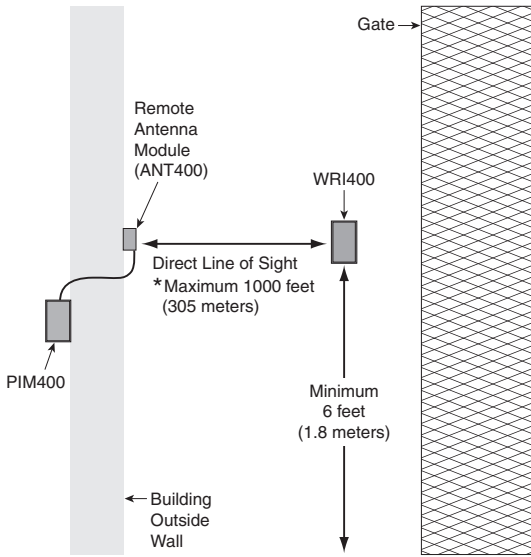
Outdoor gate applications

Follow the guidelines below for reliable performance between the WRI400 and PIM400 when used to control an outdoor gate.

- When using the PIM400's internal antenna mount the PIM400 at least 6 feet (1.8 meters) away from the floor.
- If installing the PIM400 in a room with metal walls or metal mesh in the walls, a Remote Antenna Module (ANT400) is required to be located outside of the room.
- Mount the WRI400 upright within a secured area in direct line-of-sight to the PIM400 (or the antenna module).
- If the WRI400 to be controlled by this PIM400 is outdoors, install the PIM400 indoors within a secured area on the inside of the building's outer wall nearest the gate. Use a remote antenna with the PIM400 and mount the antenna on the outside the building in direct line-of-sight to the WRI400(s).

ⓘ **If the WRI400 is mounted on a metal wall or wall with metal mesh, refer to page 9 for installation instructions.**

- If a site uses more than one WRI400, install a PIM400 within direct sight of WRI400s under its control. Maximum line-of-sight distance is 1000 feet (305 meters)* between any WRI400 and PIM400. If necessary, use a separate PIM400 for each WRI400.
- Obstructions between the WRI400's antenna and the PIM400's antenna will decrease the distance that they may be placed apart.

Use of high-gain antenna (ANT400-REM-I/O+6DB) will improve range.

Elevator applications

ⓘ   The following elevator applications pertain to access control and not elevator control.

Follow the mounting location guidelines below for reliable performance between the WRI400 and PIM400 when used to control a typical cabled hoist or hydraulic elevator.

Cabled hoist machine installations with upper machine rooms:
- Mount the WRI400 on top of the cab, lying down if possible.
- Mount the PIM400 inside a secured area, e.g., within the secured elevator machine room.
- If required, mount a Remote Antenna Module (ANT400) on the ceiling of the shaft.
- Locate the PIM400 within range of the antenna module's coax cable (15 cable feet (4.5 meters)).
- Mount the antenna module with direct line-of-sight to the WRI400 throughout the entire travel of the cab through the shaft. Ensure that structural members do not obstruct line-of-sight to the WRI400.

Cabled hoist machine installations with lower machine rooms:
- Use a Remote Antenna Module (ANT400) with the PIM400 to prevent contamination of the PIM400 from settled dust, oil, and debris.

Hydraulic machine installations
- Mount the WRI400 on the underside of the cab.
- Locate the PIM400 in a secured area, outside the shaft pit, where it will be free of contamination from oil.
- If required, use a Remote Antenna Module (ANT400) with the PIM400.
- Locate the PIM400 within range of the antenna module's coax cable (15 cable feet (4.5 meters)).
- Mount the antenna module horizontally in the shaft pit, at a height where oil leakage and debris cannot submerge it.
- The antenna module must have direct line-of-sight to the WRI400 throughout the entire shaft. Ensure that structural members, including the ram, do not obstruct line-of-sight to the WRI400.
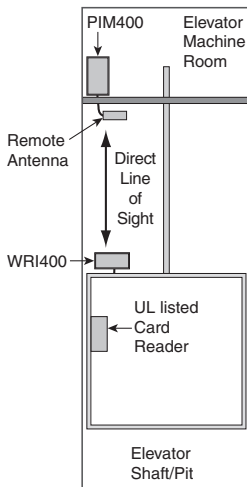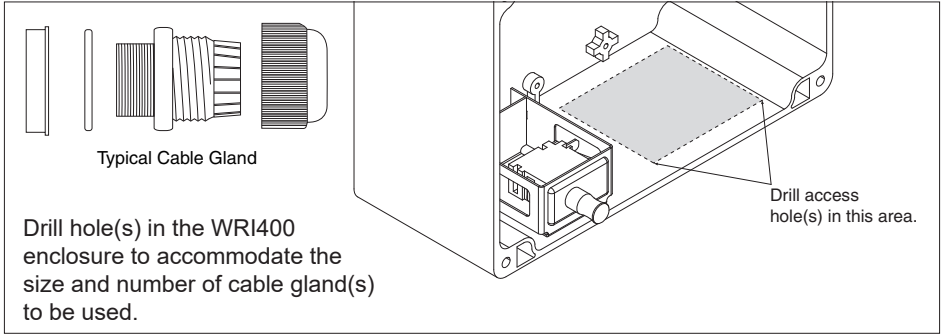

