Innovations in Communications since 1955

LEE DAN COMMUNICATIONS, INC.

PK-543A

5-4-3 WIRE APARTMENT INTERCOM AMP

WIRING INSTRUCTIONS

APPLICATION

ENTERCOM™ Apartment Entry Intercoms provide two-way communications between the building entrance and each suite/apartment. Hands-free loudspeaker operation at the entrance panel and push button controlled communication at the suite locations provide for easy operation. Controlled door entry is permitted by push button operation at the suite in conjunction with electric door release.

Optional equipment is available to provide additional functions such as post office (USPS) key door release, additional entrance panels, strobe light call indication (LI-404B) and auxiliary relay (RY-014B) for ancillary device operation (bells, lights, etc.).

PROCEDURE

1. Read installation instructions to determine equipment location and installation methods.
2. Install housings (or back boxes) and wiring.
3. Check wiring, connect and install equipment.
4. Apply power and check operation.

EQUIPMENT LOCATION

Suite/Apartment Stations

Locate suite stations (also known as remote stations) where convenient for use. See Figure A (page1) for riser diagram, or Figure 1 (page 4) for wiring/hook-up diagram.

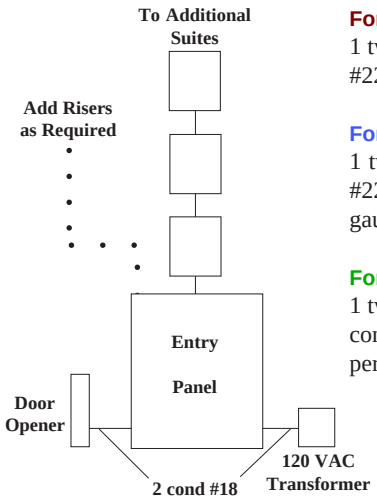
Entrance/Lobby Panel

Locate the entrance panel where it is sheltered from weather. If it must be mounted outdoors, consider wind direction and optional Rain-Guard weather hood.

PK-543A Amplifier

Install amplifier inside the entrance panel if space permits. If necessary to install the amplifier elsewhere due to temperature extremes (operating temperature range is 0–30°C) or because the panel is not large enough to house the amplifier, then use a 2 conductor shielded cable for the entrance panel speaker (connect shield drain to amplifier terminal G). Refer to *Connections Section, Item #3* for further details.

Figure A



Suite Stations:

For 3-wire stations:
1 twisted pr #22, plus 1 cond. #22 gauge per suite in riser
or,
For 4-wire stations:
1 twisted pr #22, plus 1 cond. #22 common, plus 1 cond. #22 gauge per suite in riser
or,
For 5-wire stations:
1 twisted pair #22, plus 2 cond. #22, plus 1 cond. #22 per suite in riser

WIRING

Suite/Apartment Stations

Stations may be connected in risers using the cable configurations shown in Figure A, above.

The maximum cable length is 400 feet (120 meters). Additional risers may be added as needed. Station cables must not be run in the same conduit with (or too close to) electrical wiring or background music, and must not be close to fluorescent lights, dimmers or other electrical equipment. Failing to observe this requirement can result in noise entering the intercom audio. Ensure that sufficient amounts of cable are left in the back box to make connections to stations. Do not cut cable at each station.

Transformer

Cable wiring must be 2 conductor #18 AWG with a maximum cable length of 80 feet (25 meters). If using #14 AWG wire, this distance can be extended to 200 feet (60 meters). Route cable away from suite station wiring and maintain a minimum of 3 feet (1 meter) of clearance between the transformer and the amplifier.

800-231-1414 • 631-231-1414
155 Adams Avenue • Hauppauge, NY 11788-3699
Fax 631-231-1498 • www.*LEEDAN*.com

INTERCOMS • MAILBOXES • DIRECTORIES
ANNUNCIATORS • WIRE & CABLE • NURSE-CALL

With continuous product improvement, specifications are subject to change without notice.

