WyRELESS ACCESS

PRELIMINARY

INSTALLATION INSTRUCTIONS

PANEL INTERFACE MODULE

(PIM)

Includes Installation Instructions for:

PIM, PIM-OTD, PIME, PIME-OTD, & PIM-OTD-485

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INSTALLATION INSTRUCTIONS

Wyreless Access™ Panel Interface Module (PIM)

NOTE: These instructions are for installing the Panel Interface Module (PIM), a component of a Wyreless Access System. After completing this installation refer to the "Configuring and Operating the Wyreless Access System" manual.

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1. Wyreless Access™ System Components

1.1 Overview

Every access control system that uses Wyreless Access™ contains two different types of modules (Figure 1-1):

- at least one Wyreless Panel Interface Module (WPIM), and
- at least one Wyreless Access Point Module (WAPM)

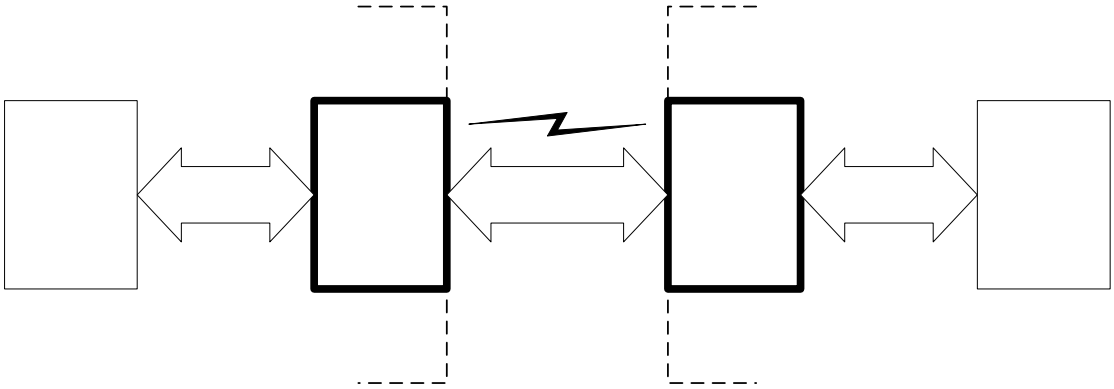

Figure 1-1 – Wyreless Access System Block Diagram

Recognition Source's product line contains several different expressions of each module.

The WPIMs are wired to access control panels and usually are installed very close to the access control panels. The WPIMs installation locations are determined by the location of the WAPMs with which they will communicate using RF.

The WAPMs are installed at access points where access will be controlled and/or monitored. Depending on the application and which WAPM is used, some wiring at the access point may be required.

Regardless of which WPIM or WAPM module is used, the communication link between the WPIM and WAPM is always RF.

This manual describes the installation of a Panel Interface Module (PIM) or a Panel Interface Module Expander (PIME), both of which are WPIMs

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1.2 Panel Interface Module (PIM) Components & Sales Models

The PIM is the wireless interface to an access control panel. The PIM can be ordered with one of two possible enclosures: PIM or PIM-OTD. Table 1-1 shows these two models, what PIM Expander, and what antenna each uses.

Sales Model	PIM	PIM-OTD
Closed Enclosure		
Opened Enclosure		
Expander	PIME	PIME-OTD
Antenna	whip only	internal “c”

Table 1-1 – PIM Enclosure Variations

MODEL	ENCLOSURE	MAXIMUM NUMBER OF WAPMs	LOCATION	ACCESS CONTROL PANEL INTERFACE/DESCRIPTION
PIM	plastic	2	indoor	Magnetic (clock & data) or Wiegand (data1/data0)
PIM-OTD	plastic	2	indoor	Magnetic (clock & data) or Wiegand (data1/data0)
PIM-OTD-485	plastic	16	indoor	RS485
PIME	n/a	2	indoor	Magnetic (clock & data) or Wiegand (data1/data0)
PIME-OTD	n/a	2	indoor	Magnetic (clock & data) or Wiegand (data1/data0)

Table 1-2- PIM Sales Model Table

2. Determining the Best PIM Location

It is important to determine the best mounting location for the PIM to insure that reliable RF communications between the PIM and its WAPMs can be achieved.

Please refer to the WAPM installation manual for determining the best location for the WAPM.

2.1 PIM Location Guidelines

NOTE: A WAPM located with a substantial steel barrier intervening between it and the PIM may require alternate PIM placement in order to ensure reliable RF communications. In these applications, mount the PIM remote from the access control panel. Choose the PIM location to prevent "shadowing" of the WAPM from PIM radio transmissions.

2.1.1 If the PIM and WAPM are to be used in a line of sight application (i.e. the PIM antenna can visually see the WAPM antenna with no obstructions), then the maximum distance between the PIM and WAPM is 1000'. If the WAPM is an IRL, then the maximum distance is 600'.

2.1.2 If the PIM and WAPM are to be used in a building using normal construction, then the maximum distance between the PIM and WAPM is 200' horizontally.

2.1.3 Always try to install the PIM on the same floor of a building as the WAPMs it controls.

2.1.4 If WAPM(s) are on another floor of a building (one floor up or down), cut the range by 100 feet for each floor away from the PIM.

2.1.5 Never install the PIM more than 1 floor away from its WAPMs.

2.1.6 Never install the PIM in an all cinder block, concrete or metal room.

2.1.7 If possible, install the PIM halfway between all the WAPMs it will control and never more than 200 feet away from any. Remember to include the WAPMs that will be controlled by a PIME, if one is used.