Cabled Hoist Elevator   **Hydraulic Elevator**
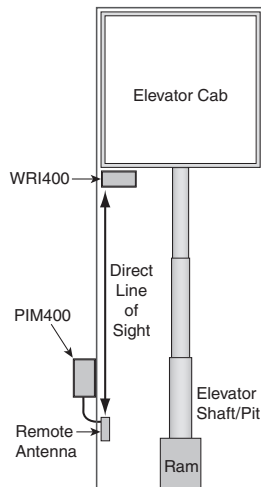
Weather-tight installation of the WRI400

A NEMA 4X certified cable gland should be used for a weather-tight installation when wires enter or exit the WRI400.

The Bud Industries cable gland (part number N4-CG) is recommended (www.budind.com). An appropriate cable gland should consist of: a black molded nylon body, a hex nut and a cable nut with a rubber gasket and cable seal.

Choose the appropriate cable gland size depending on the number and type of cables used in each installation.

Typical Cable Gland

Drill access hole(s) in this area.

Drill hole(s) in the WRI400 enclosure to accommodate the size and number of cable gland(s) to be used.

Non weather-tight installation of the WRI400

When the WRI400 is located where weather tightness is not required, use cable entry/exit connectors that comply with local electrical codes (i.e. conduit, etc.).

Drill hole(s) in the WRI400 enclosure to accommodate the size and number of entry/exit connectors to be used (refer to diagram above).

To avoid damage to electronics inside the enclosure when drilling, use light pressure so that the bit does not penetrate very far when it breaks through the enclosure, or remove electronics from the enclosure before drilling.

Mounting the WRI400

Follow these steps to permanently attach the WRI400 enclosure to its desired location.
1. Place the WRI400, cover removed, against the wall in the position where it successfully linked.
2. Mark the four mounting holes at the corners of the WRI400 housing using the housing as a template.
3. Remove the WRI400 and drill the four holes, ⁹⁄₃₂" diameter drill bit, 1¾" (44 mm) deep.
4. Orient the WRI400 vertically with the radio board at the top of the enclosure.
5. If the wall does not adequately support the WRI400 wall anchors should be used (not included).
6. If mounted on a non-metallic surface or where no metal is within 1 inch (25 mm) of the back of the WRI400, attach the WRI400 directly to the wall using appropriate #8 mounting hardware.
7. If mounted on a metallic surface or where metal is within 1 inch (25 mm) of the back of the WRI400, attach the WRI400 1 inch (25 mm) from the wall.
8. For a metallic wall installation, a spacer kit is available by contacting Schlage technical service. (Kit #K381-000-001 includes: four #8 x 1½" screws and four heavy-duty anchors. Kit #K384-003-001 includes: four #8 x 2½" screws and four 1" round by 1" high (1" O.D. x 1") spacers.)

Wiring the WRI400 to access control peripherals

The WRI400 will monitor two (2) UL listed credential readers, up to five (5) status inputs and control two (2) relays for access control peripherals. Some of the connections are optional based on the specific application of the WRI400. See *WRI400 Cable/wire specifications* on page 10 for more information.

Power

The J7 Input Power connection is mandatory. An external, UL 294 or ULC S318/ULC S319 listed power supply capable of sourcing at least 500 mA @ 12 or 24 VDC must be provided.

RS-485

J10 RS-485 connection is reserved for future expansion.

Tamper input

SW1 Lid Tamper Switch monitors the state of the WRI400 enclosure door and generates a tamper trouble signal when the lid is open. When terminals J2-1 and J2-2 are shorted a tamper trouble signal is sent to the UL listed access control panel.

