



IA543

Intercom Amplifier

Installation & Configuration Manual

The Alpha Communications® IA543 Intercom Amplifier is designed to allow two-way communications between an open voice lobby panel and multiple apartments. Additional equipment will allow communications with multiple entrance panels. Entrance panels will signal up to an apartment by pressing the corresponding call button, and the resident can answer using **TALK** and **LISTEN** buttons. A **DOOR** button provided on the apartment station can be configured to operate an electric door strike or magnetic lock to allow visitor entry.

The IA543 is compatible with additional equipment to provide specialized applications and features such as hearing impaired strobe lights, multiple sequenced door operations, integration into access control systems, and Postal locks.

INSTALLATION PROCEDURE

Read this manual to insure proper wiring, component placement, and installation methods.

WIRING REQUIREMENTS

Depending on the facility layout and number of apartments, inside stations may be connected by risers comprised of common wires with selective wires from each inside location, or connected in a home run method from each inside location. Apartment stations can be of the 3, 4, or 5 wire varieties and can be used in combination if necessary.

Wiring Requirements (all station wiring #22 AWG minimum)		Wire Designations				Maximum Length
3 wire stations	1 twisted pair (1 & 5) and 1 selective wire (X)	X	1	5		400 feet (120 meters) per riser
4 wire stations	1 twisted pair (1 & 2), (3), & selective wire (X)	X	1	2	3	
5 wire stations	1 twisted pair (1 & 2), (3),(E or 4) & selective wire (X)	X	1	2	3	
All wiring for Transformer to Amplifier minimum of #18 AWG						80 feet (25 meters)
All wiring for Door Release minimum of #18 AWG						50 feet (15 meters)
Wiring to Entry speaker must be minimum of #22 AWG twisted pair and shielded cable. Do not run cable in close proximity to any other wiring. Connect shield to G terminal at amplifier.						400 feet (120 meters)

Please note: Terminal identifications in this manual may not be shown in the actual order that they appear on the equipment.

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COMPONENT INFORMATION

APARTMENT STATIONS

Locate stations in a convenient location. Recommended height is 60" A.F.F. for most applications. If inside stations are flush mount style, install proper back box or housing. Run appropriate wires with sufficient extra length for ease of service and installation. Avoid mounting near kitchen areas where cooking grime may build up. Avoid mounting near other electrical equipment that may cause electrical interference and static noise.

AMPLIFIER

Mount amplifier in a clean, dry area away from electrical equipment that could cause noise and interference on the system. Entry panel back boxes may be used to house the amplifier in some installations providing they will offer suitable protection from heat, dirt and moisture. Do not mount the power transformer within 3 feet of the amplifier. Check all wiring for shorts and grounds before applying system power.

TRANSFORMER

The transformer must be mounted in a clean, dry area, and in accordance with all applicable codes, at a distance of 3 to 80 feet (1 to 25 meters) from the amplifier using #18AWG wire. In cases where this distance must be exceeded, use a heavier gauge wire to reduce voltage drop.

ENTRY PANEL(S)

Mount all entry panels in a suitable location protected from harsh weather and water. Although many panels are weather resistant, the more protection you can provide, the longer the life expectancy will be. When mounting flush style panels, always use protective back boxes or appropriate housings.

In the case of multiple entry systems, additional equipment, such as the IA502 or PK502B multi-entrance adapter, may be required.

DOOR RELEASE

The IA543 easily allows several door release configurations. Always use a minimum of #18AWG 2 conductor wire up to a maximum distance of 50 ft. (15 meters). In cases where this distance must be exceeded, use a heavier gauge wire to reduce voltage drop.

Always run these wires separately from the entry speaker cable to prevent interference and noise.

Special applications may require additional hardware such as the PK407A isolation relay, or RY502A Dual Door Timed Switcher Relay.

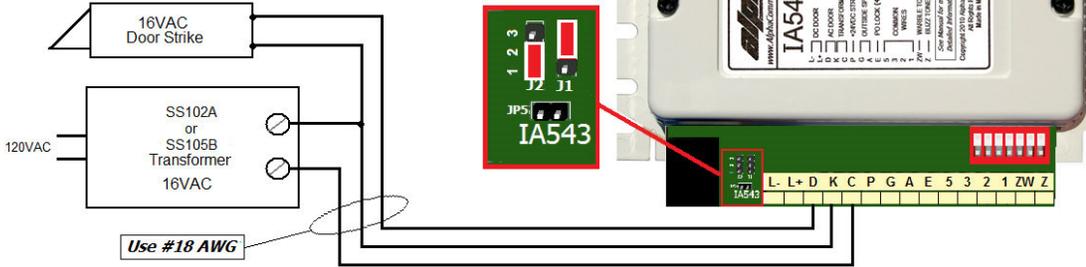
Some applications may require a separate power supply for the door release device. Please refer to the next page for specific wiring and jumper positions.

When running any audio wiring please make sure not to run too close to any source of electrical interference, such as fluorescent lights, ballasts, dimmers, other electrical wiring, electromagnetic interference (EMI), etc.

DOOR RELEASE DIAGRAMS

Set jumpers as shown in the chart below. This supplies 16VAC to the door strike through the K & D terminals when the inside station **DOOR** Button is pressed. The length of activation time is determined by the dipswitch settings (approx. 2, 10, or 25 seconds).

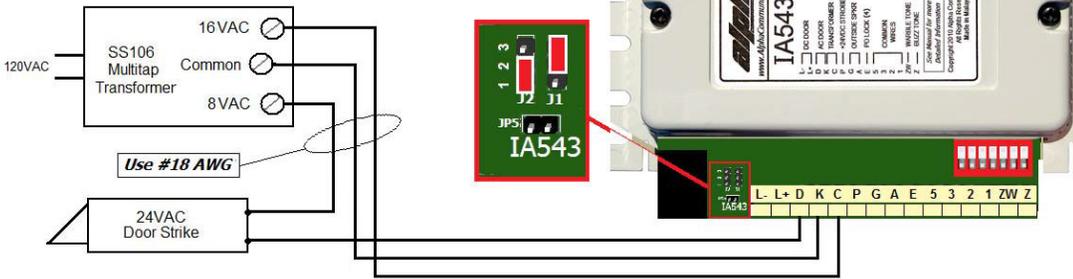
16VAC DOOR STRIKE	
J1	Jumps 2 & 3
J2	Jumps 1 & 2
JP5	Disconnected



16VAC
DOOR
STRIKE

Set jumpers as shown in the chart below. This example shows the wiring for a Multi-Tap Transformer (8/16/24 VAC) to supply 24VAC to a door strike when the inside station **DOOR** Button is pressed, while also supplying 16VAC for system power. Pay special attention to the transformer wiring and terminal markings. The length of activation time is determined by the dipswitch settings (approx. 2, 10, or 25 seconds).

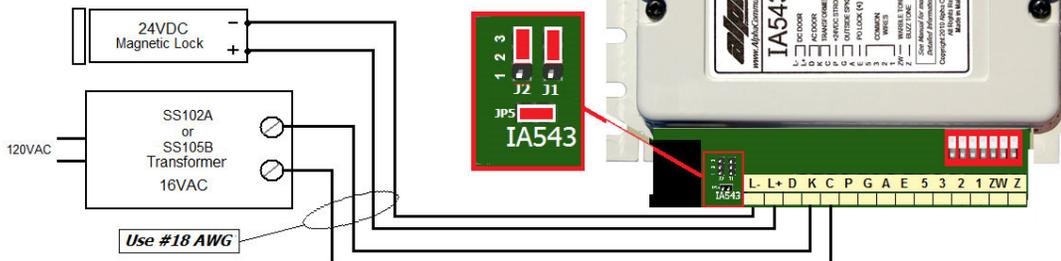
24VAC DOOR STRIKE	
J1	Jumps 2 & 3
J2	Jumps 1 & 2
JP5	Disconnected



24VAC
DOOR
STRIKE

Set jumpers as shown in the chart below. This configuration supplies continuous 24VDC to a magnetic lock through the L+ & L- terminals which is shut off when the inside station **DOOR** Button is pressed allowing the door to be opened. Insure that proper polarity is observed.

24VDC MAG LOCK	
J1	Jumps 2 & 3
J2	Jumps 2 & 3
JP5	Connected

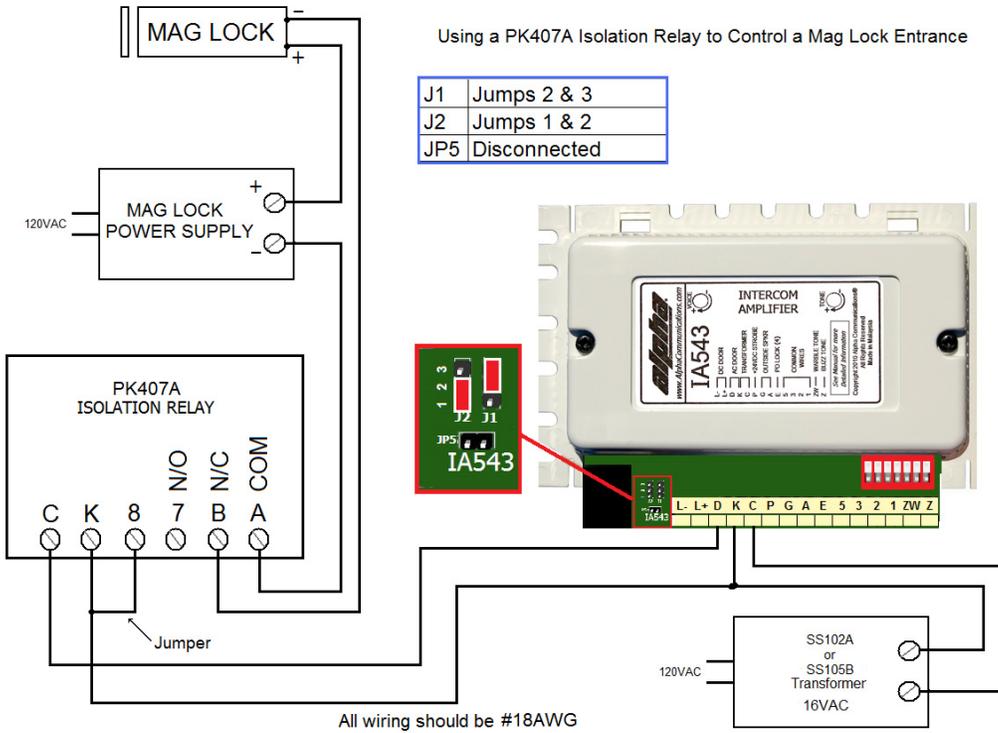


24VDC
MAG
LOCK

DOOR RELEASE DIAGRAMS - continued

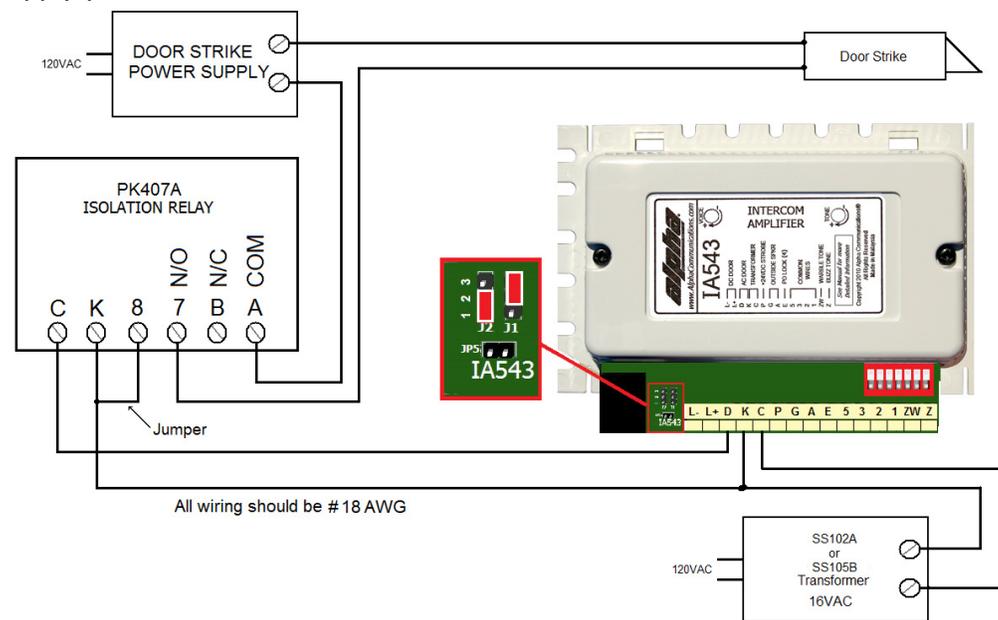
Set jumpers as shown in the chart below. This configuration is used when a magnetic door lock has its own dedicated power supply. The PK407A only provides a dry contact which in this Normally Closed mode, allows voltage to flow to a magnetic lock