©2010 *LEE DAN*® Communications, Inc. All Rights Reserve

Door Release

Cable wiring must be 2 conductor #18 AWG with a maximum length of 50 feet (15 meters). See *Figure 2—PK-543A* 'Door Strike Applications' for specifics of each door control unit configuration. *Note: A PS-30A transformer must be used for 24 VAC door strike and 12 VDC Maglock applications (8 volt tap required).*

CONNECTIONS

Before connecting to unit and applying power, verify that wires are free from shorts and grounds. Make connections as per *Figure 1—PK-543A Wiring Diagram.* Observe the following notes:

1. Do not apply power to the transformer primary until the entire system has been installed and checked for shorts and grounds. The common wires connecting to terminals 1, 2, 3, E and 5 must show open circuit when tested with an ohmmeter.
2. Use twisted pair wiring as shown. *Do not* interchange wires or reverse polarity!
3. Install PK-543A amplifier inside the entrance panel if space permits. If it is necessary to install the amplifier elsewhere due to temperature extremes (operating temperature range is 0–30°C) or because the entrance panel is not large enough to house the amplifier, then use a 2 conductor shielded cable for the entrance panel speaker (connect shield drain to amplifier terminal G).
4. The amplifier must be located at least 3 feet (1 meter) from the transformer or other electrical devices.
5. *Do not* run wiring for station common wires and entrance panel speaker in the same cable and/or conduit. This will cause feedback on the system.
6. Door release wiring should be run separate from entrance panel speaker wiring.

SHUNT AND DIPSWITCH SETTINGS

Set the dipswitches on the PK-543A as per application requirements. See also *Figure 3—PK-543A 'Shunts and Settings'*. The selectable features and controls are as follows:

Shunt JP5 Install for maglock applications. Maximum current for maglock is 500 mA at 12 VDC, or 250 mA at 24 VDC.

Shunt J2 Place shunt across: 1–2 for door strike applications; 2–3 for maglock applications.

Shunt J1 Place shunt across: 1–2 for +12 VDC maglock; 2–3 for +24 VDC maglock or AC/DC door strike applications.

Short Door Time Set SW1 to ON (right) and SW2 to OFF (left), 2 seconds

Medium Door Time Set SW1 to OFF (left) and SW2 to ON (right), 10 seconds.

Long Door Time Set SW1 to OFF (left) and SW2 to OFF (left), 25 seconds.

Entrance Tone Set SW3 to ON (right) to activate this feature—must use warble tone.

Postal Timer Set SW4 to ON (right) and SW5 to OFF (left) to make postal control timer independent at 25 seconds

PK-543 Compatible Set SW4 to OFF (left) and SW5 to ON (right) for PK-543 (old style) drop-in replacement*.

Door Hold Time Out Set SW6 to OFF (left) to activate this feature.

Talk Interlock Set SW7 to OFF (left) to activate this feature (available for 4-wire stations only).

* *For PK-543 (old style) Compatible mode, set SW4 OFF, SW5 ON, SW6 ON & SW7 ON. Also remove JP5 shunt, set J2 to shunt 1–2 and set J1 shunt to 2–3.*

The Entrance Tone setting, when active, will generate a user feedback tone at the entrance panel when visitors press call buttons. If the warble tone is in use and the entrance tone feature is active, the tone will also be heard through the entrance panel speaker when the call button is pressed.

The Door Hold Time Out setting, when active, will allow the door control device (door strike, maglock, etc.) to time out normally, despite the DOOR button being held at the suite.

SAFETY TIP: The Talk Interlock setting, when active, will require that the TALK button (at the suite) is pressed before the DOOR button will activate the door control device.

OPTIONAL ACCESSORIES

Install optional accessories according to the instructions provided.

Finish & TEST Installation

1. Confirm that all equipment is properly installed.
2. Connect power to transformer primary (120 VAC), and ensure that local electrical codes have been complied with.
3. At the entrance panel, push each button and verify that the correct suite is called.
4. At each suite, push the TALK and LISTEN buttons to communicate with a person at the entrance panel. Then push the DOOR button to confirm that the door release operates correctly.

Copyright © Lee Dan Communications, Inc. All Rights Reserved.

ADJUSTMENTS

Voice Volume and **Tone Volume** can be adjusted on the amplifier, via the access hole, with a small screwdriver.

TROUBLESHOOTING

(refer to theory drawing for additional information)

Entire System Dead

If power LED is not illuminated, check for 16 VAC at transformer secondary and 120 VAC at transformer primary. If LED is illuminated, review field wiring and perform direct test using one of the apartment stations to eliminate field wiring.