WRI400 Cable/wire specifications

Application	Part number	AWG	Description	Maximum distance
DC power input	Belden 8760	18	2 conductor	1000 feet (305 meters)
Request to enter	Belden 8760	18		2000 feet (610 meters)
Request to exit	Belden 8760	18		2000 feet (610 meters)
Strike relay output	Belden 8760	18	2 conductor shielded	2000 feet (610 meters)
Auxiliary relay output	Belden 8760	18		2000 feet (610 meters)
Credential reader tamper	Belden 8760	18		500 feet (152 meters)
Credential reader 1	Alpha 1296C	22	6 conductor shielded	500 feet (152 meters)
	Alpha 1298C	22	8 conductor shielded	
Credential reader 2	Alpha 1296C	22	6 conductor shielded	500 feet (152 meters)
	Alpha 1298C	22	8 conductor shielded	
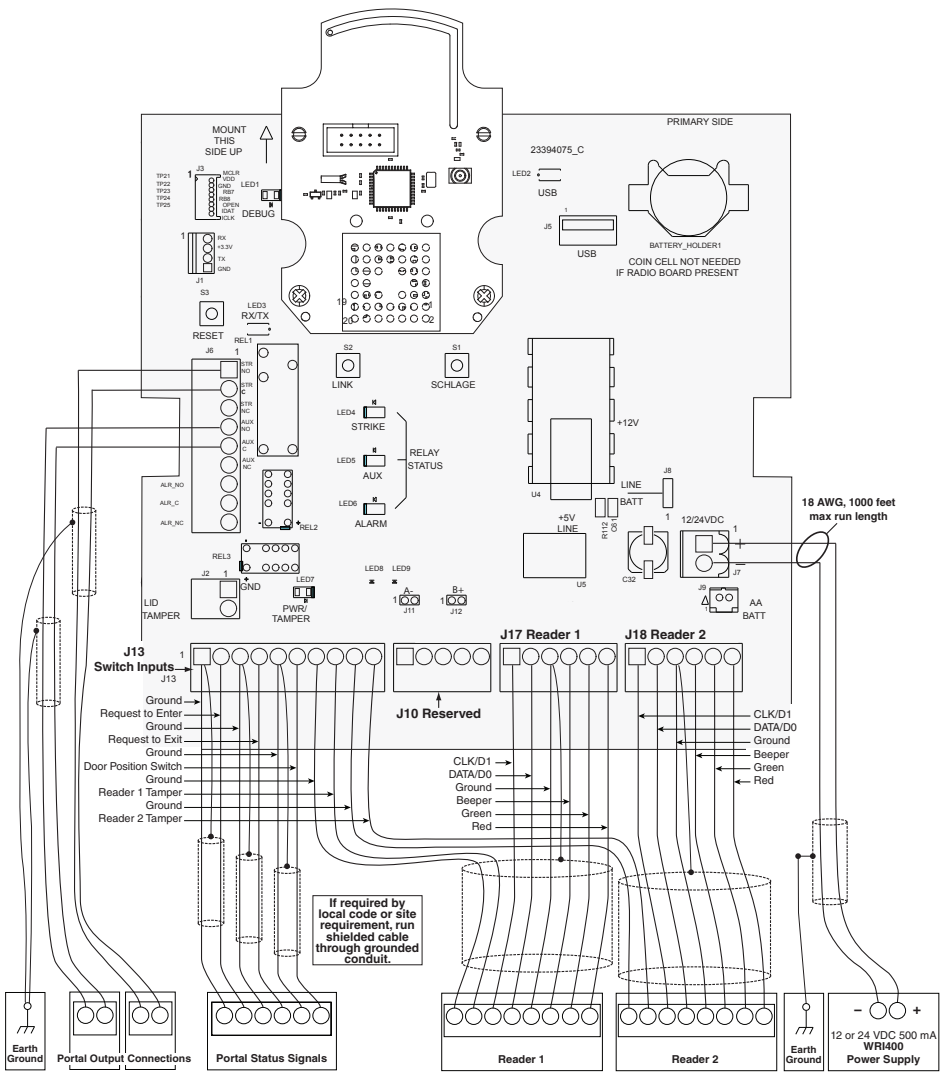
Typical WRI400 to readers and portal wiring diagram

Portal inputs

Request to Enter, Request to Exit, and Door Position Switch are designed to be dry contact switches tied to Ground when the switch is closed.

Reader 1 Tamper and Reader 2 Tamper are designed to be dry contact switches tied to Ground when the switch is closed, **OR** a signal level input for 5V logic. Any voltage greater than 5V may cause damage to either the WRI400 or the reader.