2.1.8 Always mount the PIM so the antenna is vertical for best performance.

2.1.9 Install the PIM as far above the floor as possible, 6 feet is usually optimum for operation and maintenance.

2.1.10 If possible, mount the PIM so that is there are the minimum number of obstacles between the antennas of the PIM and the WAPM.

2.1.11 Line-of-sight means no obstructions ever. If obstructions like moving vehicles can block the line-of-sight, even if for very short times, reduce the specified range in half.

2.1.12 A PIM must, in all directions (sides, top, bottom, and back), have a minimum 3" separation from any metal surface. Therefore if the PIM must be mounted on a metal surface, though not recommended, a user supplied 3" non-metallic spacer (i.e. wood) must be provided.

A PIM-OTD must, in all directions (sides, top, bottom, and back), have a minimum 1" separation from any metal surface. Therefore if the PIM-OTD must be mounted on a metal surface, though not recommended, the supplied 1" spacer kit (K384-003-001) must be used.

2.2 Pre-installation Wyreless Access ™ Test

Once the best locations for the PIM and WAPM(s) have been determined, use this procedure to check performance prior to installation:

2.2.1 As close as possible to its exact mounting location, temporarily mount the WAPM to the access control point (i.e. a door, a gate, an elevator). Do not connect battery pack yet.

2.2.2 Temporarily mount PIM in the exact location and orientation it is intended to be mounted.

2.2.3 Install the PIM antenna as indicated in Section 3.5.

2.2.4 Power the PIM temporarily with a 12-volt battery capable of delivering 300 mA by connecting it to J1 – positive left, negative right (depending on PIM PCB being used see Figure 3-1 or Figure 3-2).

2.2.5 Put the PIM into Link Mode (S1 or S2) for the WAPM (A or B) being tested (depending on PIM PCB being used see Figure 3-1 or Figure 3-2).

2.2.6 Go to the access control point being tested. Make sure the access control point is in its secure state (i.e. closed). Connect battery. Verify that linking has occurred. Successful linking is indicated at the WAPM by the green LED flashing and optionally by an internal sounder beeping. The number of green flashes and audible beeps should be the same as the channel number that the PIM is set to. This linking process can take from 20-60 seconds to complete.

2.2.7 If linking occurred successfully, link second WAPM similarly, then proceed with installing the WAPM(s) and PIM.

2.2.8 If linking does not occur successfully, move the PIM 6-10 inches in any convenient direction (up, down, sideways) and repeat until all WAPMs link successfully. Once the linking is successful, then proceed with installing the WAPMs and PIM.

2.2.9 If still not successful, change channels and repeat or move PIM closer to the WAPMs and repeat.

3. Installing the Panel Interface Module (PIM)

There are two versions of the PIM printed circuit board (PCB): RS232 (Figure 3-1), and RS485 (Figure 3-2).

3.1 How to determine the version of PIM PCB

The version of PIM PCB being installed can be identified by observing which connectors are installed on the PCB. Compare the board being installed toFigure 3-1, and Figure 3-2.

3.1.1 RS232 PIM PCB (Figure 3-1)

If the RS232, 9-pin connector, J5, is installed and the RS485, 5-pin terminal block, J7, is missing then it is a RS232 PIM PCB

3.1.2 RS485 PIM PCB (Figure 3-2

The RS485 PIM PCB can be uniquely identified in one of two ways:

- If the RS232, 9-pin connector, J5, is installed and the RS485, 5-pin terminal block, J7, is installed it is a RS485 PIM PCB
- If the Access Point A, 8-pin panel connector, J3 and the Access Point B, 8-pin panel connector, J4, are missing it is a RS485 PIM PCB

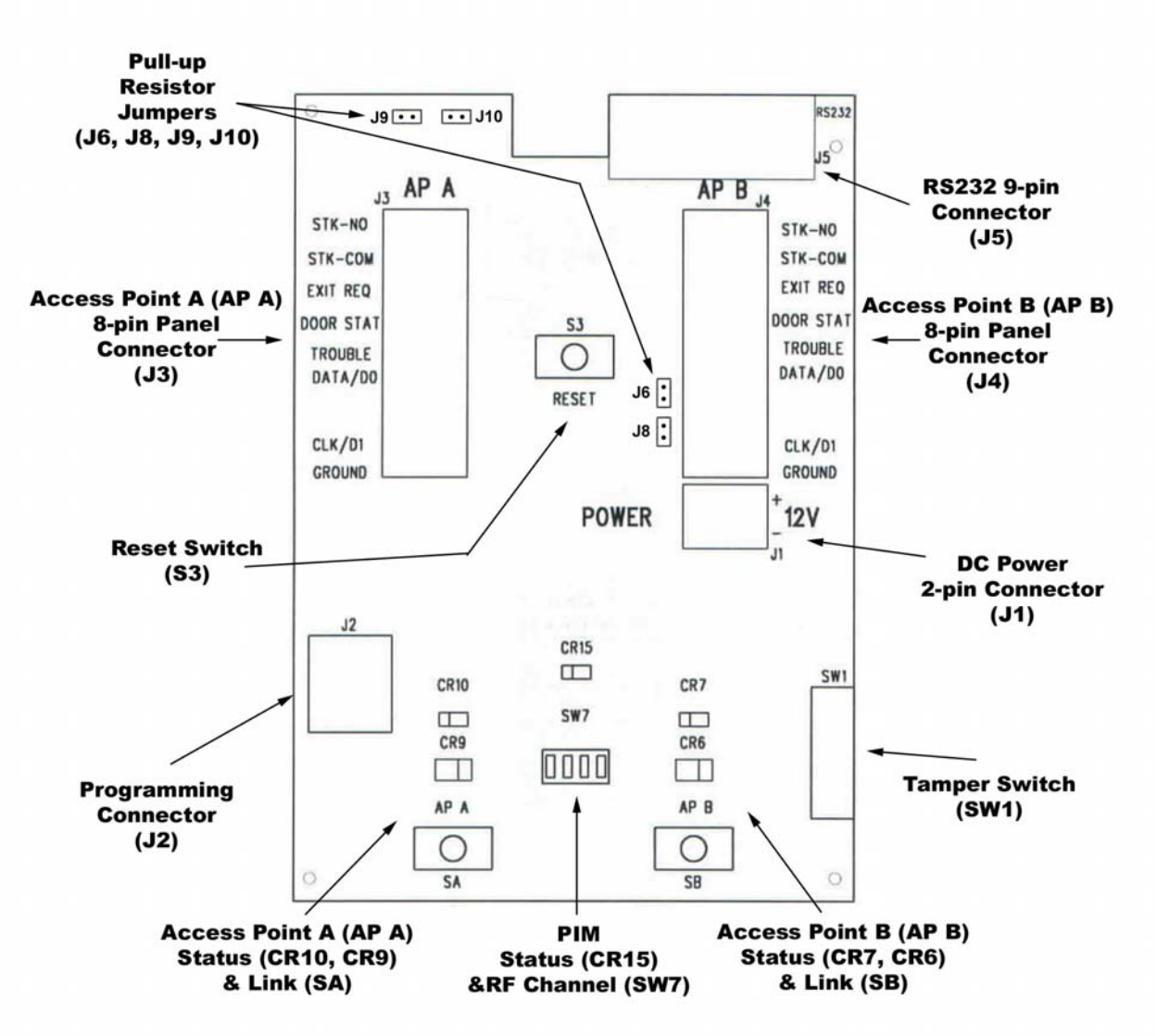

Figure 3-1 – RS232 PIM & PIME Printed Circuit Board (PCB)

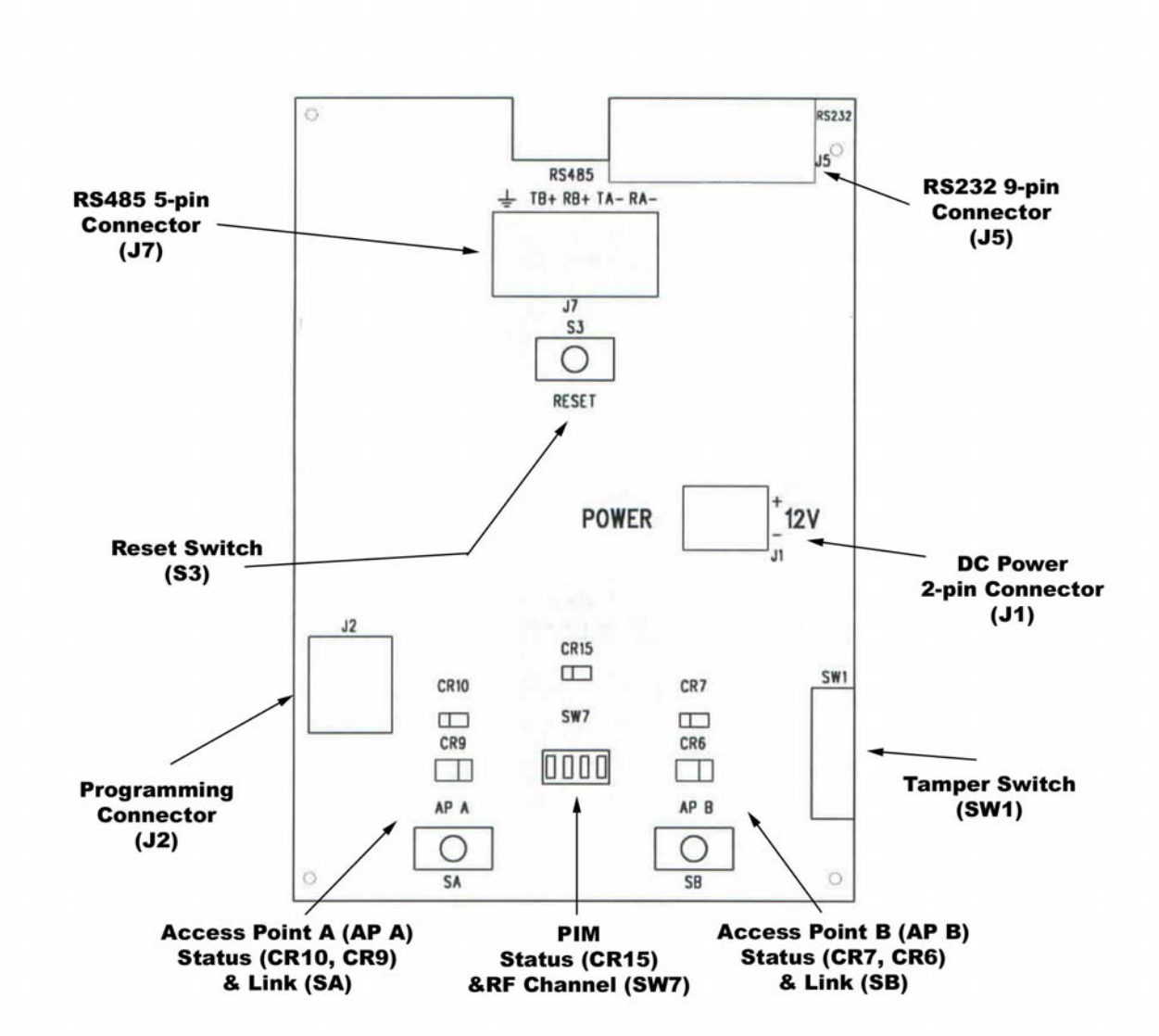

Figure 3-2 – RS485 PIM & PIME Printed Circuit Board (PCB)

3.2 PIM PCB Functional Components

NOTE: The components on the left side of the PIM PCB are for Access Point A (AP A) while components on the right are for Access Point B (AP B).

3.2.1 Access Control Panel Connections

PIM signal wiring connections to an access control panel are accomplished using two 8-Pin Connectors. J3 is used to connect Access Point A (AP A) and J4 is used for Access Point B (AP B) (depending on PIM PCB being used see Figure 3-1 or Figure 3-2).

3.2.2 DC Power Connection

DC power is connected to the PIM via connector J1. Positive is the left pin, negative is the right pin (depending on PIM PCB being used see Figure 3-1 or Figure 3-2).

3.2.3 RS485 Connection

A serial RS485 connection can be made to the PIM using connector J6. This connection is used for system configuration and future features (depending on PIM PCB being used see Figure 3-1 or Figure 3-2).

For additional information about system configuration please refer to the "Configuring & Operating a Wyreless Access System" manual and the "Configuration & Demonstration Tool (CDT)" manual.

3.2.4 PIM RF Channel & Status

The RF channel to be used to communicate with the Access Points is selected using a 4 position, single pole, single throw DIP switch SW7 (depending on PIM PCB being used see Figure 3-1 or Figure 3-2).

The overall status of the PIM is indicated using the green LED, CR15.

For additional information about setting the RF channel and how the PIM status is displayed please refer to the "Configuring & Operating a Wyreless Access System" manual.

3.2.5 Access Point Link & Status

A PIM/Access Point link mode process is initiated using a Link Switch, either S1 for AP A or S2 for AP B (depending on PIM PCB being used see Figure 3-1 or Figure 3-2).

The status of an Access Point is indicated using two LEDs: one for the real time status and one for trouble status. A red/green LED is used for real time status: CR9 for AP A and CR6 for AP B. A red LED is used for trouble status: CR10 for AP A and CR7 for AP B (depending on PIM PCB being used see Figure 3-1 or Figure 3-2).

For additional information about Access Point linking and status please refer to the "Configuring & Operating a Wyreless Access System" manual.

3.2.6 PIM Reset Switch

Switch S3 is provided to reset the PIM without having to cycle power (depending on PIM PCB being used see Figure 3-1 or Figure 3-2).

For additional information about the PIM Reset switch please refer to the "Configuring & Operating a Wyreless Access System" manual.

3.2.7 PIM Programming Connector

A programming connector (J2) is provided to allow new PIM firmware versions to be installed (depending on PIM PCB being used see Figure 3-1 or Figure 3-2).

For additional information about PIM programming, please refer to the "Configuring & Operating a Wyreless Access System" manual.

3.2.8 PIM Tamper Switch

A tamper switch (SW1) is provided to indicate when the PIM enclosure cover is open (depending on PIM PCB being used see Figure 3-1 or Figure 3-2).

For additional information about PIM tamper switch refer to the "Configuring & Operating a Wyreless Access System" manual.

3.3 Tools – Hardware Required

- Hammer
- 9/32" drill bit
- Flat and Phillips head screwdrivers (1/8" wide flat blade for screw terminals)
- Pencil

- Mounting Kit (K381-000-001), provided, including four #8 X 1 ½" screws and four heavy-duty anchors
- Mounting Kit (K384-003-001), provided, including four #8 X 2 ½" screws and four 1" round by 1" high (1" O.D. x 1") spacers

3.4 Mounting the PIM

3.4.1 PIM

If installing a PIM, see Table 1-1, PIM column, use this procedure:

3.4.1.1 Remove the desired knockout with the screwdriver and hammer.

3.4.1.1.1 To remove the inner ½" electrical metallic tubing (conduit) knockout, place screwdriver blade into inner groove and strike top of screwdriver handle with a hammer.

3.4.1.1.2 To remove the outer ¾" electrical metallic tubing (conduit), repeat the above procedure but place the screwdriver blade in the outer groove.

3.4.1.2 If the PIM is to be mounted on a metal surface, install a 3", non-metallic spacer (i.e. wood) to the metal surface first, then proceed, as described below, to fasten the PIM to the non-metallic spacer.

3.4.1.3 Place the PIM with its door opened, against the wall or against installed non-metallic spacer in the position it was successfully "link" tested (Section 2.2)

3.4.1.4 Using the four mounting holes in the back of the PIM housing as a template, mark these holes with a pencil.

3.4.1.5 Set the PIM down and drill the four holes with a 9/32" diameter drill bit, 1 ¾" deep.

3.4.1.6 Insert the four anchors provided firmly into the holes so they are flush with the wall or the non-metallic spacer.

3.4.1.7 Screw in the four screws provided to attach the PIM to the wall or the non-metallic spacer.

3.4.2 PIM-OTD

If installing a PIM-OTD, see Table 1-1, PIM-OTD column, use this procedure:

3.4.2.1 When using the internal "C" antenna with the PIM-OTD or PIME-OTD, wire routing inside the enclosure is very important. Improper wire routing will reduce the RF range. Keep the wires inside the enclosure as short as possible (i.e. do not coil an excess wire inside the enclosure). (Figure 3-3 & Figure 3-4).

