



Installation Instructions and Wiring for Tek-ENTRY®

Apartment Entry Systems with PK543 Amplifier

IL487
Section A
Rev. 17 - 09/2004

APPLICATION

The Tek-ENTRY® Apartment Entry Systems provide two-way communication between the building entrance and each suite. Hands-free loudspeaking at the entrance panel and push button communication at suite locations provide for easy operation. Controlled entry is permitted by push button operation of the electric door release.

Optional equipment is available to provide a wide variety of functions, such as delayed door lock operation, post office key door release, and additional entrance panels.

The optional RY014B Auxiliary Relay supplies a momentary closure to operate ancillary devices such as strobes, bells or lights for handicapped tenants, and is located in the apartment station back box.

PROCEDURE

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

EQUIPMENT LOCATION AND HOUSING INSTALLATION

Suite Stations

Locate suite stations where convenient for use. Install a housing or back box at the desired location.

Entrance Panel

Use an OH190 and OF190 series housing and frame for flush wall mounting. Use an OF190S series frame for surface mounting. Locate the entrance panel where it is sheltered from the 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 as shown in the wiring layout diagram, *Figure 1*. Each riser requires one twisted pair #22 (or as required for type of station), plus one conductor #22 for each suite served by the riser. (Run an additional 2 #22 conductor for LED circuit when using IR104C/LED or IR204C/LED stations.) Maximum length is 400 feet (120 meters). Additional risers may be added as needed. Cable should not be run in the same conduit with (or too close to) electrical wiring, background music wiring, or very close to fluorescent lights or other electrical equipment. Leave sufficient cable in each back box to make connections. Do not cut cable at each station.

Transformer

Wiring must be 2 conductor, #18. Maximum cable length is 80 feet (25 meters), or up to 200 feet (60 meters) using #14 wire. Route cable away from suite station wiring.

Door Release

Wiring must be 2 conductor, #18 cable. Maximum length is 50 feet (15 meters). To use 24 volt door release, use a TekTone® SS106 Transformer and connect as in *Figure 2*.

CONNECTIONS

Before connecting, make certain wires are free from shorts or grounds. Make connections as shown in *Figure 3*, observing the following notes:

1. Do not apply power to transformer primary until entire system has been installed and all wiring checked for shorts or grounds. The common wires connecting to terminals 1, 2, 3, E and 5 should show open circuit when tested with an ohmmeter.
2. Use twisted pair wiring as shown. Do not interchange wires or reverse polarity.
3. Install PK543 amplifier inside the entrance panel when using OH190 Series Housing. If it is necessary to install the amplifier elsewhere due to temperature extremes, or because an OF190S Surface Frame is being used, or if an AM600 Panel is being used, then 2-conductor, shielded cable must be used for the entrance panel speaker wiring and a 1 conductor shielded wire must be used for the BUZZ

wire (connect shield to amplifier terminal G). **NOTE:** The amplifier should be located at least 3 feet (1 meter) away from transformers or other electrical devices and must be kept away from direct heat or extreme cold. Operating temperature is 0°C–30°C.

4. Do not run wiring for station commons and entrance panel speaker in the same cable or conduit. Doing so will cause the system to experience feedback.

OPTIONAL ACCESSORIES

Install optional accessories according to the instructions provided.

FINISH INSTALLATION

1. Install the amplifier in the entrance panel housing (OH190 series only) so that it will not interfere with panel mounted equipment. Directory panel removal and replacement instructions are included with the entrance panel.
2. Install suite stations on boxes. Do not over-tighten screws.
3. Connect power transformer primary to 117 VAC. Observe local electrical codes.

TEST AND CHECK-OUT

At the entrance panel, push each button and determine if the correct suite is buzzed each time. At each suite, push **TALK** and **LISTEN** buttons to communicate with someone at the entrance panel; then push **DOOR** button to check door release option.

ADJUSTMENTS

Voice Volume is adjustable externally using a small screwdriver through the port hole on the front of the case labeled **VOICE VOLUME**.

Tone Volume is adjustable externally using a small screwdriver through the port hole on the front of the case labeled **TONE VOLUME**.

Programming Switches, by switch number:

- 1 *Door Delay*: to enable door delay, switch to left; to disable door delay, switch to right.
- 2 *Short Door Time*: with the door delay switch enabled, the short door delay may be selected. With the second DIP switch to the left, the door delay will be approx. 16 seconds; to the right, 8 seconds.
- 3 *Entrance Tone*: a call tone at the entrance panel is enabled with the third DIP switch to the right, and disabled to the left.
- 4 *Not used*.

BUZZ 1: ZW terminal is a warble tone output.

BUZZ 2: Z terminal is a steady tone output to be used for call tone at suite station.

TROUBLESHOOTING

If the system fails to operate properly, check wiring. If wiring is correct, check the following points.

Entire System Dead

Check 117 VAC at transformer primary, 16 VAC at transformer secondary, and wiring to amp.

No Talk

Check wiring to terminals 1 and 2 shorted or open, and wiring to entrance panel speaker open or shorted. Suite station may be tested by replacement.

No Listen

Check wiring to terminals 1 and 3 shorted or open and short between terminals 1 and 2.

No Door Operation

Check wiring to door release shorted or open, defective door release, and door button on suite station. Check wiring to terminals 2 and 3 or 1 and E.

No Buzzing

Check wiring to amplifier terminal Z, or ZW entrance panel push buttons; and wiring to suite station's terminal X.

Excessive Hum or Distortion

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

Radio Interference

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

Oscillation

Reduce **VOICE VOLUME** until oscillation disappears. If oscillation disappears when the buzz wire is removed from terminal ZW (red/white), set the **ENTRANCE TONE** switch to the off position, or use terminal Z for the buzz push button connection.

SIGNAL FLOW AND THEORY OF OPERATION FOR PK543 AMPLIFIER AND APARTMENT INTERCOM SYSTEM

The following example describes an Apartment Intercom System using a PK543 Amplifier and is based on a 4-Wire Intercom Station.

Call Button

Pressing an apartment **CALL** button on the entry panel routes the call tone from the PK543 Amplifier's terminal ZW (or Z), through the apartment button being depressed, to the Tone In (X) terminal on the apartment intercom station being signaled. This tone passes through the intercom station's speaker and returns on Common (1). The tone is heard at the intercom station—and if dipswitch 3 is in the ON position—at the entry panel. (Applies to warble tone only.)

Talk Button

Pressing the **TALK** button at an apartment intercom station connects audio from the intercom station's speaker through the intercom station's terminals 1 and 2, to the PK543 Amplifier's terminals 1 and 2. This audio is amplified and output on the amplifier's terminals A and G. The amplified audio is then routed to entrance panel's speaker/microphone. The result is that someone speaking at the apartment intercom station is heard at the entrance panel. In 3-wire apartment intercom stations, audio to and from the intercom station is between terminals 1 and 5.

Listen Button

Pressing the **LISTEN** button at an apartment intercom station connects the speaker of the intercom station to terminals 1 and 3 of the PK543 Amplifier, which outputs amplified audio from the entrance panel speaker. The entrance panel speaker remains connected to the PK543 amplifier terminals A and G, and acts as a microphone in this mode. In 3-wire apartment intercom stations, audio to and from the intercom station is between terminals 1 and 5.

Door Button

Pressing the **DOOR** button at an apartment intercom station applies a closure across the intercom station's terminals 2 and 3. The closure is routed to the PK543 Amplifier's terminals 2 and 3. The amplifier senses the closure and provides 16 VAC across the amplifier's terminals D and K. At the same time, DC voltage is also present across terminals L+ and L- as the unfiltered output of a full-wave rectifier fed by the same 16 VAC. This voltage is applied to the door release to unlock the entrance door.

There are two possible variations of this scheme. First, a closure across PK543 Amplifier's terminals 1 and E can be used to output 16 VAC across the amplifier's terminals D and K. Second, pressing the **DOOR** button at a 5-wire apartment intercom station produces a closure across the intercom station's terminals 1 and E (terminal 4).

Door Ajar Indication

This feature is available with the IR104C/LED and IR204C/LED suite stations. When the door is open and the door contact is in the closed state, the **DOOR** button's LED will illuminate to indicate the door is ajar.

Post Office Lock

Actuating the post office lock applies closure across the PK543 Amplifier's terminals 1 and E (terminal 4). The PK543 Amplifier senses the closure, and outputs 16 VAC across the amplifier's terminals D and K. At the same time, DC voltage is also present across terminals L+ and L- as the unfiltered output of a full-wave rectifier fed by the same 16 VAC. This voltage is applied to the door release to unlock the entrance door.

Figure 1—Wiring Layout Diagram

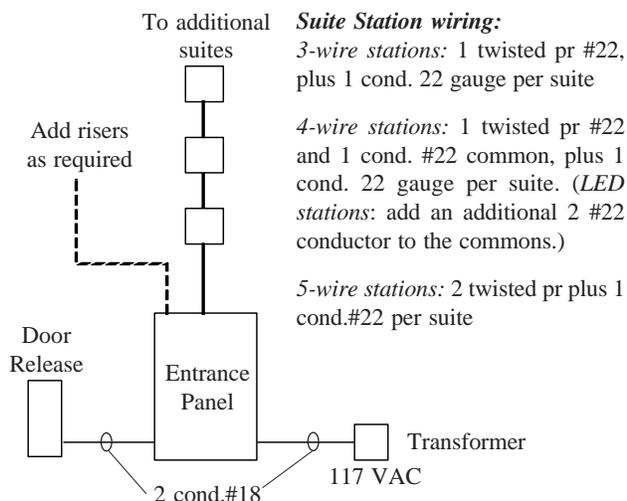
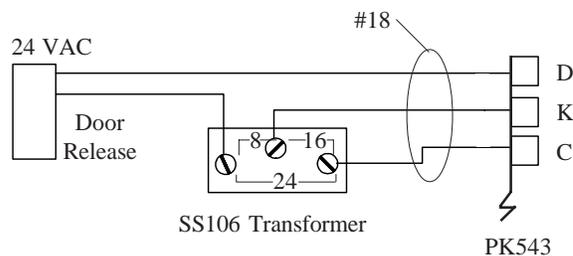