through the B & A terminals. When the inside station **DOOR** Button is pressed, the relay opens the circuit, disconnecting the power and releases the door. Insure that proper polarity between the magnetic lock and its power supply is observed.

The length of door release time is determined by the dipswitch settings (approx. 2, 10, or 25 seconds).



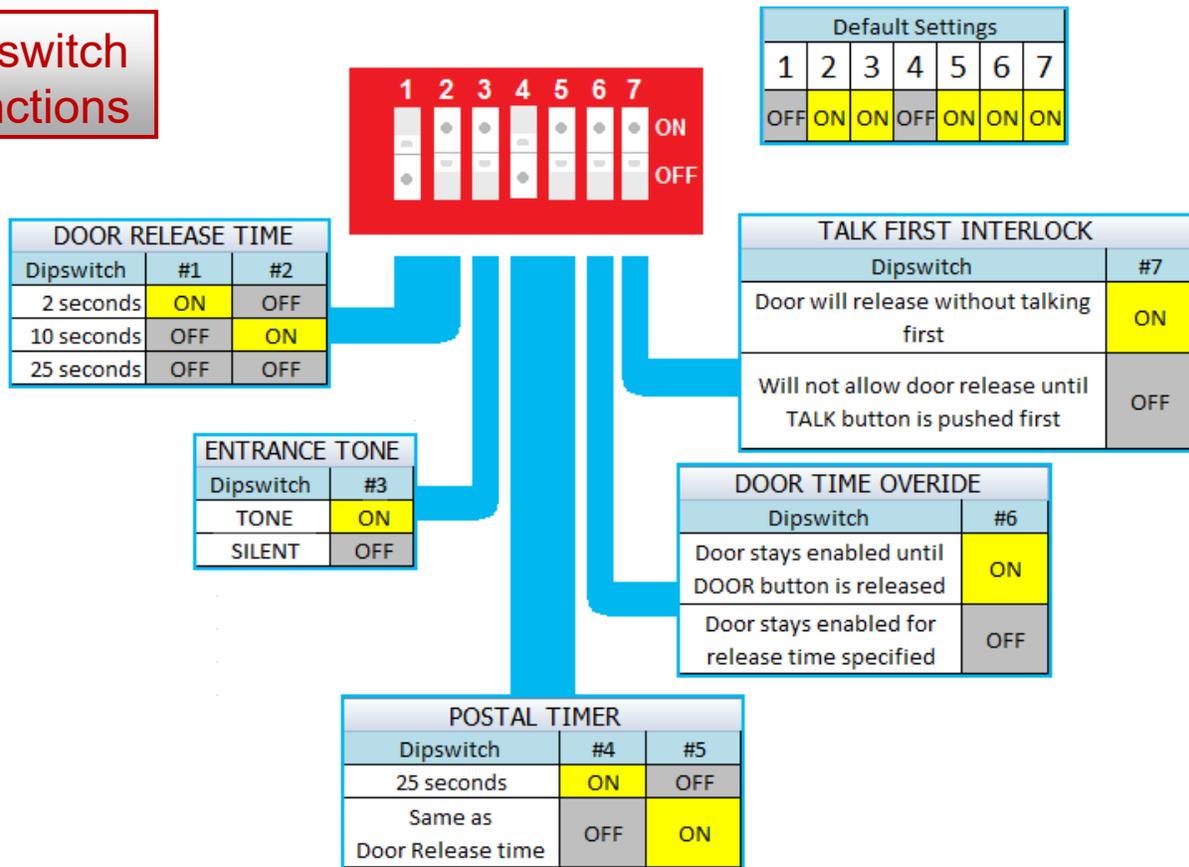
**USING THE
PK407A
ISOLATION
RELAY
for a
MAG LOCK**

