SCHLAGE

WPR400 Wireless Portable Reader
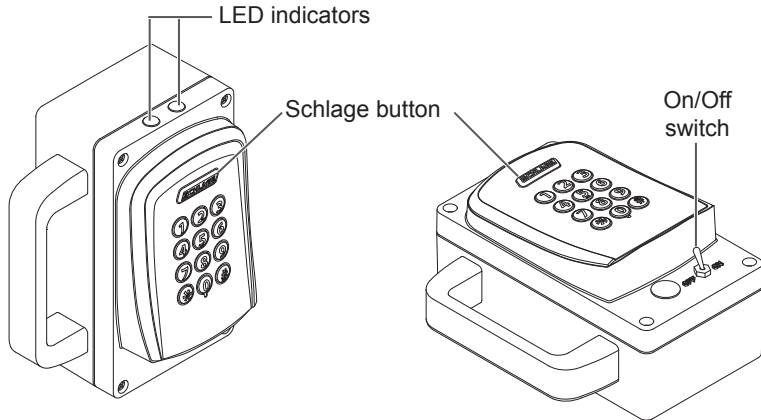# User guide

Contents

Overview

The WPR400 is a Wireless Access Point Module (WAPM) designed to interface with access control panels through a PIM400. The WPR400:

- Communicates with the PIM400 via RF (radio frequency).
- May be linked to one PIM400 only.
- Is powered with eight (8) replaceable AA alkaline batteries.
- May be used with all credential readers in the AD-Series product line.
- When attached to a credential reader, normally operates in on-line (Reader) mode.
- Information contained in the user credentials is passed to an access control panel (ACP), when in range of the ACP and the PIM400, which controls the WPR400 LEDs. The ACP maintains the audit trail.
- May be operated in Test mode, with or without a credential reader. In test mode, the WPR400 continually tests the quality of the RF link with a PIM400.

The WPR400 is shipped in "reader" mode. See *Test mode* on page 10 for more information on using the WRP400 as a tester.

If ordered as WPR400 x DT, the unit is shipped in test mode.

LED indicators

Schlage button

On/Off switch

Getting started

Follow these steps when setting up a WPR400.

1. If the PIM400 is not yet installed, install the PIM400. Refer to the user guide that came with the PIM400 or visit www.allegion.com/us (see Support>Schlage Electronics> Electronic Locks Technical Library) for more information.
2. Make sure PIM400 power is properly connected.
3. The WPR400 is shipped with batteries installed and ready for configuration. If the batteries need to be replaced, See *Batteries* on page 13 for more information. Make sure to use fresh batteries.
4. Familiarize yourself with the information contained in this user guide.

Save this user guide for future reference.

WPR400 range

For optimum performance, the WPR400 should be operated within the following range limits:

- Maximum distance between the PIM400 and WPR400 is 200 feet (61 meters) horizontally on the same floor in a building with normal construction materials.
- For a line-of-sight installation, maximum distance is 1000 feet (305 meters).

Actual range may be less than maximum distance depending on any possible RF signal interference.

Connecting a reader to the WPR400 (if necessary)

1. Connect the reader cable to the reader as shown below.

Reader

Reader cable
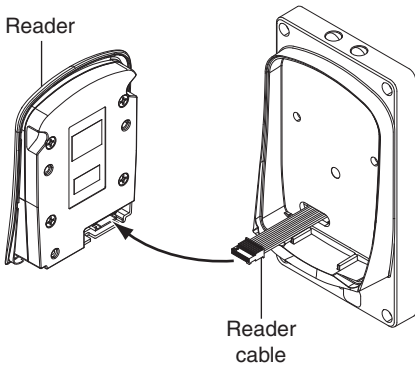
2. Secure the reader to the front cover using the screws and washers provided.

Permanently or temporarily mount the WPR400

- Mount the WPR400 using screws or Velcro® strips.
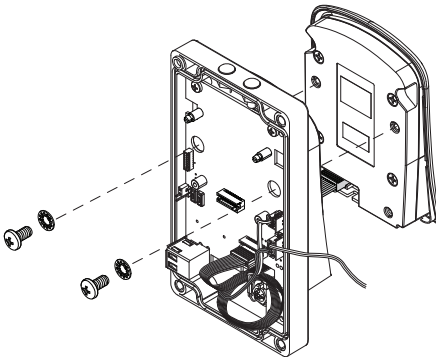- The WPR400 should always be mounted **at least one inch away from any metallic surface**.
- Place the WPR400 in a position where it was successfully link tested.

Permanent mount with screws:

1. Remove the WPR400 cover.
2. Using the base as a template, mark the mounting holes.
3. Drill a hole at each mark, and use a wall anchor and screws (not provided) to attach the WPR400.
4. If mounted on a metallic surface, use one inch non-metallic spacers (not provided).

Temporary mount with Velcro® strips:

1. Attach adhesive Velcro® strips ("hook" side) to the WPR400's base.
2. Attach the other adhesive Velcro® strips ("loop" side) to the mounting surface, positioned according to the placement of strips on the WPR400's base.
3. Press the WPR400 to the mounting surface with both sets of strips aligned.

Schlage Utility Software (SUS)

The SUS can be used to configure credential reader settings.

For information about the SUS and credential reader settings, see the SUS User Guide at www.allegion.com/us.

To start communication with the SUS:

1. Turn off the WPR400 power switch.
2. Loosen the 4 screws and remove the WPR400 cover.
3. Connect the USB communication cable to the WPR400 USB port.

USB Port
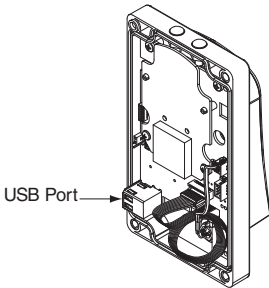
4. Log in to the SUS software. (See the SUS User Guide at www.allegion.com/us.)
5. Turn on the WPR400 power switch. Wait for the WPR400 to complete the power-on reset and the LEDs to stop blinking.
6. Press the credential reader Schlage button two (2) times quickly.

The WPR400 is communicating with the SUS when the Schlage button blinks alternate right/left red and the SUS display indicates "WPR400" at the bottom of the main screen.
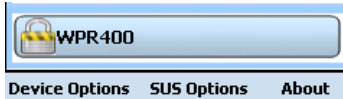

7. The SUS software is now available to view or edit credential reader settings or update firmware.

To edit settings or update firmware on the WPR400, the SUS software and the WPR400 must be coupled. Follow the steps below to couple the WPR400 and the SUS.

Coupling with the SUS

1. With power on the WPR400 and the SUS communicating as described above, press and hold the IPB button while pressing the TMP button three (3) times. The WPR400 will be in coupling mode for approximately 20 seconds.
2. While in coupling mode, the WPR400 top right LED will be solid amber, and the Schlage button on the reader will light solid green and blinking red.
3. On SUS, select the option "Couple SUS to Device". SUS will report when coupling is successful. Successful coupling is indicated on the WPR400 reader with the Schlage button blinking alternate left–right red.
4. If unable to initiate coupling, follow the steps to reset the WPR400 to factory defaults. See *Reset to factory defaults* on page 9 for more information.
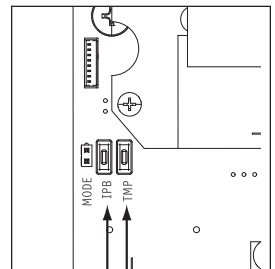
Link to a PIM400 (reader mode only)

Each time it is turned on, the WPR400 will check the quality of its link to a PIM400, if a link had previously been made. If the previous link to a PIM400 cannot be re-established or it does not exist, the WPR400 will automatically attempt to link to a PIM400.

Only one WPR400 or other WAPM can be linked at a time. Ensure that no other PIM400s are in link mode during this process.

1. Make sure that new batteries are installed in the WPR400. See *Batteries* on page 13 for more information and instructions on replacing batteries, if necessary.
2. Turn off the WPR400.
3. Make sure that the PIM400 is in link mode. See "Link Mode" in the PIM400 User Guide for more information.
4. Turn on the WPR400. The WPR400 will go through a power-on initialization and then automatically attempt to link to a PIM400.
5. If the link is successful, the Schlage button will blink green, and the beeper will sound. The number of green blinks/beeps indicates the RF channel number.
6. If the link fails, the WPR400 Schlage button will blink red three (3) times and five (5) short beeps will sound. The PIM400 will remain in link mode, so the link may be attempted again.

ⓘ **The WPR400 will fail to link if the PIM400 is not properly set to link mode. The LEDs on the PIM400 will alternately blink red and green.**

ⓘ **The WPR400 will fail to link if it is not in RF range of the PIM400. Move the WPR400 closer to the PIM400 location. (With standard construction, do not exceed 200 feet (61 meters) distance between the WPR400 and the PIM400. Do not locate the WPR400 and the PIM400 on separate floors of a building.)**

7. Test the WPR400 for normal operation by presenting a valid credential. The Schlage button will light green.

Re-link the WPR400

The WPR400 requires re-link:

- When the WPR400 or PIM400 is moved out of range or replaced
- When the RF channel is manually changed in the PIM400. See *Change the RF channel* on page 8 for more information.
- When Dynamic Channel Switching is activated in the PIM400. See *Enable dynamic channel switching* on page 8 for more information.
- After the WPR400 or PIM400 has been factory default reset.

To re-link, repeat the link procedure shown above.

Change the RF channel

ⓘ **Changing the RF channel will terminate links with other WAPMs previously linked to the PIM400.**

The WPR400 radio frequency (RF) channel is controlled by the PIM400 it is linked with. The RF channel in use may be changed on the PIM400 through the Schlage Utility Software (SUS).

Follow these steps to change the RF channel on the WPR400*.*

1. Start communication between the PIM400 and the SUS by logging in to the SUS application. The SUS will display "PIM400-TD2", "PIM400-RSI" or "PIM400-SBB" when communicating.
2. Select "Device options".
3. Select "PIM Properties".
4. Select the "Edit" tab.
5. Select a new/different RF channel.
6. Save your selection.
7. Select the "Link" tab.
8. Select a "Door address" and click on the "Link" button.
9. Try to link again using the new RF channel.

Enable dynamic channel switching

ⓘ **Activation of dynamic channel switching will terminate links with other WAPMs previously linked to the PIM400.**

Dynamic channel switching (DCS) is controlled by the PIM400 the WPR400 is linked with. DCS may be enabled on the PIM400 through the Schlage utility software (SUS).

Follow these steps to enable dynamic channel switching on the WPR400.

1. Start communication between the PIM400 and the SUS by logging in to the SUS application. When communicating, the SUS will display "PIM400-485-RSI" for the PIM400-485, or "PIM400-TD2" for the PIM400-TD2.
2. Select "Device options".
3. Select "PIM properties".
4. Scroll down to the "Dynamic channel switching" menu.
5. Select one of three (3) "Enable channel".
6. Save your selection.
7. Try to link again using the dynamic channel switching selection.

Reset to factory defaults

ⓘ **All information in the WPR400 will be deleted and reset to factory defaults!**
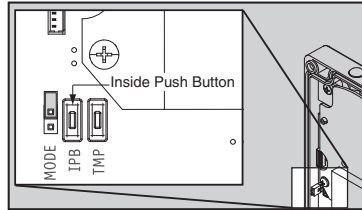
Level 1 factory default reset

Level 1 factory default reset will delete all lock settings as found in the "edit" tab on the "lock properties" screen on the SUS.

Lock Properties		
View	**Edit**	Reader

Edit tab

1. Remove the WPR400 cover.
2. Press and hold Schlage button until two (2) beeps sound (10 seconds).
3. Release the Schlage button.
4. Press and release the IPB three (3) times. The top LEDs will flash when the reset is complete.
5. Replace the cover.

Level 2 factory default reset

Level 2 factory default reset will delete all the reader settings as found in the "reader" tab on the "lock properties" screen on the SUS.

Lock Properties		
View	Edit	**Reader**

Reader tab

1. To complete level 2 factory default reset, repeat steps 2 through 4 above **within 10 seconds of the confirmation signals of level 1 factory default reset.** If more than 10 seconds pass after the confirmation signals of level 1 reset, then level 1 reset will be repeated.

Link mode LED reference

Schlage LEDs	Beeps	Action
1 Red, 1 Green	0	One link request was sent to find a PIM400 in link mode. This action will repeat twice, then stop.
1 Green	0	Successful RF packet transmission
1 Red	0	Unsuccessful RF packet transmission
Z Green [1]	Z [2]	Link was successful
3 Red	5	Link was unsuccessful

1 Z = RF channel number on which the WPR400 is linked (1-10). The RF channel of each PIM400 in the area should be known and recorded.

2 Number of beeps should match the RF channel number of the PIM400.

Normal operation LED reference

Schlage LEDs	Action
Green	A valid credential was presented to the WPR400 reader
Red	An invalid credential was presented to the WPR400 reader

Test mode

ⓘ **Disconnect the batteries from the WPR400 while configuring this mode. (See steps 1 and 2 under *Batteries* on page 13.)**

If the wireless portable reader was ordered as WPR400 x DT, the unit is shipped in test mode.

A credential reader is not required to operate the WPR400 in test mode.

The PIM400 should be in link mode prior to operation of the WPR400 in test mode. See *Set link mode on the PIM400* on page 11.

To select test mode:

1. Loosen the four screws and remove the WPR400 cover.
2. Place a jumper across the two pins of the "Mode" connector on the main circuit board.
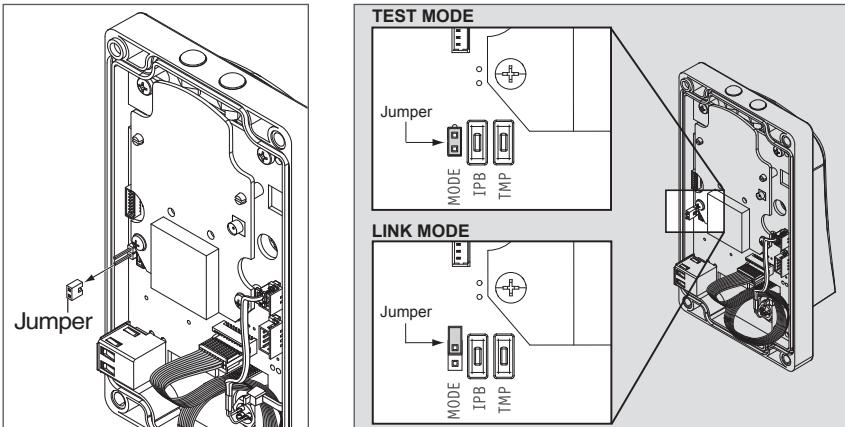
3. Reassemble the WPR400 before powering on.

When powered on, the WPR400 will automatically enter test mode and test the quality of the RF link.

If the RF link fails, the Schlage button will blink red three (3) times and five (5) short beeps will sound. Repeat the link attempt by either of the following methods (the PIM400 will remain in link mode):

- without a reader attached, cycle the WPR400 power switch, or,
- with a reader attached, present any credential OR press any number key on the keypad.

If the link problem continues, See *WPR400 range* on page 4 for more information and steps to correct the problem.

Set link mode on the PIM400

1. Mount the PIM400-TD2 to the wall (or ceiling) in the exact location and in the same manner that the PIM400-TD2 or PIM400-485 would be located and mounted (mounting hardware not included).
2. Remove the cover from the PIM400-TD2.
3. Connect the power supply to J2 (DC power) screw terminal on the PIM400-TD2.
4. Connect the power supply to AC power.
5. Press and release LINK 1 switch (SW2) to link Access Point 1, or LINK 2 switch (SW3) to link Access Point 2.
6. The corresponding LED (LED1 for LINK1, LED2 for LINK2) blinks red and green. This indicates that the PIM400-TD2 is in Link Mode. To abort link mode, press the same switch again.

J2, DC Power

Link 1 Button

Link 2 Button
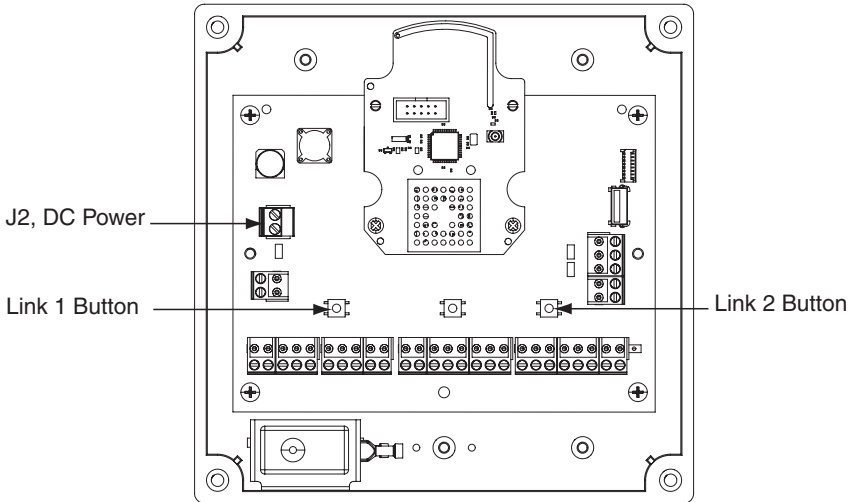
PIM400-TD2 printed circuit board (PCB)

Use the WPR400 in test mode

Do not attempt a pre-installation test if the WPR400 batteries are low. See *Batteries* on page 13 for more information on replacing the batteries.

Always locate the PIM400 in the intended mounting position(s) before and during the link process.

1. The WPR400 should be held in place at the exact spot where the WAPM (WPR400, WRI400 or WSM400) will be installed. (Always hold the WPR400 by the handle, not by the housing.)
2. Test on the intended door with the door open and with the door closed.
3. Turn on the WPR400. It will perform a power-on test and then automatically enter test mode. It will then send 200 test packets to check the quality of the RF link. A successful link will produce more green than red LED blinks during the link transmissions. See "WPR400 test mode LED reference" below for more information.
4. For each new link test, the WPR400's power must be cycled off, then on.

> **TIP**
>
> The first time you test the link to the PIM400-TD2 with the WPR400 in test mode, do so within close proximity so that you can observe a successful link result before linking at a remote distance.

WPR400 test mode LED reference

In test mode, the WPR400's LEDs will blink to indicate RF communication quality as follows:

Schlage LEDs	RF Communication 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
10 fast red blinks	Low battery, test incomplete (See *Batteries* on page 13 for information on replacing batteries.)

A successful transmission rate greater than 85% is needed for a successful link and to ensure that more than 99.6% of all RF transmissions will be completed error-free. If the RF transmission is poor or unsuccessful, attempt modifications to improve the transmission. See "Improve RF communication" below.