No Talk

Check wiring to terminals 1 and 2, and check whether wiring to entrance panel speaker is shorted or open. Suite station can be swap tested with another working unit.

No Listen

Check wiring to terminals 1 and 3, or for short between terminals 1 and 2. Check to see if wiring to entrance panel speaker is shorted or open. Suite station can be swap tested with another working unit.

No Door Operation

Check wiring to door release for shorts and opens, or for defective door release. Confirm that shunts are properly set for door release type and that connections to appropriate output have been made. Check wiring to terminals 2 and 3, or 1 and E (depending upon suite station type).

No Call Tone

Check wiring to terminal Z or ZW to entrance panel, related entrance panel call buttons, and suite station X terminal. Suite station can be swap tested with another working unit.

Excessive Hum or Distortion

Check whether wiring is installed too close to electrical wiring or electrical devices; amplifier installed too close to transformers or other electrical devices; twisted pair wiring not used as required; or amplifier voice volume set too high.

Radio Interference

Connect G terminal from amplifier to electrical ground. *Note: This connection is not shown on the wiring diagram, since the situation is not always improved by adding it.* If the problem persists, consult the factory or service representative.

Oscillation (feedback or howling)

Reduce the voice volume until oscillation is eliminated. If oscillation stops when the call tone wire is removed from ZW, set entrance tone (SW3) to the OFF (left) position.

SIGNAL FLOW AND THEORY OF OPERATION FOR PK-543A AMPLIFIER AND APARTMENT INTERCOM SYSTEM

The following example describes an apartment intercom system using a PK-543A in conjunction with a 4-wire suite station. Refer also to *Figure 4—PK-543A Theory Diagram.*

Call Button

Pressing a suite station call button on the entrance panel routes the call tone from the Z or ZW terminal on the PK-543A to the X terminal (tone in) on the associated suite station. This signal then passes through the speaker and returns to the PK-543A via the 1 terminal (audio common). If the warble tone is in use and the entrance tone feature is active, the tone will also be heard through the entrance panel speaker when the call button is pressed.

Talk Button

Pressing the TALK button at a suite station connects the suite station's internal speaker to terminals 1 and 2 of the PK-543A, which serves as an audio input to the amplifier. The audio is then amplified and sent to terminals A and G, which are connected to the entrance panel's speaker (speaker mode).

Listen Button

Pressing the LISTEN button at a suite station connects the suite station's internal speaker to terminals 1 and 3 of the PK-543A, which serves as an audio output from the amplifier. This allows the suite station to receive the amplified audio being received by the amplifier on terminals A and G from the entrance panel speaker (microphone mode).