Connect the shield of the portal input cables to the appropriate WRI400 GND terminal.

ⓘ **To ensure proper integration with the ACP, the switch input may be changed from the default condition using the Schlage Utility Software (SUS) on the HHD.**

Switch input terminal			Description	Default condition
GND	J13-1	Ground	Electrical ground (common) for the WRI400.	
RTE	J13-2	Request to enter	When the switch opens or closes, the WRI400 will send a Request to Enter status signal to the ACP.	Switch closed (GND) = Request to Enter
GND	J13-3	Ground	Electrical ground (common) for the WRI400.	
RTX	J13-4	Request to exit	When the switch opens or closes, the WRI400 will send a Request to Exit status signal to the ACP.	Switch closed (GND) = Request to Exit
GND	J13-5	Ground	Electrical ground (common) for the WRI400.	
DPS	J13-6	Door position switch	When the switch opens or closes to GND, the WRI400 will send a door position switch status signal to the ACP.	Switch closed (GND) = Door Closed
GND	J13-7	Ground	Electrical ground (common) for the WRI400.	
TAMP1	J13-8	Reader 1 tamper	When a signal level input is used, connect the wire to TAMP1 OR When a dry contact switch is used, connect one wire to TAMP1 and the other to Pin 7 (GND).	Signal low or switch closed (GND) = Reader 1 Tamper
GND	J13-9	Ground	Electrical ground (common) for the WRI400.	
TAMP2	J13-10	Reader 2 tamper	When a signal level input is used, connect the wire to TAMP2 OR When a dry contact switch is used, connect one wire to TAMP2 and the other to Pin 9 (GND).	Signal low or switch closed (GND) = Reader 2 Tamper

Portal outputs

The two (2) optional portal outputs consist of strike output and auxiliary output. These are Form C type relay outputs with common, normally open and normally closed contacts.
- The default configuration of the strike relay is as follows:
- When the strike relay is de-energized the portal is assumed to be secure.
- When the strike relay is energized the portal is assumed to be unsecure.

Accordingly, the appropriate side of the relay contact (normally open/normally closed) must be used to ensure that when the relay is de-energized the portal is locked, and when the relay is energized the portal is unlocked. The aux relay is de-energized by default.

Both the strike and aux relay outputs can be configured by the SUS on the HHD.

Relay output terminal			Description
STR_NO	J6-1	Strike normally open	The strike relay is capable of switching up to a 6 Amp resistive load at 24 VDC, 6 Amp at 120 VAC or 3 Amp at 240 VAC.
STR_C	J6-2	Strike common	
STR_NC	J6-3	Strike normally closed	
AUX_NO	J6-4	Auxiliary normally open	The aux relay is capable of switching up to a 2 Amp resistive load at 24 VDC or 0.5 Amp at 120 VAC.
AUX_C	J6-5	Auxiliary common	
AUX_NC	J6-6	Auxiliary normally closed	
ALR_NO	J6-7	Alarm normally open	Not used in the WRI400.
ALR_C	J6-8	Alarm common	
ALR_NC	J6-9	Alarm normally closed	

A transient suppressor must be installed with every electrical device switched through a portal output relay contact.

Refer to the *Portal output suppression diagram* on page 14. Follow the UL listed electrical lock/load manufacturer's recommendation for suppression of magnetic/inductive loads. Use a properly rated transient voltage suppression (TVS) diode (or silicon avalanche diode). Install the suppressor within 18 inches (46 cm) of the switched electrical load.

ⓘ **Portal outputs must utilize a dedicated shielded cable to prevent transient contamination of other WRI400 signal wiring. Do not run portal output wires in the same cable or conduit as any other WRI400 wiring. Connect the shield of the portal output cables to the appropriate earth ground terminal of the electrical lock/load or auxiliary load power supply. The shield SHOULD NOT be connected at the WRI400.**
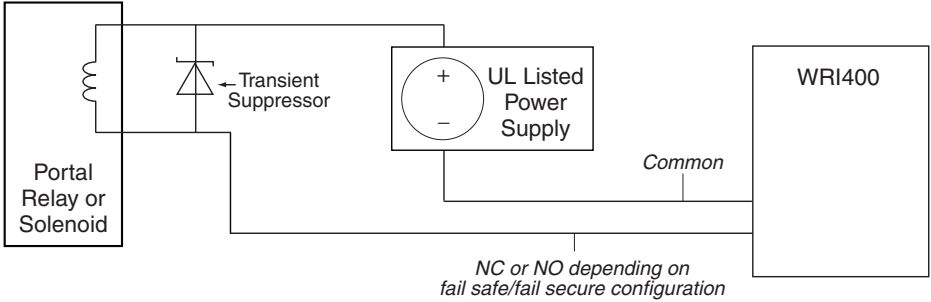
Portal output suppression diagram

Credential readers

An input device with either Wiegand (Data1/Data0) or magnetic (clock and data) bit stream can be used with the WRI400. The WRI400 provides two separate credential reader interfaces.