To use the PK407A as an isolation relay for a door strike with a separate power supply, the wiring and jumper settings are the same as above, except the wire going to the B terminal (Normally Closed) would go to the A terminal (Normally Open) instead. This way power from the IA543 would close the connection to apply power to the door strike and release the door.



**USING THE
PK407A
ISOLATION
RELAY
for a
DOOR
STRIKE**

Dipswitch Functions



Dipswitches #1 & #2 set the length of door release time for approx. 2, 10, or 25 seconds (See chart above).

Dipswitch #3 will provide a tone at the entrance panel when the call button is pressed.
(you must use ZW as your tone wire to the entry panel).

Dipswitches #4 & #5 allow the Postal Lock to release the door for 25 seconds independent of the #1 & #2 setting.
(works only with 4 wire stations).

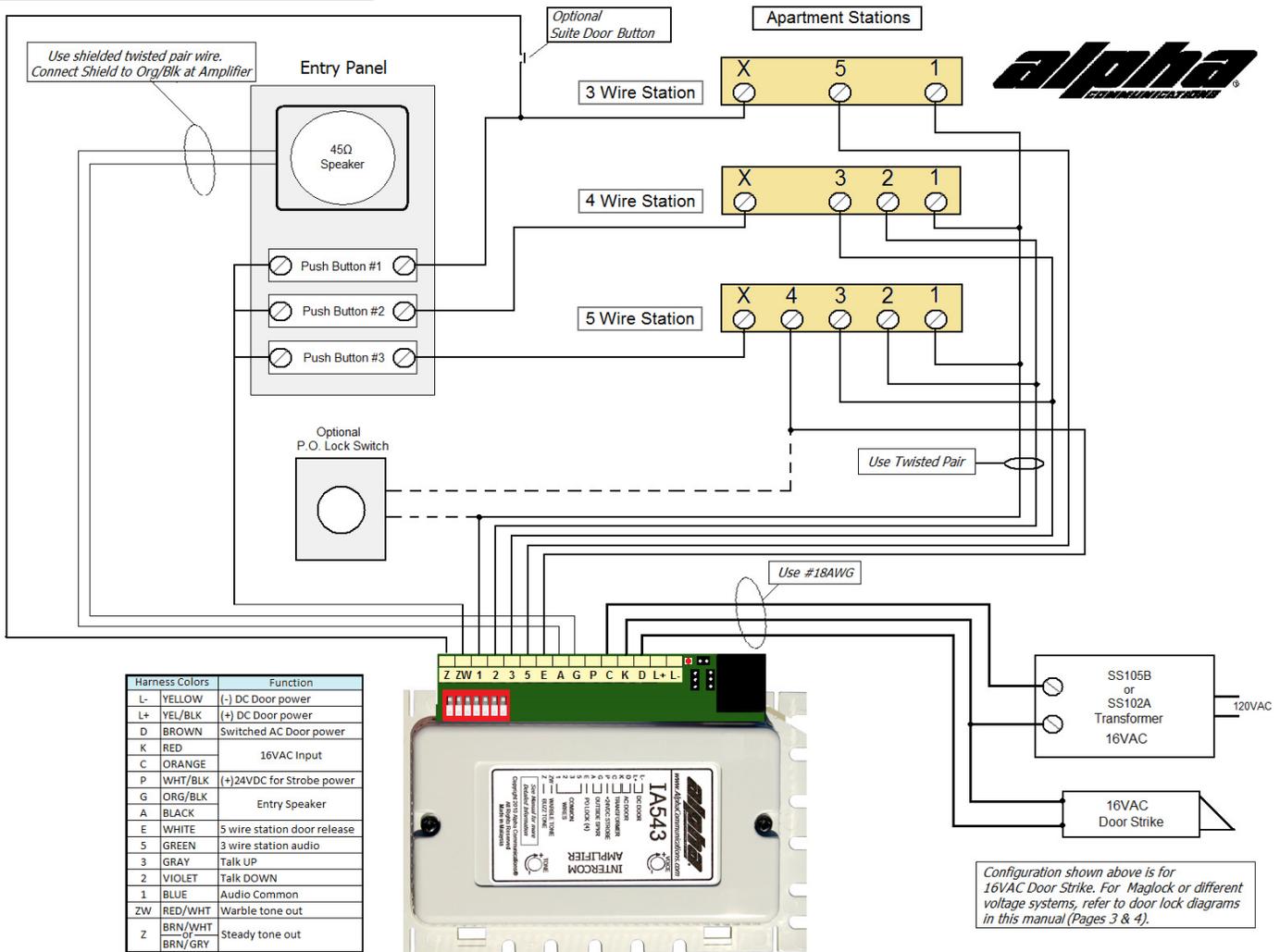
Dipswitch #6, when OFF, will only allow the door to release for the time determined by the position of #1 & #2.
If ON, it will continue to stay on past the normal time delay until the **DOOR** Button is released.