Door Button

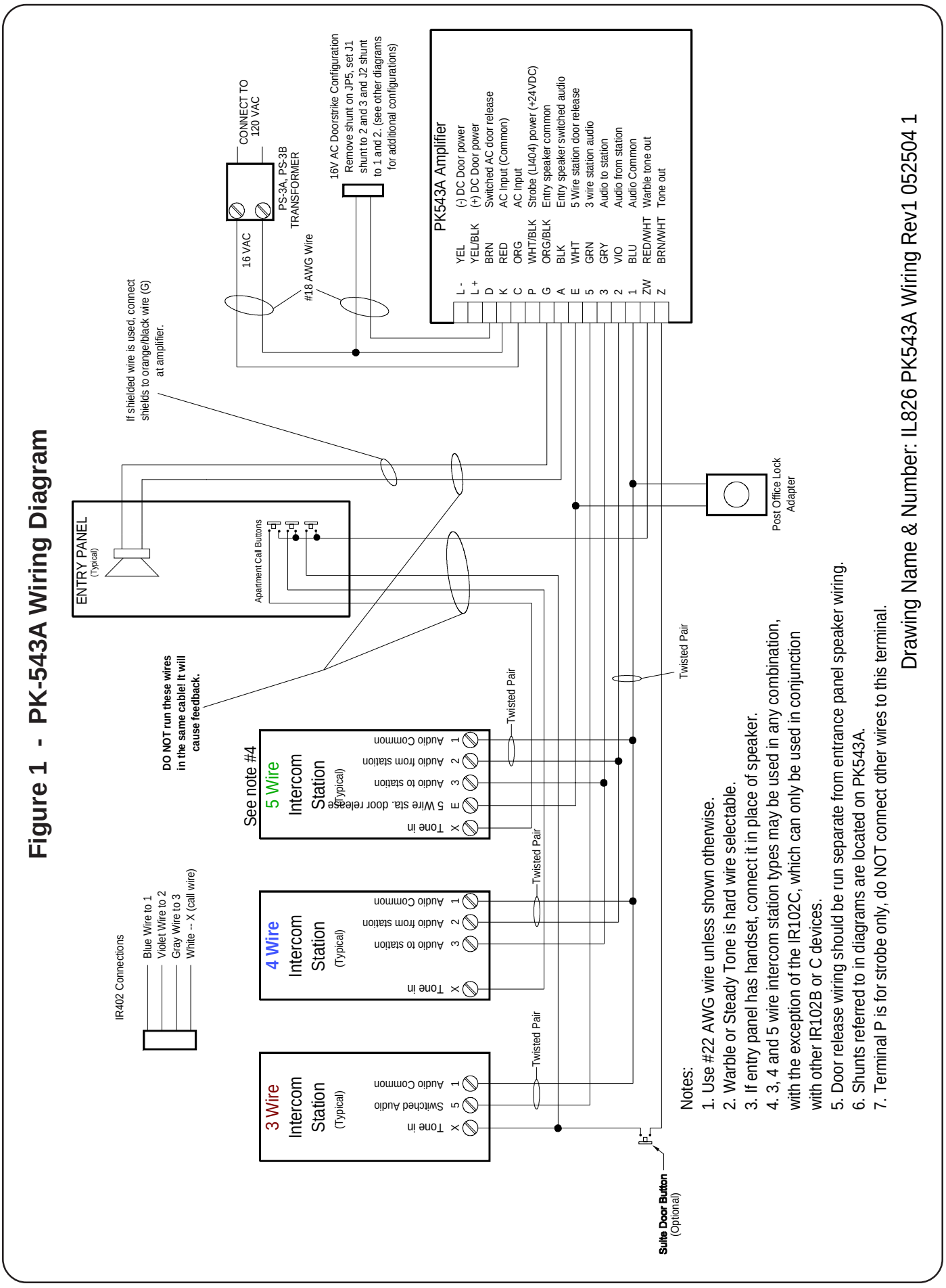
Pressing the DOOR button at a suite station creates a closure between terminals 2 and 3 on the PK-543A. This state is sensed by the amplifier and causes the door release to be activated (output specifics are based on PK-543A settings). This state is also triggered by shorting terminals 1 and E as is typically done by a postal lock.

Cross Reference Part Index

Model Numbers Below Are Interchangeable:

PK543 = PK-543 (Old Style)
PK-543 = PK543 (Old Style)
PK543A = PK-543A (New Style)
PK-543A = PK543A (New Style)
PS-3A, PS-3B = SS102A (16VAC)
PS-30A = SS106 (16VAC)
RY014B = RY-014B
RY-014B = RY014B
SS102A = PS-3A, PS-3B
SS106 = PS-30A (Tri-Volt: 8/16/24VAC)

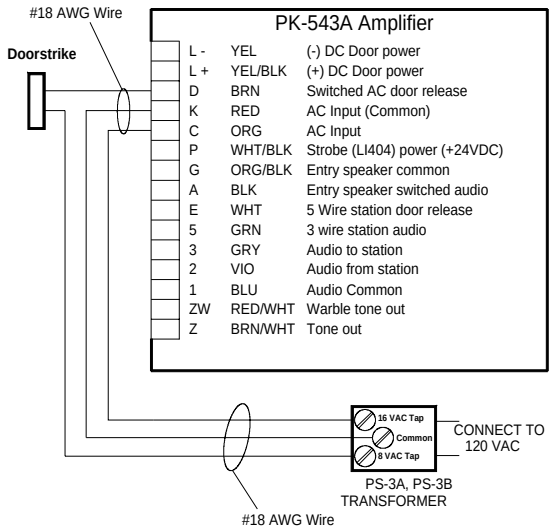
Copyright © Lee Dan Communications,, Inc. All Rights Reserved.