Connect the shield of the Reader 1 cable to the WRI400 J17-3 terminal (GND). Connect the shield of the Reader 2 cable to the WRI400 J18-3 terminal (GND). Do not connect the cable shield at the credential reader.

ⓘ **Reader input ports are designed for 5V logic. Any voltage greater than 5V may cause damage to either the WRI400 or the readers.**

The WRI400 does not provide power to the readers. Power must be provided to the readers separately by a UL listed power supply.

The WRI400 may not provide complete control of the reader's beeper or LEDs. Please consult with your reader's manufacturer for instruction on reader configuration.

	Reader 1 terminal	Reader 2 terminal	Description
CLK/D1	J17-1	J18-1	Credential reader inputs: Each input line is pulled to GND through a 12V transient suppressor and a 2 mega-ohm resistor.
DATA/D0	J17-2	J18-2	
			Wiegand or magnetic format is automatically detected.
GND	J17-3	J18-3	The signal ground of the WRI400 must be tied to the signal ground at the reader.
BEEPER	J17-4	J18-4	Beeper signal line connection to the reader. This is an "open collector" style output and has a 12V transient suppressor to GND. The output is switched to GND through a 100 Ohm resistor to activate the beeper on the reader. NOTE: Most readers beep independently, and beeper performance depends on the specific reader model.
GRN	J17-5	J18-5	Green LED signal line connection to the reader. This is an "open collector" style output and has a 12V transient suppressor to GND. The output is switched to GND through a 100 Ohm resistor to activate the green LED on the reader.
RED	J17-6	J18-6	Red LED signal line connection to the reader. This is an "open collector" style output and has a 12V transient suppressor to GND. The output is switched to GND through a 100 Ohm resistor to activate the red LED on the reader.

Power failure modes

The installer may configure the strike and/or auxiliary relay status (with SUS on the HHD) for the possible event of power failure.

The default power failure mode is **fail secure** (locked).

To maximize security, a valid credential must be presented before any change to the strike relay can take effect.

- For the system to **fail secure**, the secure mechanism must be tied to the normally closed side.
- For **fail secure**, UL listed panic hardware must be used to allow emergency exit from the protected area.
- To **fail safe** (unlocked), the secure mechanism must be tied to the normally open side and the SUS must also be configured to enable **fail safe** mode. Strike and auxiliary relays need not be configured the same.
- Third party locking devices must have some form of uninterruptible power supply for the WRI400 to control their power failure mode.

The HHD can be used to configure WRI400 settings.

For information about the HHD and WRI400 settings, see the Schlage Utility Software (SUS) User Guide at www.allegion.com/us.

To connect the HHD to the WRI400:
1. Verify power is connected to the WRI400.
2. Loosen the 4 screws and remove the WRI400 cover. The power LED should blink when the cover is off. The WRI400 will signal tamper to the access control panel while the cover is off.
3. Log in to the SUS software. (Refer to the SUS User Guide for log-in procedure.)

ⓘ **Make sure the HHD connection type is set to "USB Connection".**

4. Connect the HHD to the WRI400 USB port (J5). The WRI400's USB LED will blink green.
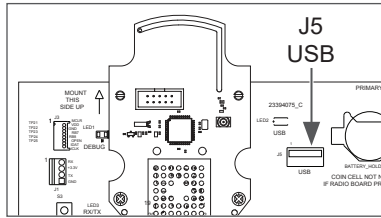
ⓘ **The WRI400 is communicating with the HHD when the USB LED blinks green and the HHD display indicates "WRI400" at the bottom of the main screen.** *The SUS is now ready to view the WRI400 settings.*

5. To Edit Settings or Update Firmware on the WRI400, the SUS software and the WRI400 must be coupled. Follow the steps below to couple the WRI400 and the HHD.

Coupling with the HHD
1. On the WRI400, press and hold the Schlage button while pressing the LINK button three (3) times within 5 seconds.