Figure 3-3 – Improper Wire Routing

Figure 3-4 – Proper Wire Routing

There are dimples on the sides and bottom of the PIM-OTD enclosure indicating the only proper place to drill holes (Figure 3-5 and Figure 3-6).

Figure 3-5 - PIM-OTD Dimples for Hole Drilling

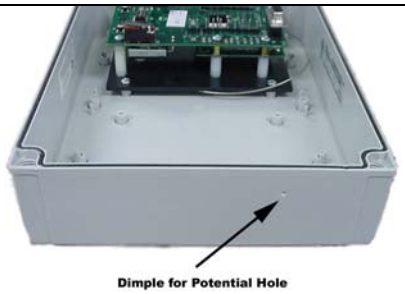

Figure 3-6 – PIM-OTD Dimples for Hole Drilling

NOTE: There are two dimples on the top of the PIM-OTD enclosure. These are for remote antenna installation and are not to be used for signal/power wiring.

Using these dimples, drill hole(s) in the PIM-OTD enclosure, to accommodate the size and number of entry/exit connectors to be used.

NOTE: When drilling, make certain that the drill bit does not damage any electronics inside the enclosure. Use light drill pressure so that the bit does not enter the enclosure very far when the bit breaks through the inside of the enclosure.

3.4.2.2 Place the PIM-OTD, with its cover removed, against the wall in the position it was successfully "link" tested (Section 2.2)

3.4.2.3 Using the four mounting holes in the corner of the PIM-OTD housing as a template, mark these holes with a pencil.

3.4.2.4 Set the PIM-OTD down and drill the four holes with a 9/32" diameter drill bit, 1 ¾" deep.

3.4.2.5 Insert the four anchors provided (kit: K381-000-001) firmly into the holes so they are basically flush with the wall.

3.4.2.6 If the PIM-OTD is to be mounted on a non-metallic surface use the #8, 1½" screws provided (kit: K381-000-001) to attach the PIM-OTD to the wall..

If the PIM-OTD is to be mounted on a metallic surface use the 1" round by 1" high (1" O.D. x 1") spacers and the #8, 2½" screws provided (kit: K384-003-001) to attach the PIM-OTD 1" from the wall.

3.5 Installing the Antenna

3.5.1 Omni Whip Antenna (ANT-OMNI)

Insert the straight black omni antenna, supplied with the PIM or PIME, into the hole at the top of the PIM housing and tighten the screw. *Do not over tighten.*

3.5.2 Internal C Antenna

If the internal C antenna is to be used, then no antenna installation is required.

3.6 Connecting the RS232 PIM PCB to the Access Control Panel

Review the PIM Functional Components from Section 3.1 before connecting the RS232 PIM PCB to an access control panel.

Caution: Disconnect the access control panel's power and standby batteries while wiring the PIM to the panel.

Warning! Because each access control panel is different, always check the panel's instruction manual for appropriate interface wiring.

Use shielded 8-conductor wire for the signal wiring between PIM and the access control panel. Refer to Table 5-1 for maximum wiring lengths and cable specifications.

There are 6 different wiring connections that need to be made between the PIM and the Access Control Panel. These 6 connections need to be made for each of the Access Points on the PIM if both are used:

3.6.1 DC Power (required)

Refer to J1 section of Table 3-2 for how to connect DC power to the PIM. This connection is always required regardless of the system application or configuration.

3.6.2 Access Point Card Reader (optional)

Refer to J3/J4 section of Table 3-2 for how to connect the Card Reader signals from the PIM to the access control panel. This connection is optional depending on the system application or configuration. Make certain there is at least one signal ground connection between the PIM and the access control panel.

3.6.2.1 The Card Reader signals on earlier PIM versions are driven by open-collector (open drain) devices. If the access control panel does not have internal pull-up resistors then external pull-up resistors (external to the access control panel) will need to be installed. See Recognition Source Application Note A664-006-xxx: "When Are PIM External Pull-Up Resistors Needed?"

3.6.2.2 Later versions of the PIM RS232 PCB have optional pull-up resistors on the PCB. These pull-up resistors are enabled or disabled using PCB shorting blocks (jumpers) (Table 3-2). The PIM RS232 with pull-up resistors on the PCB are shipped with the pull-ups enabled.

Shorting Block	Signal		Pull-ups Enabled (1Kohm to +5 VDC)	Pull-ups Disabled (open collector)
J10	AP A Pull-ups	CLK/D1	shorted	open
J9		DATA/D0	shorted	open
J8	AP B Pull-ups	CLK/D1	shorted	open
J6		DATA/D0	shorted	open

Table 3-1 – PIM RS232 Pull-up Resistor Options

3.6.3 Access Point Strike Signal (optional)

Refer to J3/J4 section of Table 3-2 for how to connect the Strike signal from the access control panel to the PIM. This connection is optional depending on the system application or configuration. Make certain there is at least one signal ground connection between the PIM and the access control panel.

3.6.4 Access Point (Door) Position Signal (optional)

Refer to J3/J4 section of Table 3-2 for how to connect the Access Point (Door) Position Switch signal from the PIM to the access control panel. This connection is optional depending on the system application or configuration. Make certain there is at least one signal ground connection between the PIM and the access control panel.

3.6.5 Access Point Request to Exit Signal (optional)

Refer to J3/J4 section of Table 3-2 for how to connect the Request to Exit signal from the PIM to the access control panel. This connection is optional depending on the system application or

configuration. Make certain there is at least one signal ground connection between the PIM and the access control panel.

3.6.6 Access Point Trouble Signal (optional)

Refer to J3/J4 section of Table 3-2 for how to connect the Trouble signal from the PIM to the access control panel. This connection is optional depending on the system application or configuration. Make certain there is at least one signal ground connection between the PIM and the access control panel.

After all required connections have been made connect the power and standby batteries to the panel.

PIM	PIM SIGNAL	ACCESS PANEL SIGNAL	DESCRIPTION/EXPLANATION
J1	12V+	+7-14 VDC	PIM inputs for 12 VDC power. The PIM works from 7 to 14 VDC, and draws 250mA max during transmit. The access control panel's reader power outputs may not source enough current for the PIM. If this is the case use the access control panel's main regulated 12 VDC power supply or a separate UL approved 12 VDC power supply. Observe polarity.
	12V-	DC Ground	
J3 for Access Point A J4 for Access Point B	STK-NO	Normally Open Strike Relay Contact	PIM input, used to monitor the state of the access panel's strike relay. The STRIKE signal should be connected to the normally open terminal of the strike relay. The GROUND signal should be connected to the common terminal of the strike relay. This connection only needs to be made if the Access Point needs to be unlocked (door) or raised (gate). The PIM circuit is designed for connection to dry strike relay contacts (i.e. no external voltage should be applied to the strike relay contacts).
	STK-COM	Common Strike Relay Contact	If the access control panel does not have dry strike relay contacts, please contact Recognition Source for interfacing advice (section 6).
	EXIT REQ	Request To Exit Input	PIM open collector output, used to indicate when the Access Point is making a request to exit and needs to be connected to the access control panel's request to exit input (15 VDC max, 50ma max). This connection only needs to be made if the Access Point needs to have a request to exit function. *Default configuration: low = request to exit. Logic polarity configurable.*
	DOOR STAT	Door Status Input	PIM open collector output, used to indicate the position of the Access Point's portal: open or closed (15 VDC max, 50ma max). This connection only needs to be made if the Access Point needs to know the Access Point's portal state. *Default configuration: low = door closed. Logic polarity configurable.*
	TROUBLE	General Purpose Alarm Input	PIM open collector output, used to indicate that the Access Point has some type of trouble that needs attention or maintenance (15 VDC max, 50ma max). This connection only needs to be made if the Access Point trouble status needs to be monitored *Default configuration: low = trouble. Logic polarity configurable.*
	DATA/D0	Data or Data 0 Input	PIM outputs shipped with 1Kohm pull-up resistors to +5VDC option enabled (configurable to open collector by removing PCB jumpers), used to present card data to the access control panel. Generally, if the Access Point uses a magnetic reader then the PIM will present clock & data signals to the access control panel. If the Access Point uses a Wiegand or Proximity reader then the PIM will present data1/data0 signals to the access control panel.
	CLK/D1	Clock or Data 1 Input	It is easy to get these signals reversed, if the first hookup fails to work, try switching the wires at these terminals. (6 VDC max, 50ma max). Refer to section 3.6.2 above, for pull-up resistor options for these signals. *Default configuration: pull-up resistors = enabled. Configurable via PCB jumpers.*
	GROUND	Signal Ground	This is a common signal ground for the EXIT REQ, DOOR STAT, TROUBLE, DATA/D0, and CLK/D1 signals.
J5	PIN 2	TD Transmit Data	A RS232 communications port used with Wyreless Access system configuration tool. For additional information please refer to the "Configuring & Operating a Wyreless Access System" manual and the "Configuration & Demonstration Tool (CDT)" manual.
	PIN 3	RD Receive Data	
	PIN 5	Signal Ground	

Table 3-2 – RS232 PIM to Access Control Panel Connections

3.7 Connecting the RS485 PIM PCB to the Access Control Panel

Review the PIM Functional Components from Section 3.1 before connecting the RS485 PIM to an access control panel.

Caution: Disconnect the access control panel's power and standby batteries while wiring the PIM to the panel.

Warning! Because each access control panel is different, always check the panel's instruction manual for appropriate interface wiring.

Use shielded 3 or 5 conductor wire for the signal wiring between PIM and the access control panel. Refer to Table 5-1 for maximum wiring lengths and cable specifications.

There are 2 different wiring connections that need to be made between the PIM and the Access Control Panel.

3.7.1 DC Power (required)

Refer to J1 section of Table 3-3 for how to connect DC power to the PIM. This connection is always required regardless of the system application or configuration.

3.7.2 RS485 Connections (required)

Refer to J7 section of Table 3-3 for how to connect the RS485 signals from the RS485 PIM to the access control panel.

Notes about making a RS485 connection: There is some confusion about the "A" and "B" designations for the RS485 signals. The EIA RS-485 Specification labels the data wires as "A" and "B" but many RS485 products label their wires "+" and "-." Some products associate the "+" signal with "A", some with "B". The bottom line is that the "+" should always be connected to the "+" and the "-" to the "-" however it is designated. Reversing the polarity will not damage either RS485 device, it just won't communicate. So take your best guess (a 50/50 chance) about connecting "+" to "+" and "-" to "-" and if it doesn't work, switch them!

