PK543A Amplifier
Installation Instructions and Wiring

used with Tek-ENTRY® Apartment Entrance Panels

Sec

Rev.

Reviewed for Code Compliance
Inspections Division
Approved with Conditions
Date: 09/26/16

APPLICATION

The Tek-ENTRY® Apartment Entry Intercoms provide two-way communications between the building entrance and each suite. 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 functionality, such as post office key door release, additional entrance panels, strobe light call indication (LI404B) and auxiliary relay (RY014B) 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 Stations

Locate suite stations (also known as remote stations) where convenient for use. Install a housing or back box at the desired location.

Entrance Panel

Use an OH190 series housing and OF190 series frame for flush wall mounting. Use an OF190S series frame for surface mounting. Locate the entrance panel where it is sheltered from weather.

Amplifier

Install the amplifier inside the entrance panel when using an OH190 series housing. The amplifier must be installed outside the entrance panel when using an OF190S series surface frame. Refer to *Connections Section, Item #3* for further details.

WIRING

Suite Stations

Stations may be connected in risers using the following cable configurations:

3-wire stations: 1 twisted pair #22 AWG, plus 1 conductor #22 AWG per station in riser.

4-wire stations: 1 twisted pair #22 AWG, plus 1 conductor #22AWG, plus 1 conductor #22 AWG per station in riser.

5-wire stations: 1 twisted pair #22 AWG, plus 2 conductor #22 AWG, plus 1 conductor #22 AWG per station in riser.

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 lighting 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.

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.

Door Release

Cable wiring must be 2 conductor #18 AWG with a maximum length of 50 feet (15 meters). See *Figure 2—PK543A* Doorstrike Applications for specifics of each door control unit configuration. *Note: An SS106 transformer must be used for 24 VAC doorstrike and 12 VDC Maglock applications (8 volt tap required).*

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TekTone®'s quality system is registered by UL® to the ISO 9001:2000 standard. (File #A10766.)

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CONNECTIONS

Before connecting to unit and applying power, verify that wires are free from shorts and grounds. Make connections as per *Figure 1—PK543A 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 PK543A amplifier inside the entrance panel when using OH190 series housing. 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 PK543A as per application requirements. See also *Figure 3—PK543A 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 doorstrike 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 doorstrike 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 SW OFF (left) to make postal control independent at 25 seconds
PK543 Compatible	Set SW4 to OFF (left) and SW5 to ON (right) for PK543 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 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.*

The Entrance Tone setting, when active, will generate a user feedback tone at the entrance panel when users 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 (doorstrike, maglock, etc.) to time out normally, despite the DOOR button being held at the suite.

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.

ADJUSTMENTS

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

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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.

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The following example describes an apartment intercom system using a PK543A in conjunction with a 4-wire suite station. Refer also to *Figure 4—PK543A 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 PK543A to the X terminal (tone in) on the associated suite station. This signal then passes through the speaker and returns to the PK543A 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 PK543A, 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 PK543A, 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 PK543A. This state is sensed by the amplifier and causes the door release to be activated (output specifics are based on PK543A settings). This state is also triggered by shorting terminals 1 and E as is typically done by a postal lock.

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Figure 1—PK543A Wiring Diagram

Notes:

1. Use #22 AWG wire unless shown otherwise.
2. Warble or Steady Tone is hard wire selectable.
3. If entry panel has handset, connect it in place of speaker.
4. 3, 4 and 5 wire intercom station types may be used in any combination, with the exception of the IR102C, which can only be used in conjunction with other IR102B or C devices.
5. Door release wiring should be run separate from entrance panel speaker wiring.
6. Shunts referred to in diagrams are located on PK543A.
7. Terminal P is for strobe only, do NOT connect other wires to this terminal.

Drawing Name & Number: IL826 PK543A Wiring Rev1 052504 1

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Figure 2—PK543A Doorstrike Applications

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+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: IL826 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

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

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

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Figure 3—PK543A 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.

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Figure 4—Theory Diagram

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