Link button   Schlage button
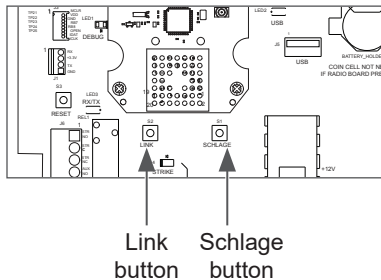
2. The USB LED will blink red and green. On SUS, select the option "Couple HHD to Device". SUS will report when coupling is successful.
3. Successful coupling will be indicated on the WRI400 with a blinking green USB LED.

Construction access mode

Construction access mode is used to allow access before the WRI400 has been linked to a PIM400, and for testing purposes.

To program a master construction credential:
1. Remove the WRI400 cover.
2. Press and hold the Schlage button.
3. Present a credential to the reader within 5 seconds of pressing the Schlage button.
4. The debug LED will blink green 5 times.
5. This credential becomes the Master Construction Credential.

ⓘ **If the credential is not presented within 5 seconds timeout will occur. Repeat steps 2-5 above.**

To program construction access user credentials:

The Master Construction Credential must be programmed before programming construction access user credentials.
1. Present the Master Construction Credential to the reader.
2. The debug LED will light green for 20 seconds.
3. Present the credential to be programmed within 20 seconds.

Construction access mode is cancelled by any one of the following actions:
- Couple the WRI400 to the HHD.
- Link the WRI400 to the PIM400.
- Reset the WRI400 to factory defaults.

> **TIPS**
>
> Use the same Master Construction Credential for all the readers in the facility.
>
> If you present the first card to a new WRI400's reader to create the Master Construction Credential and the card is not accepted, the WRI400 has either been programmed or already has a Master Construction Credential.
>
> If the Master Construction Credential cannot be located, reset the WRI400 to factory settings. See *Reset to factory defaults* on page 19.

Note: Construction access mode is intended for use during construction of the site. Construction Access Mode shall not be used once construction has been completed, and the WRI400 must be linked to the PIM400.

Link the WRI400 to a PIM400

The WRI400 and PIM400 must be linked for programmed credentials to function.

ⓘ **Make sure the PIM400 is in link mode. Refer to the PIM400 user guide for more information.**

1. Make sure power is connected to the WRI400.
2. Remove the WRI400 cover.
3. Press and hold the WRI400's LINK button until the RX/TX LED blinks red and green.
4. When linking is successful the RX/TX LED will blink to indicate the quality of the RF link.

RX/TX LED	Link quality
Solid green, fast green blinks, or green with very few red blinks	Good link
Solid red or fast red blinks	Poor or no link

ⓘ **The WRI400 will fail to link if it is not in RF range of the PIM400. Refer to *PIM400 and WRI400 location* on page 5 for distance specifications.**

ⓘ **Refer to *Troubleshooting* on page 20 for more information on linking.**

5. Once successfully linked to the PIM400, the WRI400 will signal tamper to the access control panel until the WRI400 cover is replaced.

Reset to factory defaults

All information in the WRI400 will be deleted and reset to factory defaults!
1. Remove the WRI400 cover.

The WRI400 will signal tamper to the access control panel while the cover is off.
2. Press and hold both the Schlage and link buttons for three (3) seconds.
3. Upon completion of factory default reset the WRI400 debug LED will blink green for one second, and the WRI400 will signal the reader's LED to blink green for one second and the beeper to sound.
4. Replace the cover.

Test

Test the WRI400 with power applied
1. The lid tamper LED will blink green when the WRI400 cover is removed and will light solid green when the lid tamper switch is pressed.
2. Most readers are designed to function independently of the WRI400. If the reader's LED and beeper performance is irregular or unexpected, refer to the instructions that came with the reader.

Schlage button test
ⓘ **Performing the Schlage Button Test will not result in the loss of any WRI400 settings or programming changes.**
1. While holding the Schlage button, press and release the reset button.
2. All relays, on-board LEDs, reader LEDs and reader beeper will be active while the Schlage button is pressed.

WRI400 in construction mode
1. After programming a Construction Credential (refer to page 18), present a valid Construction Credential to the reader.
2. The WRI400 strike relay will activate for the length of the default relock delay. The aux relay will not activate.