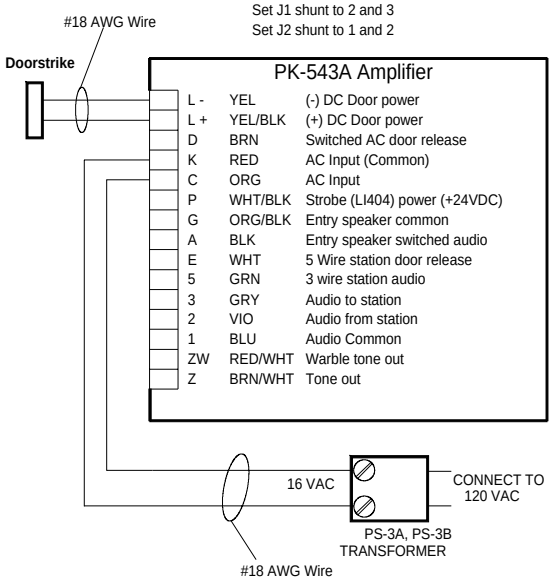
Copyright © Lee Dan Communications, Inc. All Rights Reserved.

Figure 2 - PK-543A Doorstrike Applications

+24V AC Doorstrike Application:
Remove JP5 Shunt
Set J1 shunt to 2 and 3
Set J2 shunt to 1 and 2

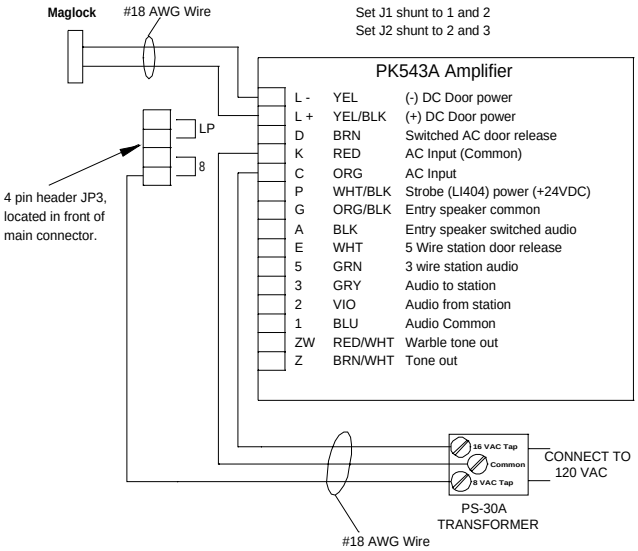


16V DC Doorstrike Application:
Remove JP5 Shunt
Set J1 shunt to 2 and 3
Set J2 shunt to 1 and 2

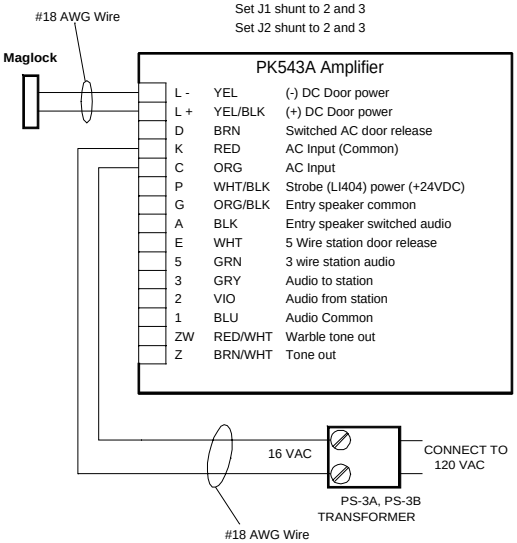


Drawing Name & Number: IN-826 PK543A Doorstrike Applications 1 Rev0 050604 1

+12VDC/500mA DC Maglock Application:
Install JP5 Shunt
Set J1 shunt to 1 and 2
Set J2 shunt to 2 and 3



+24VDC/250mA DC Maglock Application:
Install JP5 Shunt
Set J1 shunt to 2 and 3
Set J2 shunt to 2 and 3