PIM	PIM SIGNAL	ACCESS PANEL SIGNAL	DESCRIPTION/EXPLANATION
J1	12V+	+7-14 VDC	PIM inputs for 12 VDC power. The PIM works from 7 to 14 VDC, and draws 250mA max during transmit. The access control panel's reader power outputs may not source enough current for the PIM. If this is the case use the access control panel's main regulated 12 VDC power supply or a separate UL approved 12 VDC power supply. Observe polarity.
	12V-	DC Ground	
J5	PIN 2	TD Transmit Data	A RS232 communications port used with Wyreless Access system configuration tool. For additional information please refer to the "Configuring & Operating a Wyreless Access System" manual and the "Configuration & Demonstration Tool (CDT)" manual.
	PIN 3	RD Receive Data	
	PIN 5	Signal Ground	
J7	⏚	Signal Ground	A full or half duplex, 2 or 4 wire, bi-directional RS485 communications port for interfacing to access control panels. For a 2 wire RS485 installation refer to Table 3-4 For a 4 wire RS485 installation refer to Table 3-5 **Note: Transmit and Receive nomenclature are with respect to the PIM (i.e. Transmit = data sent from the PIM, Receive = data sent to the PIM)**
	TB+	+ Transmit Data	
	RB+	+ Receive Data	
	TA-	- Transmit Data	
	RA-	- Receive Data	

Table 3-3 – RS485 PIM to Access Control Panel Connections

PIM[1]		Access Control Panel (ACP)[2]	
Signal	**Description**	**Signal**	**Description**
⏚	Signal Ground	Ground	ACP Signal Ground
TB+	PIM +Transmit Data	+ RS485	ACP +RS485 Data
RB+	PIM +Receive Data		
TA-	PIM –Transmit Data	- RS485	ACP –RS485 Data
TB-	PIM –Receive Data		

1 – PIM Transmit and Receive nomenclature are with respect to the PIM
2 – ACP Transmit and Receive nomenclature are with respect to the ACP

Table 3-4 – 2 Wire RS485 Connections

PIM[1]		Access Control Panel (ACP)[2]	
Signal	**Description**	**Signal**	**Description**
⏚	Signal Ground	Ground	ACP Signal Ground
TB+	PIM +Transmit Data	+ RS485 Receive	ACP +Receive Data
RB+	PIM +Receive Data	+ RS485 Transmit	ACP +Transmit Data
TA-	PIM –Transmit Data	- RS485 Receive	ACP –Receive Data
TB-	PIM –Receive Data	- RS485 Transmit	ACP –Transmit Data

1 – PIM Transmit and Receive nomenclature are with respect to the PIM
2 – ACP Transmit and Receive nomenclature are with respect to the ACP

Table 3-5 – 4 Wire RS485 Connections

After all required connections have been made connect the power and standby batteries to the panel.

This completes the installation of the PIM/PIME.

If the Wyreless Access Point Modules (WAPM) that this PIM/PIME will control are not installed yet, now is the time to install them, please refer to the appropriate APC Installation Manual.

If the Wyreless Access Point Modules (WAPM) that this PIM/PIME will control are installed, then you are ready to configure your Wyreless Access System, please refer to the "Configuring & Operating a Wyreless Access System" manual.

4. Installing a Panel Interface Module Extender

The PIM and the PIM-OTD can be expanded to control two additional access points by adding a Panel Interface Module Extender (PIME). To expand the PIM use a PIME, to expand the PIM-OTD use a PIME-OTD.

4.1 Installing an Extender in a PIM Enclosure

Installing a PIME permits one PIM enclosure (indoor) to control two additional access points for a total of four. The PIME is a PCB identical to the PCB in a standard PIM. The PIME mounts in the PIM enclosure to the right of the standard PIM PCB using 6 screws (Figure 4-1). All 6 screws are held in place by retaining washers and screw into threaded bosses inside the PIM enclosure. The top 4 screws use thin fiber retaining washers and the bottom 2 screws use a thicker nylon retaining washer. The retaining washers provide the proper spacing for mounting the PIME and therefore it is very important that the retaining washers be used and that the thicker nylon washers are only used on the bottom two holes.

Once the PIME is mechanically mounted in the PIM enclosure, follow the instructions in section 3.5 to install the PIME antenna and connect the PIME to the access control panel. The installation instructions in section 3.5 are written for a PIM, when installing a PIME; substitute PIME where ever PIM is found.

NOTE: If the PIME is installed after the PIM was installed it may be necessary to re-evaluate if the current PIM location is optimum for all the WAPMs that this location will control (see section 2).

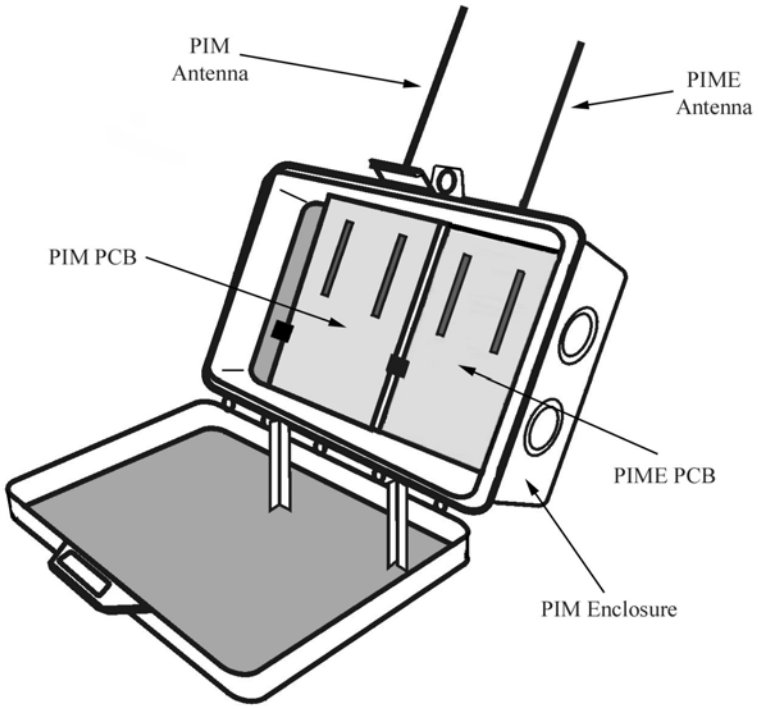

Figure 4-1 – PIME PCB Location

4.2 Installing an Extender in a PIM-OTD Enclosure

Installing an Extender permits one PIM-OTD enclosure (outdoor) to control two additional access points for a total of four. The PIME-OTD is a PCB identical to the PCB in a standard PIM-OTD. The PIME-OTD mounts in the PIM-OTD enclosure to the right of the standard PIM-PCB using four 3/8", #6 thread forming screws, provided (Figure 4-2).

Once the Extender is mechanically mounted in the PIM-OTD enclosure, follow the instructions in section 3.5 to install the Extender antenna and connect the Extender to the access control panel. The installation instructions in section 3.5 are written for a PIM, when installing a PIME-OTD substitute PIME-OTD where ever PIM is found.

NOTE: If the PIME-OTD is installed after the PIM-OTD was installed it may be necessary to re-evaluate if the current PIM-OTD location is optimum for all the WAPMs that this location will control (see section 2).

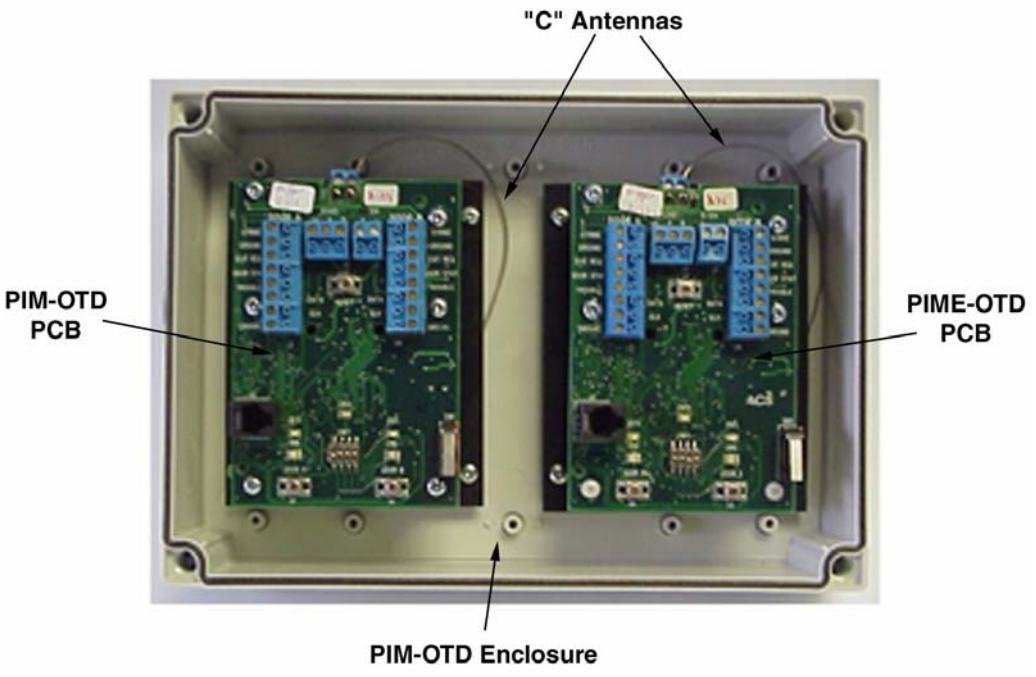

Figure 4-2 – PIME-OTD PCB Location in a PIM-OTD

5. PIM/PIME Cable/Wire Specifications

Application	Part Number	AWG	Description	Maximum Distance
DC Power Input	Belden 8760	18	2 conductor	1,000’
RS485	Belden 9842 or 9841	24	3 conductor shielded	1,000’
PIM to Access Control Panel	Alpha 1298C	22	8 conductor shielded	500’

Table 5-1 – PIM Cable/Wire Specifications

6. Contacting Recognition Source

For questions regarding Wyreless Access ™:

(630) 762-4450
(630) 762-4444 fax

7. FCC/UL Compliance & Warnings

7.1 FCC Compliance

- This device has been authorized by the FCC Rules and Industry Canada.
- This device complies with the limits for a Class B digital device and a Class B intentional radiator, pursuant to Part 15 of the FCC Rules and with RSS-210 of Industry Canada. Operation is subject to the following two conditions: (1) This device may cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- The Wyreless Access System Component must be installed by qualified professionals or contractors in accordance with FCC part 15.203, Antenna Requirements.
- Do not use any antenna other than the one provided for the unit.

7.2 UL Compliance

- The Panel Interface Module (PIM) is listed under UL294 as an access control system accessory.
- Access equipment manufactured and/or sold by Recognition Source, LLC, is not rated for, or intended for use in life safety installations.
- For UL installations use Recognition Source Power Supply, model PS-12VDCR-500mA UL listed class 2 power supply.
- For UL installations the Panel Interface Module enclosure (PIM or PIM-OTD) must be mounted in a secure area.

7.3 Warnings

- RF Exposure - To comply with FCC RF exposure requirements for mobile transmitting devices this transmitter should only be used or installed at locations where there is normally at least a 20 cm separation between the antenna and all persons.
- Do not co-locate and operate in conjunction with any other antenna or transmitter.
- Changes or modifications not expressly approved by Recognition Source could void the user's authority to operate the equipment.

8. Revision History

Version	Date	Changes
X001	09/09/03	preliminary in house release for comments