WRI400 linked to PIM400 and communicating with ACP
1. Present a valid credential to the reader.
2. The WRI400's strike relay and strike LED will activate for the relock delay.
ⓘ **A valid credential will not activate the AUX relay unless the ACP has given the credential authorization to do so.**
3. If an invalid credential is presented to the reader, the WRI400's RX/TX LED will blink red twice.
ⓘ **The ACP may be capable of indicating the WRI400 status for the following:**
   - *Lid tamper*
   - *Request to enter*
   - *Request to exit*
   - *Door position switch*

   Default settings for the above inputs can be configured using the HHD and/or the ACP.

Problem	Problem indication	Solution
WRI400 is not operating	No blink from PWR/TAMPER LED	Confirm connection to external power supply. See *Wiring the WRI400 to access control peripherals* on page 10.
		The PWR/TAMPER LED should flash green when the WRI400 is powered and the cover is removed.
WRI400 to PIM400 linking is unsuccessful	Four RED blinks at the end of a LINK attempt	Check the distance between the WRI400 and the PIM400. Maximum distance is 200 feet (61 meters).
	No data is getting to the ACP	The WRI400 and the PIM400 must be located on the same floor of the building.
	No data is getting to the PIM – diagnostics do not show DOOR status	Make sure the PIM400 is in link mode before attempting to link to the WRI400. See *Link the WRI400 to a PIM400* on page 18.
		A remote antenna module connected to the WRI400 and/or the PIM400 will improve RF communication. See *PIM400 and WRI400 location* on page 5.
		NOTE: Two short red blinks from the RX/TX is normal for an unauthorized card.
The credential reader is not operating properly	The WRI400 STRIKE Relay/LED is not activated when a card or keypad credential is presented	Confirm that the four connections required for basic operation readers are properly connected: Power, Ground, CLK/D1 and DATA/D0.
		Confirm that CLK/D1 and DATA/D0 wiring is not reversed.
		Consult the reader's user guide and confirm that the reader has specified power.
	The reader's beeper and/or LED is not functioning as expected	The WRI400 may not control or configure the reader's beeper or LED settings.
		Consult the reader's user guide for more information on configuring the reader's beeper, or the reader's LED patterns.
HHD is not communicating with the WRI400	No USB LED HHD display reads "No Device Connected"	Make sure the USB connector is properly connected. The USB LED will blink green.
		Set the HHD connection type to "USB".
		See *Handheld device (HHD)* on page 17.
Unable to configure settings with HHD	HHD display reads "Your HHD is not authenticated to perform this action"	Check that the HHD is properly coupled to the WRI400.
		See *Handheld device (HHD)* on page 17.

Important things to know before calling technical service:

- The WRI400 does not include or require a coin cell battery.
- The two reader inputs on the WRI400 are independent inputs. Both have the same access control rights because the WRI400 is assigned as one opening at the access control panel.
- Aux relay action is assigned by the access control panel. A credential must have aux relay rights before the ACP will command the WRI400 to activate the aux relay. The aux relay will activate **only when the WRI400 is in normal operating mode** (the ACP does not communicate with the WRI400 when in Construction Mode).
- When the WRI400 is operating in Construction Mode only the strike relay will activate for access.
- All communication firmware is compatible with the WRI400 and the PIM400.

LED	Condition	WRI400
RX/TX (LED3)	1 Quick RED flash	Loss of RF communication
	2 Quick RED flashes	No access granted upon credential
	4 alternating RED/GREEN flashes	Link start: WRI start searching for PIM400's presence
	Quick GREEN flashing	Linking: Good link quality
	Quick RED flashing	Linking: Bad link quality
	Slow GREEN flashing (X times)	Link Success: X = Linked RF channel number (1-10)
	4 Quick RED flashes	Link failed
STRIKE (LED4)	Solid GREEN	Relay energized
	OFF	Relay de-energized
AUX (LED5)	Solid GREEN	Relay energized
	OFF	Relay de-energized
DEBUG (LED1)	GREEN for 1 second	Factory Default Reset completed successfully
	5 Quick GREEN flashes	Master construction credential programmed successfully / user construction credential programmed successfully / 20-sec timeout
	Solid GREEN (20 seconds-max)	Waiting for user construction credential, after master presented
Power/Tamper (LED7)	Solid GREEN	Cover on
	Slow GREEN flashing	Cover off
USB (LED2)	Alternating RED/GREEN	SUS coupling
	Slow GREEN flashing	USB connected