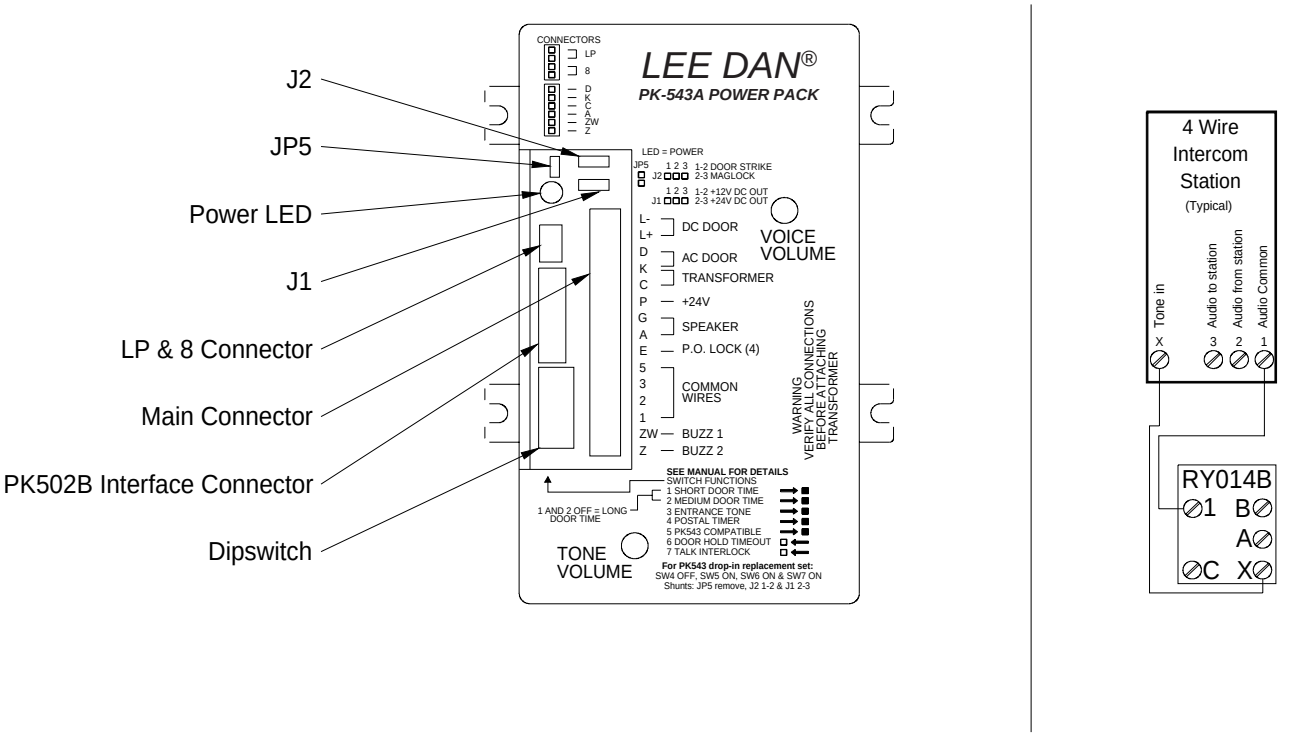


Note: LP and 8 are each available on two pins of the JP3 connector. Brackets are provided to identify.

Drawing Name & Number: IN-826 PK543A Doorstrike Applications 2 Rev1 051606 1

Copyright © Lee Dan Communications,, Inc. All Rights Reserved.

Figure 3 - PK-543A Shunts and Settings



Dipswitch Settings: (right and left are referenced from the view above)

Short Door Time - set SW1 to ON (right) and SW2 to OFF (left), 2 seconds

Medium Door Time - set SW1 to OFF (left) and SW2 to ON (right), 10 seconds

Long Door Time - set SW1 to OFF (left) and SW2 to OFF (left), 25 seconds

Entrance Tone - set SW3 to ON (right) to activate this feature

Postal Timer - set SW4 to ON (right) and SW5 to OFF (left) to make postal control timer independent at 25 seconds

PK543 Compatible - set SW4 to OFF (left) and SW5 to ON (right) to make unit for drop-in replacement for PK543*

Door Hold Time Out - set SW6 to OFF (left) to activate this feature

Talk Interlock - set SW7 to OFF (left) to activate this feature (available for 4-wire stations only)

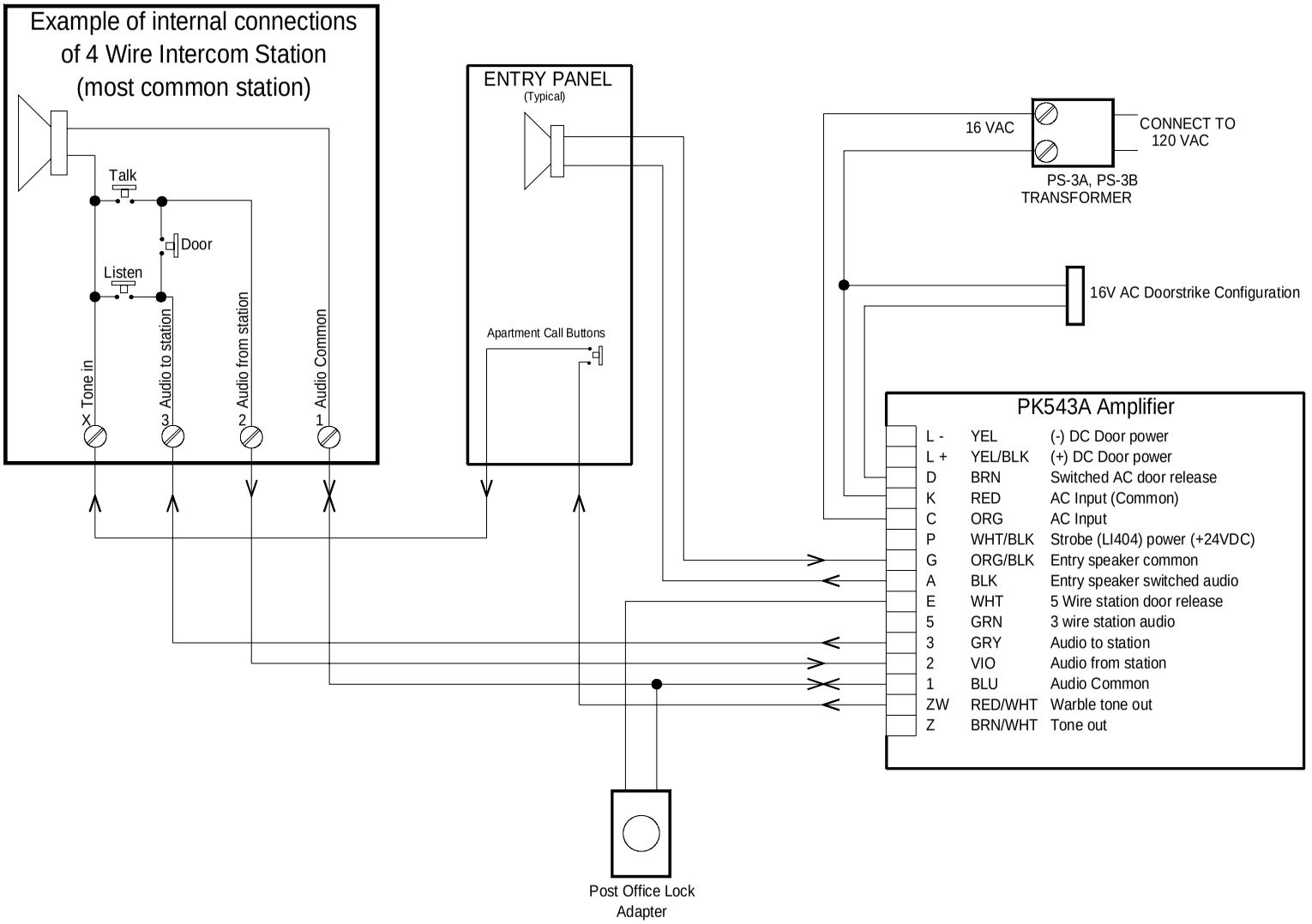
* - For PK543 Compatible mode, set SW4 OFF, SW5 ON, SW6 ON & SW7 ON.
Also remove JP5 shunt, set J2 to shunt 1 - 2 and set J1 shunt to 2 - 3.