Improve RF communication

1. Ensure that the distance between the PIM400 and the WPR400 does not exceed 200 feet (61 meters). The PIM400 and the WPR400 should not be located on separate floors in a building.
2. If the link problem still exists and the PIM400 is in a closet, move it outside the closet where a Schlage Remote Antenna could be located. This will eliminate the RF attenuation from the closet wall. If this allows for a successful link, then the PIM400-TD2 or PIM400-485 should be mounted outside the closet. If it is not desirable to mount the PIM400-TD2 or PIM400-485 outside the closet, then mount it in the closet with the Schlage omnidirectional (remote) Antenna mounted outside the closet.
3. If the link problem still exists, use a PIM400-TD2 with a Schlage directional (remote) antenna aimed at the non-linking WPR400 test location.
4. Finally, move the PIM400 to another workable location nearer to the test site, then test again.
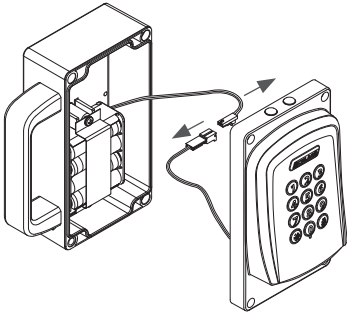
Batteries

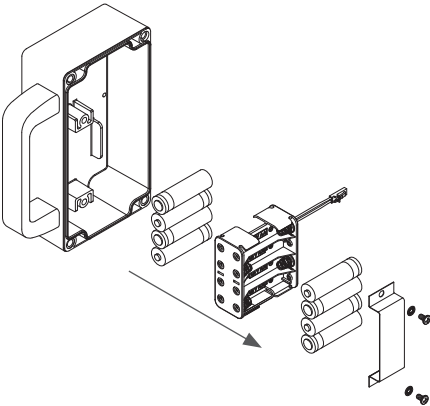To install or replace batteries:
1. Remove the WPR400 cover.
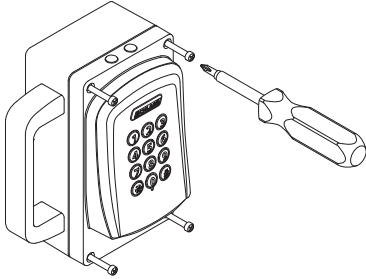
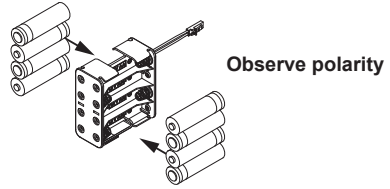2. Disconnect the battery wires.

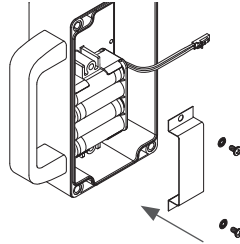3. Remove the battery retainer and battery holder.
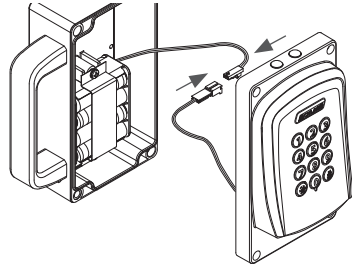4. Remove the old AA batteries from the battery holder.

5. Place eight new AA batteries into the battery holder.
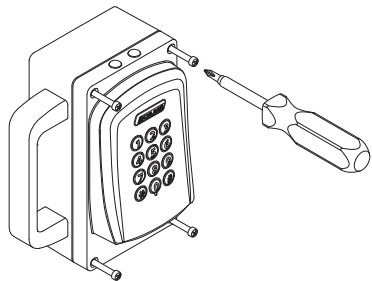
Observe polarity

6. Place the battery holder in the original position and reattach the battery retainer.

7. Reconnect the battery wires, and carefully pack the wires inside the enclosure.

8. Reattach the WPR400 cover making sure no wires are pinched.

Troubleshooting

For troubleshooting, browse to www.allegion.com/us (see Support>Schlage Electronics>Electronic Locks Technical Library).

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 fi rmware 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 co-located 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.