Dipswitch #7 when OFF, will require the **TALK** button to be pressed before the **DOOR** Button will release the door.
If ON, the Door release can be activated without talking first.

Jumper Positions

J1	Default is jumping the 2 & 3 pins. Changed for special applications only.
J2	Default is jumping the 1 & 2 pins for Door Strike applications (power on activation).
	Jump 2 & 3 pins for Mag lock applications (power off on activation).
JP5	Default setting is not jumped.
	Jump to provide 24VDC at the L+ and L- terminals.

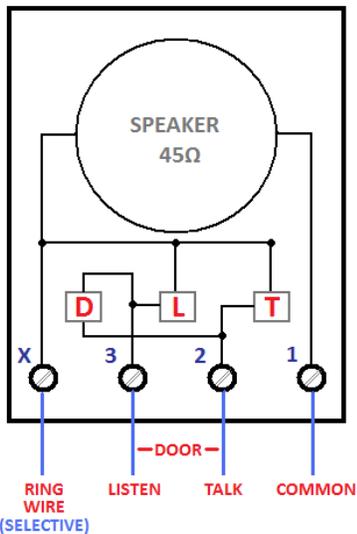
MAIN SYSTEM DIAGRAM



Configuration shown above is for 16VAC Door Strike. For Maglock or different voltage systems, refer to door lock diagrams in this manual (Pages 3 & 4).

The IA543 amplifier has two serviceable adjustments for Voice Volume and Tone Volume located through two access holes on the front cover. Use a small screwdriver and do not use excessive force. Carefully turn clockwise to increase the volume. High volume setting may result in feedback oscillation.