Drawing Name & Number: IN-826 PK543A Shunts and Settings RY-014B Wiring Rev3 051506 1

Copyright © Lee Dan Communications, Inc. All Rights Reserved.

Copyright © Lee Dan Communications,, Inc. All Rights Reserved.

Figure 4 - Theory Diagram



Drawing Name & Number: IL826 PK543A Theory Rev0 050704 1

Innovations in Communications™
since 1955

LEE DAN® COMMUNICATIONS, INC.®

PK-543A

SPECIFICATIONS

APPLICATION

The PK-543A Power Pack Intercom Amplifier is a self-contained unit not requiring an external amplifier. The PK-543A is designed for use with most 3-4-5 wire apartment stations and provides amplification control and power circuits needed to operate a complete apartment intercom system. Voice volume control and tone volume control are easily adjustable through the screwdriver slot on the front panel.

PK-543A is the most popular and most versatile apartment intercom amplifier

Additional functions include multi-entrance operation with the PK-502B, AC or DC door operation selectable by terminal connection with selectable delayed action door release set at the dip switch, post office door lock release and a tone signal to call remote stations. A steady or warble tone can be used to identify calling from the main entrance panel and a call button located at the suite entrance.

SPECIFICATIONS

Dimensions:	Height: 5 1/2" Width: 3 1/8" Depth: 2"
Construction:	Rugged ABS Plastic Casing.
Amplification:	Integrated circuit amplifier including amplifier with frequency response adjusted for best voice articulation.
Call Tone:	Integrated circuit oscillator.
Door Release:	AC or DC operation with selectable timing.
P.O. Release:	P.O. door lock release.
Connections:	Polarized plug in type.
Power Req.:	16 VAC, 10VA
Mounting:	Surface, or mount to the rear of specifically designed apartment entrance speaker panels.
Replaces:	*LEE DAN*® models: PK-543, PK-104B, PK-103B, PK-103A, PK-101A. Also replaces many other brands and models (call for info).

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The intercom amplifier shall be a *LEE DAN* model PK-543A or approved equal and shall provide the amplification, control and power circuits needed to operate the entire intercom system. Amplifier shall feature integrated circuit amplification, integrated circuit tone call oscillator, adjustable volume and tone volume controls. Amplifier shall provide for AC or DC door release operation selectable by terminal connection and selectable delayed door timing of 8 seconds or 16 seconds selected at the DIP switch. A steady or warble tone is available to identify calling entrance.

Low voltage wiring shall be used and plug-in type terminals shall be provided for installation wiring. Non plug-in connectors shall not be acceptable.

The PK-543A shall be mountable to the rear of specifically designed *LEE DAN* apartment entrance speaker panels.

STATION COMPATIBILITY:

PK-543A is compatible with these *LEE DAN* apartment intercom stations:

IR-081B, IR-081C, IR-081D

IR-082A, IR-082C, IR-082D

IR-103B, IR-103E, IR-104B, IR-104E, IR-105B, IR-105E

IR-107A, IR-107AG, IR-107C, IR-107CG, IR-107D, IR-107DG, IR-147A

IR-203, IR-203E, IR-204, IR-204E, IR-205, IR-205E

IR-207, IR-207A, IR-207B, IR-207S, IR-207SS

IR-307, IR-307A, IR-307C, IR-307D

IR-403, IR-404, IR-405, IR-413, IR-414, IR-415

IR-423, IR-424, IR-425, IR-433, IR-434, IR-435

IR-443, IR-443SS, IR-444, IR-444SS, IR-445, IR-445SS

IR-453, IR-454, IR-455

IR-463, IR-463SS, IR-464, IR-464SS, IR-465, IR-465SS

PK-543A compatible stations can often, but not always be intermixed within a system. Contact factory to verify compatibility.

800-231-1414 • 631-231-1414
155 Adams Avenue • Hauppauge, NY 11788-3699
Fax 631-231-1498 • www.*LEEDAN*.com

INTERCOMS • MAILBOXES • DIRECTORIES
ANNUNCIATORS • WIRE & CABLE • NURSE-CALL
With continuous product improvement, specifications are subject to change without notice.

Copyright © Lee Dan Communications, Inc. All Rights Reserved.