Figure 2—Optional Connection for 24 VAC Door Release

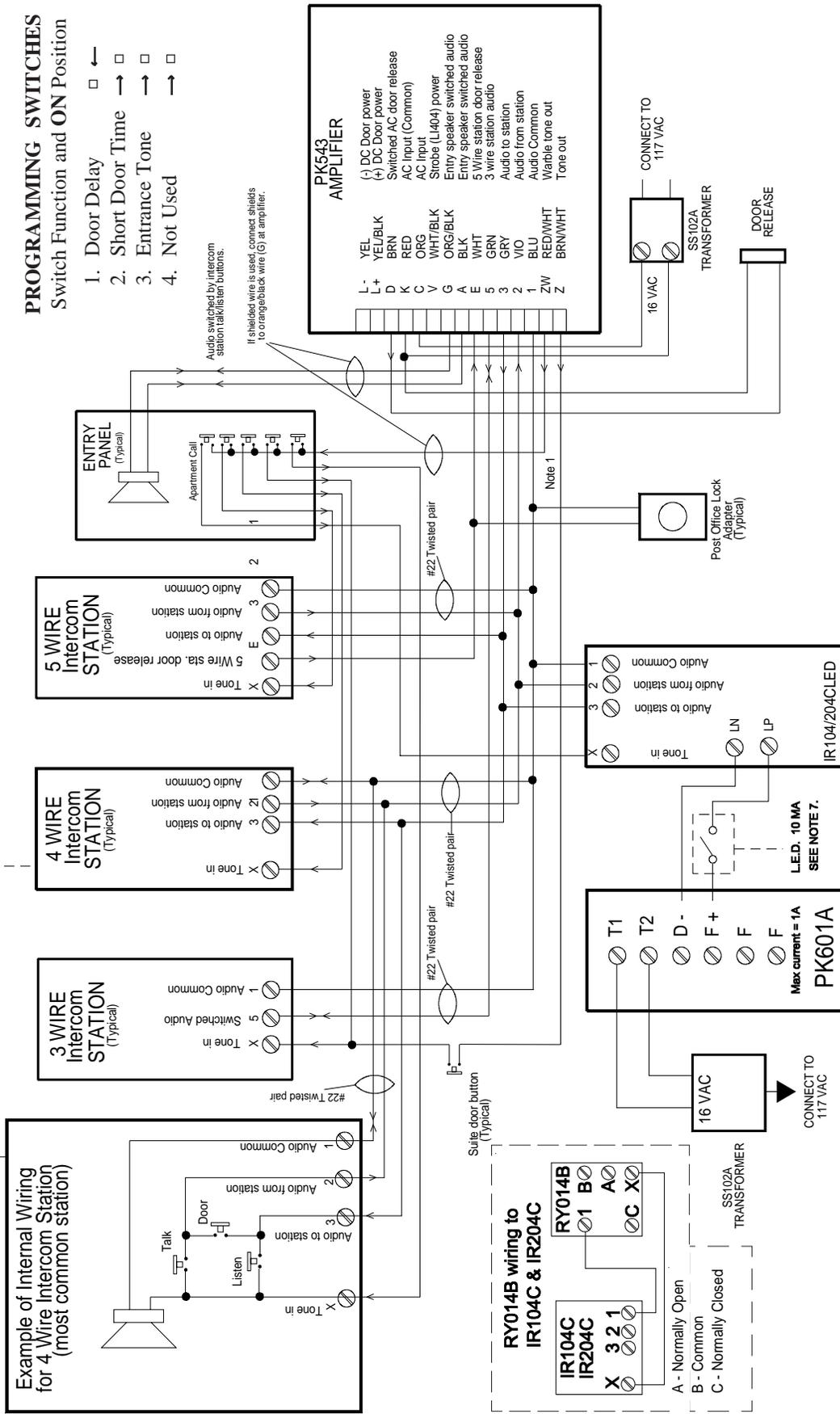


Note: Terminal L- is not the same electrically as terminals 1, G and K.

Figure 3—Apartment Intercom Stations

PROGRAMMING SWITCHES
Switch Function and ON Position

- 1. Door Delay □ ←
- 2. Short Door Time □ →
- 3. Entrance Tone □ →
- 4. Not Used □ →



NOTES:

1. Terminal V is for strobe only! The entrance panel speaker connects to terminal G or terminal A. Connecting it to terminal V will damage the speaker.
2. Warble or steady tone are hard wire selectable.
3. Use #22 AWG wire unless otherwise shown.
4. If Entry Panel has a handset, connect it in place of speaker.
5. For DC door operation, connect door release to L- (yellow) and L+ (yellow/black).
6. 3-, 4- and 5-wire Intercom Station types may be used in any combination.
7. Run door release wiring separately from entrance panel speaker's wiring.
8. To calculate switch current handling: # of units × 10MA (Ex: 25 apartments × 10MA = 2500MA)