4 WIRE INTERCOM STATION INTERNAL DIAGRAM



TYPICAL 4 WIRE STATION – BACK VIEW

IMPORTANT NOTES

Terminal P is 24VDC+ for use with strobes only. Connecting other wires or components will damage equipment.

Run twisted/shielded wire to front speaker away from other wires to prevent excessive system noise.

Use 22 gauge twisted pair wire unless otherwise indicated on diagram.

PROBLEM	IA543 TEST PROCEDURE	
SYSTEM DEAD	LED OFF?	LED ON?
	Check for 16 VAC at K & C terminals. If no power check transformer secondary for 16VAC. If no power check for 120VAC at transformer primary.	Test system by disconnecting field wiring and connecting a station directly to the amplifier. If OK, check field wiring for continuity to stations and check for shorts between wires. If necessary check entry with a speaker between A & G terminals.
TALK DOWN NOT WORKING	LISTEN NOT WORKING EITHER?	LISTEN OK
	Check outside speaker wiring at terminals A & G. Check speaker for approx. 45 ohms resistance. Test by using an apartment station directly at the amplifier with field wires disconnected. If OK, Check COMMON wiring from the inside stations to the amplifier.	Test by using an apartment station directly at the amplifier with field wires disconnected. If OK, Check #2 wire from the inside stations to the amplifier for short or open.
LISTEN NOT WORKING	TALK NOT WORKING EITHER?	TALK OK
	Check outside speaker wiring at terminals A & G. Check speaker for approx. 45 ohms resistance. Test by using an apartment station directly at the amplifier with field wires disconnected. If OK, Check COMMON wiring from the inside stations to the amplifier.	Test by using an apartment station directly at the amplifier with field wires disconnected. If OK, Make sure a TALK button is not shorted by disconnecting #2 at amplifier. If OK, Check #3 wire from the inside stations to the amplifier for short or open.
DOOR RELEASE INOP.	LED GOES OUT WHEN DOOR BUTTON IS PRESSED	LED STAYS ON WHEN DOOR BUTTON IS PRESSED
	Check that Jumpers are set for proper door release unit voltage and type. Check for AC voltage at K&D when DOOR button is pressed OR check for DC voltage at L+ & L-. If voltage is present, check wiring to door release for short or open and test unit itself.	Indicates the amplifier is not receiving a signal from the inside station. Use a jumper wire between terminals 2 & 3 to check for operation at the amplifier. If good, check field wiring for open circuits (usually talk or listen functions may not work either).
NO CALL TONE AT INSIDE STATIONS	Assuming all other functions of the amplifier are working, connect a test speaker between ZW and #1 terminals on the amplifier. Warble tone should be heard. If good, check continuity between entry panel button common and ZW terminal. If good, check continuity between entry buttons and inside stations (X wires). If only one inside station is bad, check its call button and then selective wire (X) to the entry panel.	
HUM, STATIC, DISTORTION COMPLAINTS	These issues are caused by wiring in close proximity to line voltage electrical wiring and electrical devices, especially motors, compressors, and fluorescent lights. Not using proper gauge twisted pair wiring will contribute to these electrical interference problems. Sometimes the amplifier volume can be set too high causing distortion.	
FEEDBACK OSCILLATION	An entry speaker and apartment station in close proximity can cause a feedback loop which may be reduced or eliminated by lowering the voice volume on the amplifier. Feedback can also be caused by the entry speaker wiring being unshielded and/or in close proximity to the other wiring of the system. Test the ZW wire by disconnecting it to see if the feedback stops. If so, turn dipswitch #3 off.	
RADIO/ AUDIO INTERFERENCE	The wiring in an intercom system can occasionally create a receiving antenna sensitive to certain frequencies. Try connecting the G terminal of the amplifier to a good building earth ground. Check that your wiring to the entry panel speaker is shielded.	

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