Sequenced Operations

Link	Press and hold **LINK** button for **3 secs** to start Link process.
Factory Default Reset	Press and hold **BOTH SCHLAGE** and **LINK** buttons for **3 secs.**
Coupling	Press and hold **SCHLAGE** button, press **LINK** button **3 times** within **5 secs.** Coupling window is enabled for **30 secs.**
Construction-Mode Programming	**To program a master construction credential *:** Press and hold **SCHLAGE** button, then present valid credential to the reader within **5 secs.** If the credential is not presented within 5 seconds, time-out will occur. * Note: WRI400 must be in factory default state to program the master construction credential. **To program each user construction credential:** Present the master construction credential to the reader. The DEBUG LED will light green. Present the credential to be programmed to the reader within 20 seconds or time-out will occur.
Test	While holding the **SCHLAGE** button, press and release **RESET** button. All relays, onboard LEDs, reader LEDs, and reader beepers will remain active while the **SCHLAGE** button is pressed.

NOTE:

This information pertains ONLY to the Wireless Reader Interface (WRI400) device. If this WRI400 is changed to a Wireless Status Monitor (WSM400) or CT5000 controller, this label should be replaced with the appropriate device information.

Contact your local authorized dealer or visit www.schlage.com/support

Note: Locations of objects and scale of diagram are approximate.

LED2 — USB
LED1 — DEBUG
LED3 — RX / TX
S3 RESET
S1 SCHLAGE
S2 LINK
RELAY STATUS
LED4 STRIKE
LED5 AUX
LED6 ALARM
LED7 Power / Tamper
RELAY 1
RELAY 2
RELAY 3
J6
J2

FCC/IC statements

The communication module is a 900 MHz transceiver for electronic locks and non-lock devices. The communication module links the access device to the Access Control Management System, with feedback control to the Access Device via a wireless means. The module contains the embedded firmware implementing the radio physical and data layers. There are 5 antennas approved for use with this module:

Approved antenna list:

The required antenna impedance is 50 ohms.
1. PCB trace antenna with a 5.7dBi maximum gain
2. p/n: 23520587, dual beam antenna with a 3.5dBi gain (ANT400-REM-HALL)
3. p/n: 23530579, multi band directional panel antenna with 8.5dBi gain (ANT400-REM-I/O+dB)
4. p/n: 23530553, dual band quasi-omni panel antenna with 4.5dBi gain (ANT400-REM-I/O)
5. p/n: 23520561, multi band omni antenna with 2dBi gain (ANT400-REM-CEILING)

Antennas having a gain greater than the antenna type approved in the list are strictly prohibited for use with this device. However, antennas of the same type with a gain equal to or less may be used. Examples of this may include:

• a directional panel antenna with a gain equal to or less than 8.5 dBi may be used with this module

• an omni-directional antenna with a gain equal to or less than 2.0 dBi may be used with this module

Specifications of the radio module:

Power output: 18.6 dBm
Modulation: BPSK-40
Operating frequency: 906 -924 MHz

Note: The intended use of this module is not for the general public. It is generally for industry/commercial use only. This transceiver is to be professionally installed in the end product by Allegion, and not by a third party. The Schlage XPB-COMAD400V2 900 MHz Communication Board Module will not be sold to third parties via retail, general public or mail order. In the case of a repair, the transceiver will be replaced by a professional Installer.

Federal Communication Commission interference statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful 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 of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

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.

FCC/IC caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

To comply with FCC/IC RF exposure limits for general population/uncontrolled exposure, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter.

Industry Canada statements

This Device complies with Industry Canada License-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 undesired operation of the device.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication.

This radio transmitter, 8053B-COMAD400V2, has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated.

Approved antenna list:

The required antenna impedance is 50 ohms.
1. PCB trace antenna with a 5.7dBi maximum gain
2. p/n: 23520587, Dual Beam Antenna with a 3.5dBi gain (ANT400-REM-HALL)
3. p/n: 23530579, Multi band Directional Panel antenna with 8.5dBi gain (ANT400-REM-I/O+dB)
4. p/n: 23530553, Dual Band Quasi-Omni Panel Antenna with 4.5dBi gain (ANT400-REM-I/O)
5. p/n: 23520561, Multi band Omni Antenna with 2dBi gain (ANT400-REM-CEILING)

Antennas having a gain greater than the antenna type approved in the list are strictly prohibited for use with this device. However, antennas of the same type with a gain equal to or less may be used. Examples of this may include:

• a directional panel antenna with a gain equal to or less than 8.5 dBi may be used with this module

• an omni-directional antenna with a gain equal to or less than 2.0 dBi may be used with this module.

To comply with IC RF exposure limits for general population/uncontrolled exposure, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter.