

LEF Series OPEN VOICE SELECTIVE CALL INTERCOM

Models: **LEF-3** (3-call master)
LEF-5 (5-call master)
LEF-10 (10-call master)
LEF-10S (10-call master w/all call)

* LEF-5W, LEF-10W & LEF-10SW:
w/Terminal Box prewired

INSTALLATION & OPERATION MANUAL

PRECAUTIONS

⚠ WARNING (Negligence could result in death or serious injury.)

- Do not dismantle or alter the unit. Fire or electric shock could result.
- Do not connect any non-specified power source to the +, - terminals, and do not install two power supplies in parallel to a single input. Fire, damage to the unit, or system malfunction could result.
- Keep the unit away from water or any other liquid. Fire or electric shock could result.
- When existing doorbell wires are used, it is possible that they contain AC voltage. Electric shock or unit damage could result. Make sure doorbell transformer is disconnected before re-using those wires. Only a qualified Technician should do the installation.
- Do not use DC power supply with a voltage other than what is specified. Fire or electric shock could result.

⚠ CAUTION (Negligence could result in injury or damage to property.)

- Before turning on power, make sure wires are not crossed or shorted. Fire or electric shock could result.
- Do not install the unit in a location subject to constant vibration or impact. If dropped, injury or unit damage could result.
- When mounting the unit on a wall, install the unit in a convenient location, but not where it could be jarred or bumped. Injury could result.
- For DC powered systems, use Aiphone power supply model specified with system. If non-specified product is used, fire, malfunction, or unsatisfactory system performance could result.
- During an electrical storm, unplug the power supply from the AC outlet. If not, power surge damage to the equipment could result.
- Do not install the unit in any of the following locations. Fire, electric shock, or unit trouble could result.
 - * Places under direct sunlight, or near heating equipment that varies in temperature.
 - * Places subject to dust, oil, or chemicals.
 - * Places subject to moisture and humidity extremes, such as a bathroom, cellar, greenhouse, etc.
 - * Places where the temperature is quite low, such as inside a refrigerated area or in front of air conditioner.
 - * Places subject to steam or smoke, such as near heating or cooking surfaces.
 - * Where interference generating devices such as dimmer switches, alarm panels, or fluorescent light fixtures are closeby.

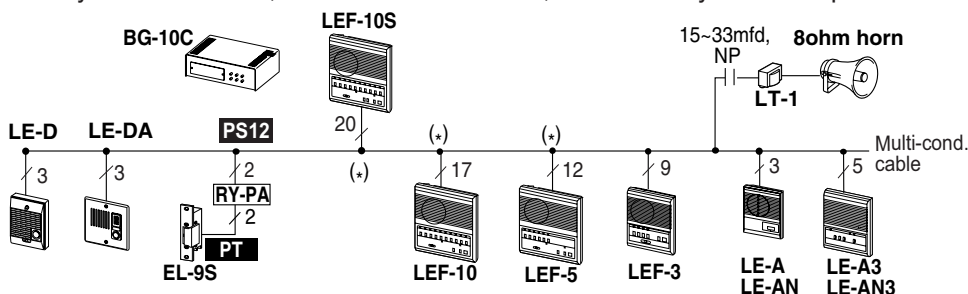
⚠ GENERAL PRECAUTIONS

- Keep the intercom wires more than 20 inches (50cm) away from AC 100~240V wiring. AC induced noise and/or unit malfunction could result.
- In areas where broadcasting station antennas are close by, the intercom system may be affected by radio frequency interference.
- The unit will be inoperative during a power outage.
- The unit is for inside use only. Do not install outdoors.

1 SYSTEM OUTLINE & COMPONENTS

■ System outline

The LEF is a flexible Open Voice Selective Call Intercom system which integrates any combination of master and sub stations. The system features selective calling from any master with handsfree reply, call-in and LED from a variety of sub stations, selective door release, and a variety of other optional features.

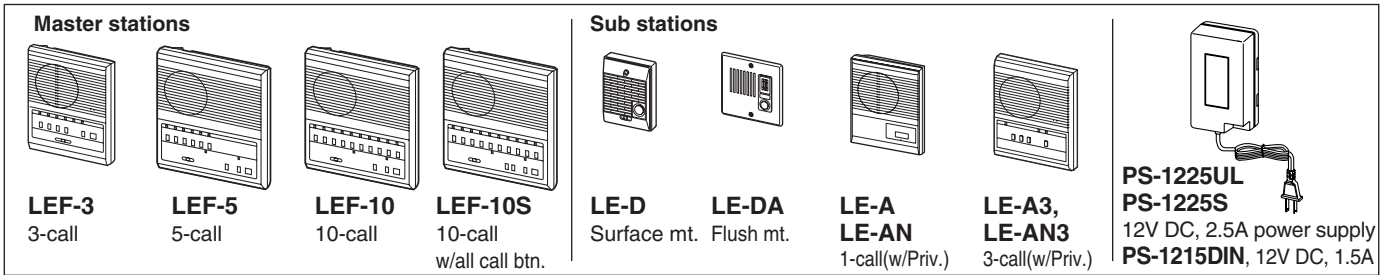


■ Package contents

- LEF intercom (LEF-3, 5,10 or 10S)
- Packet of screws
- Installation & Operation Manual

■ Components available

- **Intercoms:** Masters or subs, intermixable

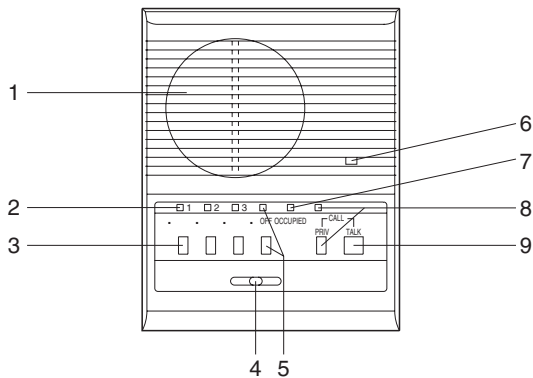


- Additional **Sub stations:**
LE-DL: Surface-mount w/anodized aluminum panel
★ AH-108 8Ω horn speaker w/LT-1 matching transformer & NP-25V (33μfd, bp, 25V)
- **All Call & Background Music:**
BG-10C: All call, chime & music adaptor.
Requires a **PS-1225UL** power supply (12V DC, 2.5A).
- **PanTilt video door stations:**
MYW-P1L or **MYW-P3L** adaptor: For 1 or 3 Video door stations.
MYW-P10L for 4~10 Video door stations.
Up to two **MYH-CU** video monitors can be powered with one **PS-1820UL** power supply. Add **PS-1820UL** power supply for every two additional monitors (up to 10 or max. distance capacity).
MK-DAC, MK-DBC, MK-DGC & MK-DGV, PanTilt video doors.

2 NAMES & FEATURES

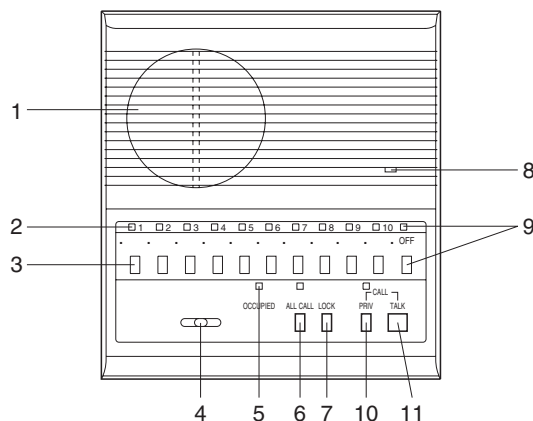
■ Names & functions

LEF-3



- 1 Speaker
- 2 Call-in LED (3)
- 3 Station-Select button (3)
- 4 Voice volume control
- 5 OFF button (w/ON LED)
- 6 Mic. (initiator only)
- 7 Occupied LED (In-use)
- 8 Priv. button & LED indicator
- 9 Talk (listen) button

LEF-5, 10, 10S



- 1 Speaker
- 2 Call-in LED (5 or 10)
- 3 Station-Select button (5 or 10)
- 4 Voice volume control
- 5 Occupied (In-use) LED
- 6 All Call transmit button & LED
- 7 Door Strike button
- 8 Mic. (initiator only)
- 9 OFF button (w/ON LED)
- 10 Priv. button & LED indicator
- 11 Talk (listen) button

- ★ LEF-5: 5 station buttons and OFF.
LEF-10: All Call button & LED not included

■ Features

- Four LEF master stations, intermixable.

Models	Capacity	Door strike	All Call transmit	Video door
LEF-3	4 stations			
LEF-5	6 stations	X		X
LEF-10	11 stations	X		X
LEF-10S	11 stations	X	X	X

• Optional features:

- * PanTilt Video door stations (w/ **MYW-P1L**, **MYW-P3L**, or **MYW-P10L** adaptor)
- * All Call, chime & Music distribution (w/**BG-10C** adaptor)
- * Selective door release (w/**RY-PA** relay, 1 per door)
- * 8 Ω horn speaker (**AH-108** w/**LT-1** transformer & **NP-25V** capacitor)
- * External signaling when door/sub calls (w/**RY-AC/A** and external device)

WIRING:

- **Loop-wired system with multi-conductor shielded cable.**

All-master system: 4 common wires + 1 wire per number of stations in the system.

If All Call is included: Add 4 additional common wires (P1~P3,Y).

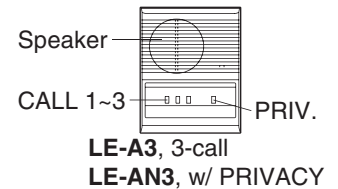
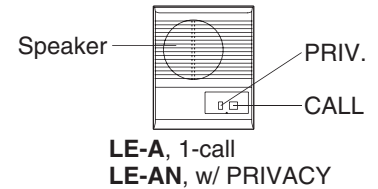
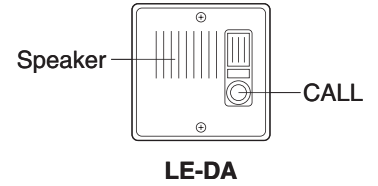
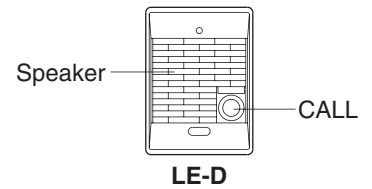
If Door Release is included (LEF-5/10/10S): Add 1 common (L) + 1 individual wire for each door to be released (K# terminals).

Single-master system: 2 wires homerun* from each sub to the master.

Leave jumpers between E & – installed.

*NOTE: It is recommended even in a single master system that 3 wires are used for all sub stations in the system, and that the E & - jumpers are removed. This ensures that the wiring is proper in the event of system expansion in the future.

Intermixed system with masters and subs: 3 wires from each sub to the nearest master, or 2 common + 1 individual wire per station on a loop. Remove jumpers between E & – from all stations in a multi-master system.



■ Wire Reference Chart

Standard Communication (Max. # of stations)				With selective door release and/or camera call-up (incl. "K" wires b/n masters, max.)	
Model #	# of Conductors	Wire # (22AWG)	Wire # (18AWG)	# of Conductors	Wire # (22AWG)
LEF-1C	12	822212	X	X	X
LEF-3C	12	822212	X	X	X
LEF-5C	15	822215	X	20	822220
LEF-10C	20	822220	X	30	822220 + 822210
LEF-3	9	822210	X	X	X
LEF-3L	9	822210	X	12	822212
LEF-5	12	822212	X	20	822220
LEF-10	17	822215	X	30	822220 + 822210
LEF-10S	20	822220	X	30	822220 + 822210
LE-A	3	822203	821803	X	X
LE-B	3	822203	821803	X	X
LE-C	6	822206	X	X	X
LE-D	3	822203	821803	X	X
LE-DA	3	822203	821803	X	X

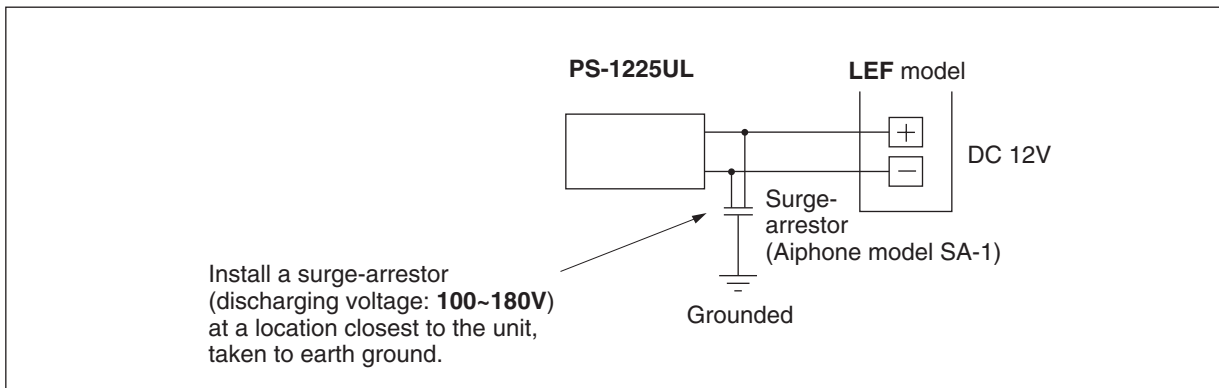
3 PRECAUTIONS ON INSTALLATION & WIRING

⚠ CAUTION

- ★ Do not connect AC wires to any terminal on any unit, as fire or unit damage may occur. Connect only the specified power source on +, – terminals.
- ★ Do not install more than one power supply (PS-1225UL) for an entire LEF system.
- ★ Do not attempt to install or connect wires on LEF equipment while system's power supply is plugged in.
- ★ LEF masters and related equipment, except door stations, are designed for indoor use only. Do not install outdoors.

IMPORTANT

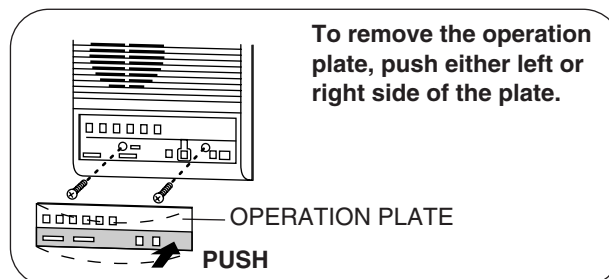
- ★ There is no need to disassemble the equipment for installation, other than to open the unit to connect the wires to the inside of the back case. Do not access the PC board or components unless properly qualified.
- ★ Any other manufacturer's products installed with this system (power supply, external signaling device, etc.) are not covered under Aiphone's warranty.
- ★ Do not mount LEF equipment in the following places, as it may cause the system to malfunction:
 - Near light switches or dimmer switches, or near fluorescent light fixtures.
 - Near alarm panels or other electronic equipment that may emit data noise.
 - Behind a doorway or any other area that may block access to the unit.
- ★ LEF units are electronic devices, therefore must not be subjected to water or moisture.
- ★ Severe weather conditions, such as lightning storms, may cause damage to LEF equipment. We recommend that power surge protection be installed as follows: (However, this does not guarantee that no damage will occur).
 - Connect the GROUND terminal of the power supply to an earth ground. In this case, a separate surge arrester is not necessary.
 - When using a power supply that has no GROUND terminal, install a surge arrester near the output as shown.
 - Additional SA-1 surge arrestors can be installed to protect communication lines. One SA-1 per 2 wires on each master station.



- Before actually installing the LEF system, the contents on pages 4 ~ 8 must be thoroughly read and understood.

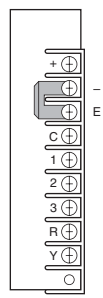
To access the inside of the unit for making wire connections:

1. Remove operation plate and loosen the two screws on the front of the unit. (Do not remove screws)
2. Carefully lift front of intercom up and off the back chassis.
3. If desired, unplug connectors and set unit aside during mounting and wiring of the back chassis.
4. When wiring is completed, plug in connectors and put unit back together. Peel protective covering off of directory card.



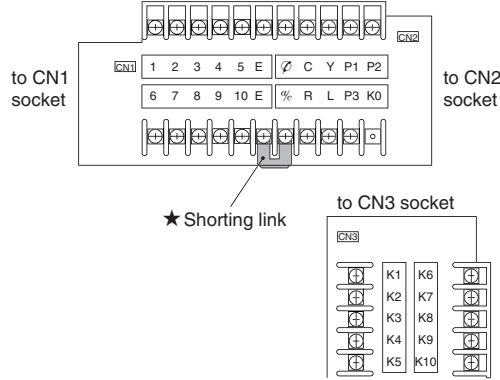
4 WIRING

LEF-3

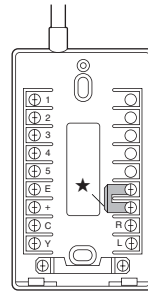


LEF-5, LEF-10, LEF-10S

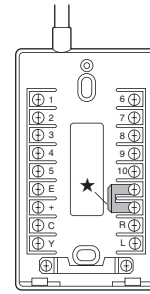
(unused terminals have no screws)



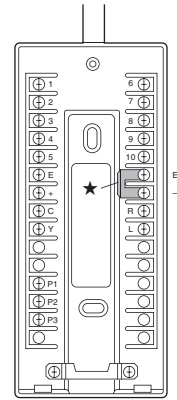
* LEW-5, LEW-10, and LEW-10S Terminal boxes are not equipped with K1 ~ K5, K1 ~ K10 terminals.



LEW-5

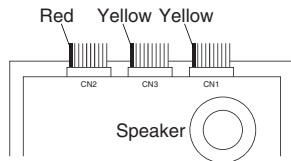


LEW-10



LEW-10S

LEF-10, 10S
Front case
back view



*** IMPORTANT: The shorting link between the E and – terminals must be removed on all units when two or more master stations are included in the system. Leave it attached only in 1-master systems with 2 conductor homerun wiring to each sub station.**

Terminal definitions

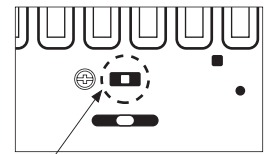
- 1 ~ 10:** Station number, establishes communication to other LEF masters (to "C" terminal) or LE subs (to "1" terminal)
 - C:** "CALL", Call receive from another master (and All Call/Chime/Music reception)
 - E:** Common communication line
 - R:** Activates occupied LED to indicate when any master is ON (line drops to 0V DC when any master is on.)
 - Y:** Occupied mode control during All Call (becomes +9V DC during All Call)
 - L:** Door strike activation (becomes +12V DC when "key" button is pressed)
 - +, -:** 12V DC power supply connection. Use Aiphone PS-1225UL(S).
 - P1:** All Call control (becomes +10V DC when All Call button is pressed and activates pretone)
 - P2, P3:** All Call transmit of audio path from initiating master to BG-10C
- ★ **K1 ~ K5 (LEF-5), K1 ~ K10 (LEF10, 10S):** Selective control terminal, used for video control with MK Video series, or for selective door release (w/RYP-A) from the master to multiple door stations. ("K#" terminal becomes ground (-) when corresponding station number is pressed.)

Call tone adjustment

3-position volume switch, located under directory cover plate. Adjusts call tone volume to low (far left), medium, high (far right).



LEF-3



LEF-5,10,10S

3-pos. call tone vol. switch (under directory cover)

Selector switch for Call Tone in Occupied Mode

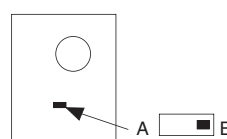
LEF surface mount master stations are set in the "B" position from the factory. This allows a sub call-in tone to be heard at a muted level while the master is in the occupied mode.

*If a BG-10C is included in the system, the switch must be set to the "A" position, which will mute the call tone while the door chime is heard throughout the system. Otherwise, the chime and call tone will be heard simultaneously.

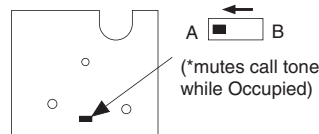
"A" position: Mutes call tone at master while system is in occupied mode.

"B" position: Call tone is heard when master is in occupied mode.

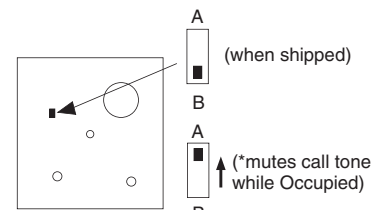
FRONT CASE
BACK VIEW



LEF-3 (when shipped)



LEF-5



LEF-10,LEF-10S

LEF All-Master configuration

LEF all-master systems are designed to be wired in a looped fashion from the first to last master. The number of conductors for a system (not including "K" for terminals) are:

Model	Cable	Wire number
LEF-3	9 conductors	#822210 (22AWG, 10 cond.)
LEF-5	12 conductors	#822212 (22AWG, 12 cond.)
LEF-10	17 conductors	#822220 (22AWG, 20 cond.)
LEF-10S	20 conductors	#822220 (22AWG, 20 cond.)
LE Subs	3 conductors	#822203 or #821803 (22AWG, 3 cond.)

- A single-master system can be wired with 2 conductors homerun from each sub. (Wire #822202 or #821802 in USA)

Cable requirements

Use multi-conductor cable with an overall shield, non-twisted, 22AWG to 18AWG (0.65mm to 1.0mm), to accommodate the maximum number stations in the system, each of which requires one designated wire, plus up to nine common wires per system, depending on features used. Selective door release adds one additional wire per door being released. Use the gauge specified for the maximum distance between the two farthest stations.

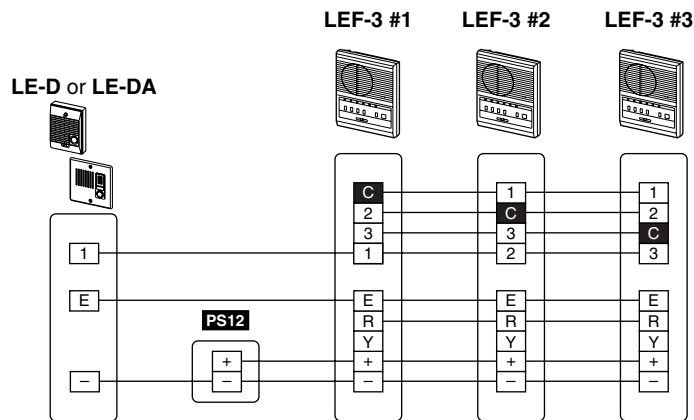
Power supply

The entire LEF system can be powered by one power supply (PS-1225UL, PS-1225S, 12VDC, 2.5A), located near the center of the wire run.

For a system including the All Call and Chime with the BG-10C, one PS-1225UL(S) will power the BG-10C and the LEF system.

Wiring Diagrams

Three LEF-3 and One Door Station

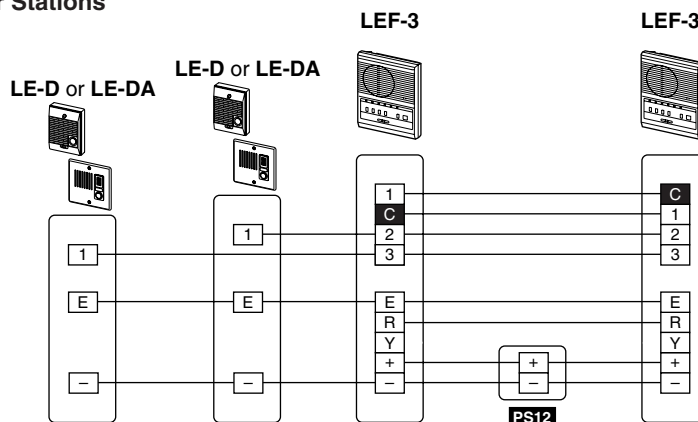


Note: This diagram assigns the master stations as station 1, 2, and 3. The door station is answered on each station's own number terminal (1, 2, or 3 respectively).

⚠ Remove the shorting link between "E" and "-" terminals at all the LEF masters and door/sub stations.

PS12 : PS-1225UL
PS-1225S
PS-1215DIN

Two LEF-3 and 2 Door Stations

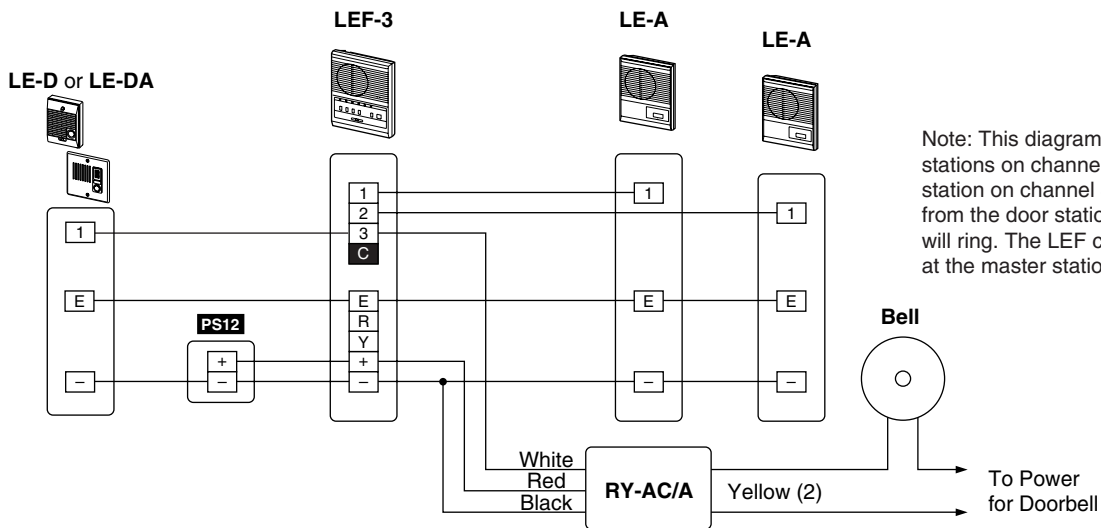


Note: This diagram assigns both master stations to use channel 1 to talk to the other master. The door stations are on channels 2 and 3 respectively.

⚠ Remove the shorting link between "E" and "-" terminals at all the LEF masters and door/sub stations.

PS12 : PS-1225UL
PS-1225S
PS-1215DIN

LEF-3 with 2 Subs, 1 Door and External Signaling



Note: This diagram assigns the inside sub stations on channels 1 and 2, and the door station on channel 3. When a call is received from the door station, the remote doorbell will ring. The LEF call tone will only be heard at the master station, not at the LE-A subs.

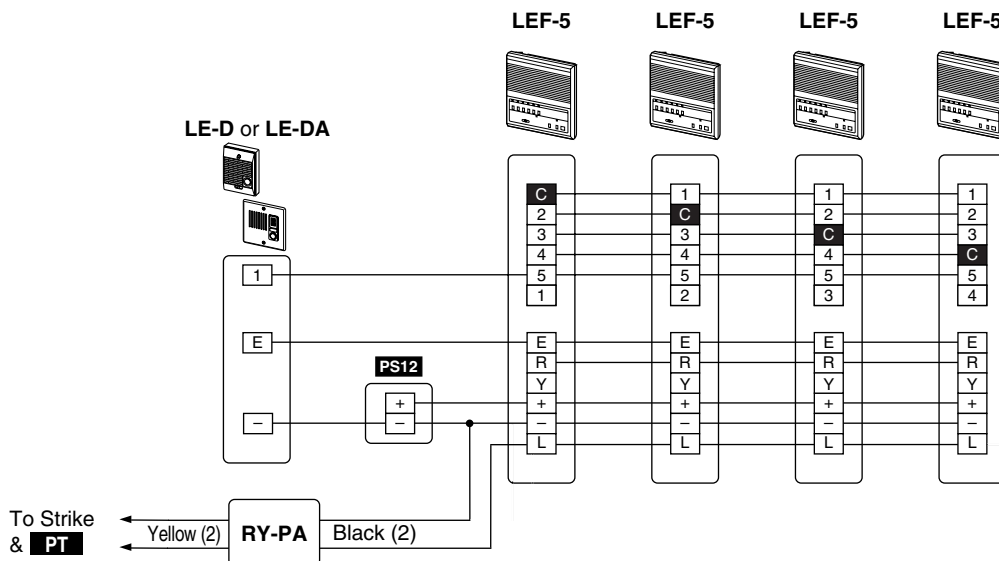
IMPORTANT: Aiphone recommends using 3 conductor wiring to sub and door stations, even in a single master, homerun wired system. This enables a single master system to be expanded with more masters in the future. When using 3 conductors, remove the E/- jumpers at all sub and master stations.



The shorting link between "E" and "-" terminals should be removed on all units where there are 3 conductors available per sub. If there are only 2 conductors per sub and 1 master in the system, then the jumpers should remain attached.

PS12 : PS-1225UL
PS-1225S
PS-1215DIN

Four LEF-5 Masters, One Door Station with Door Release



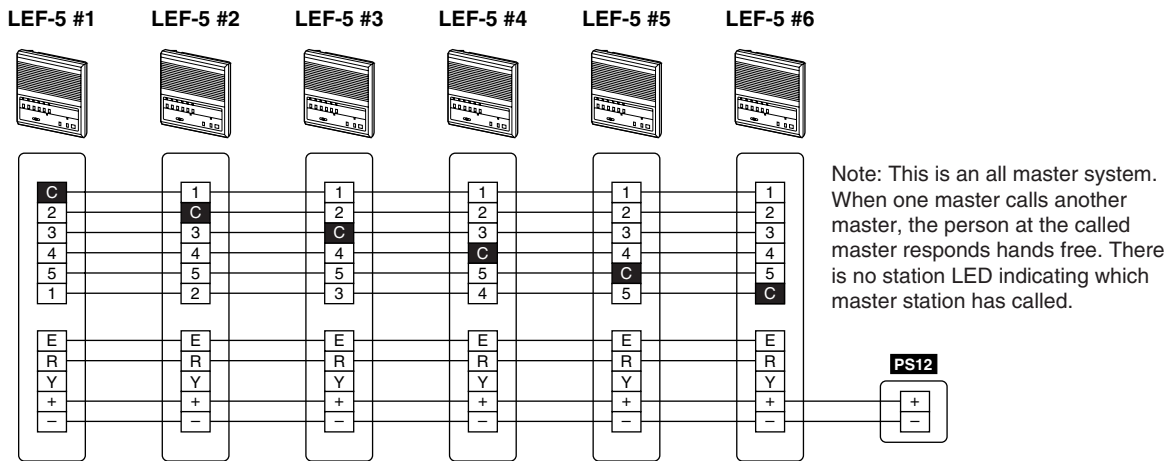
Note: This diagram assigns the masters on channels 1 ~ 4, and the door station on channel 5. Each station's own channel button is not used in this illustration.



Remove the shorting link between "E" and "-" terminals at all the LEF master and door/sub stations.

PS12 : PS-1225UL, PS-1225S, PS-1215DIN
PT : Transformer for Strike

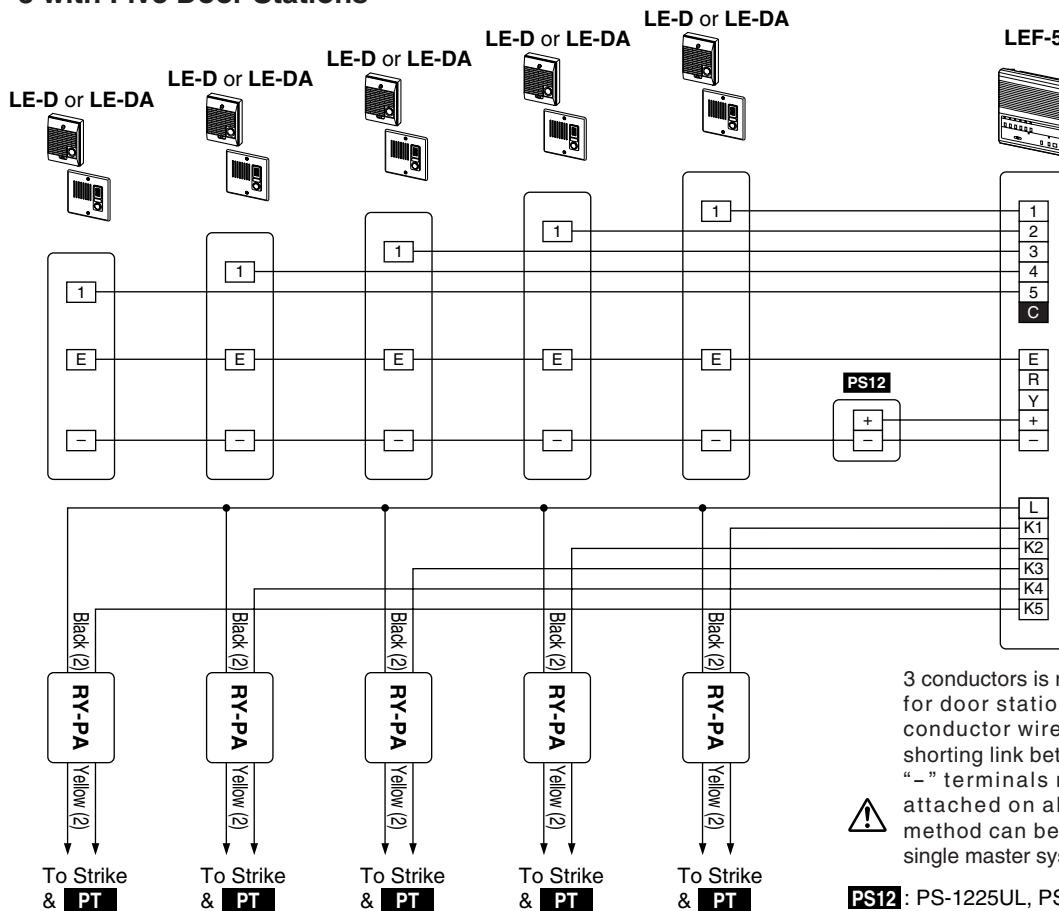
■ Six LEF-5's



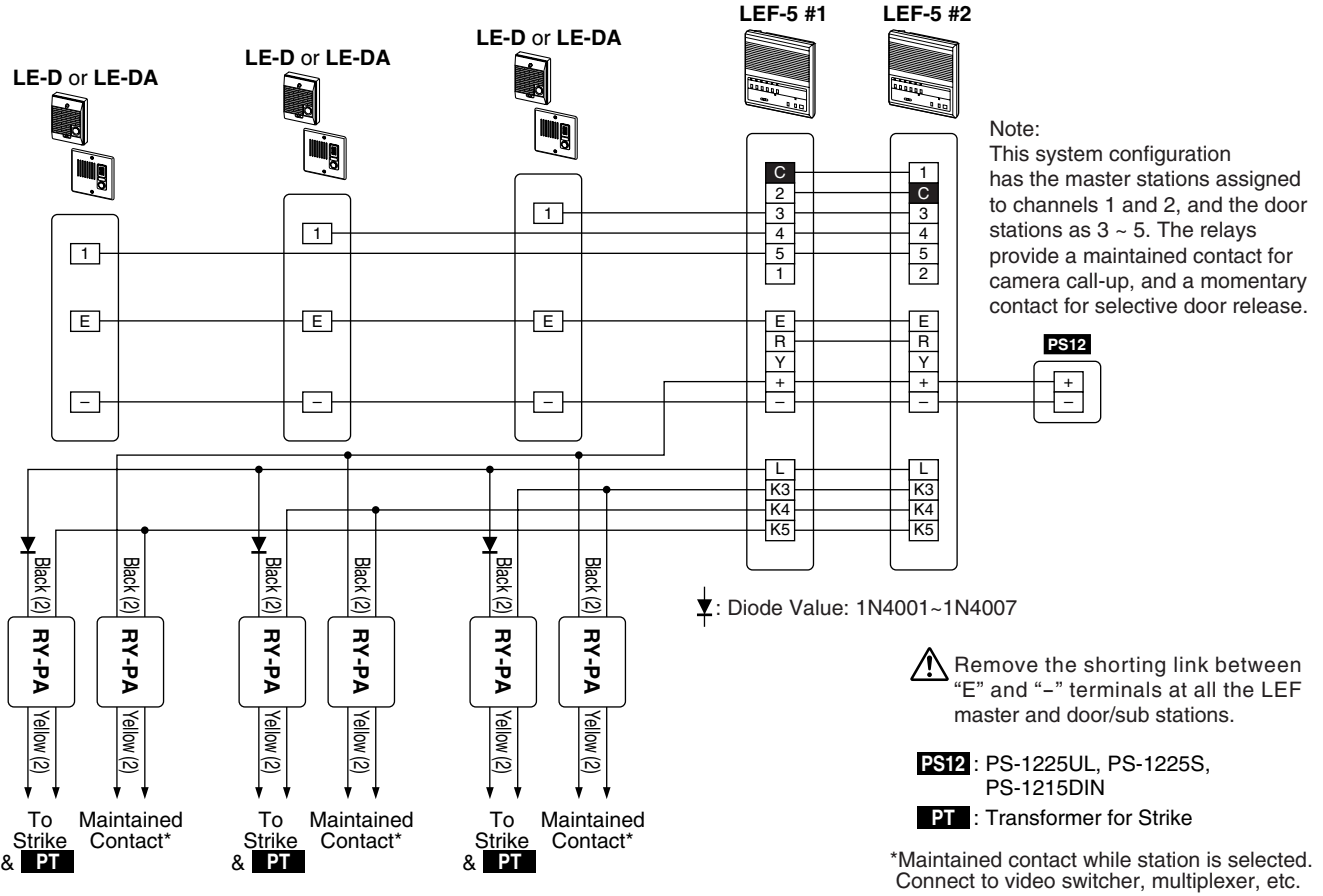
⚠ Remove the shorting link between "E" and "-" terminals at all the LEF master stations.

PS12 : PS-1225UL
PS-1225S
PS-1215DIN

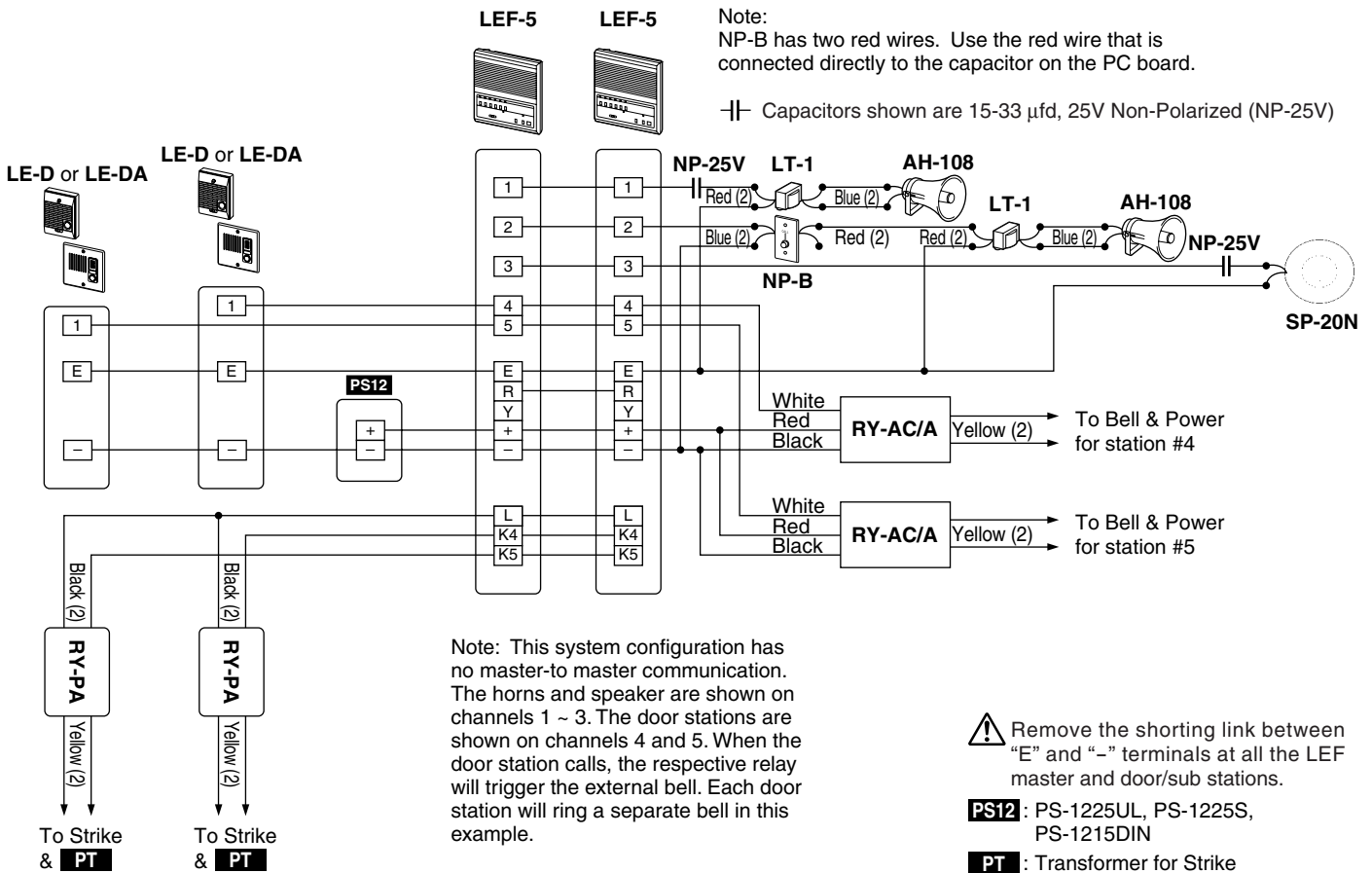
■ One LEF-5 with Five Door Stations



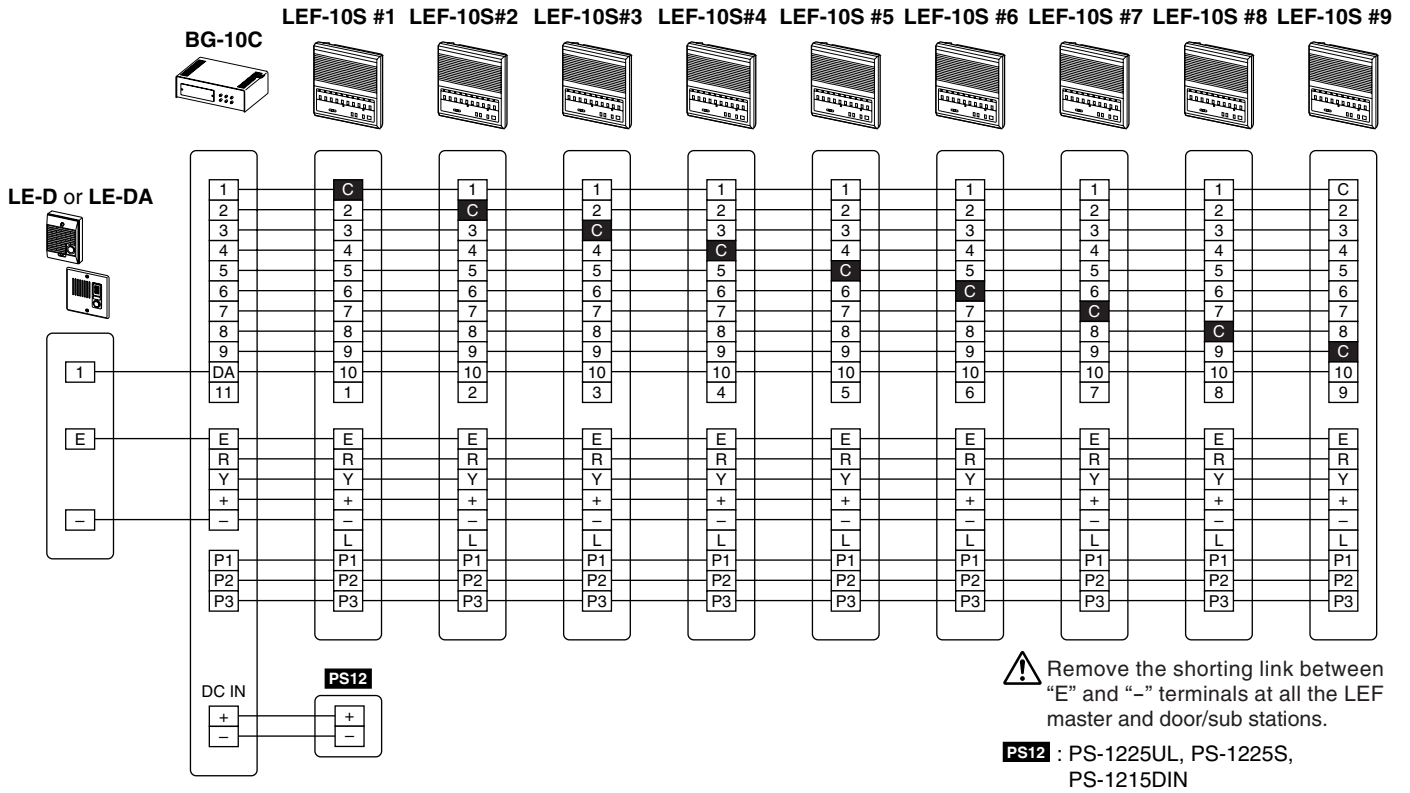
Two LEF-5, Three LE-D w/Camera Call-up and Door Release



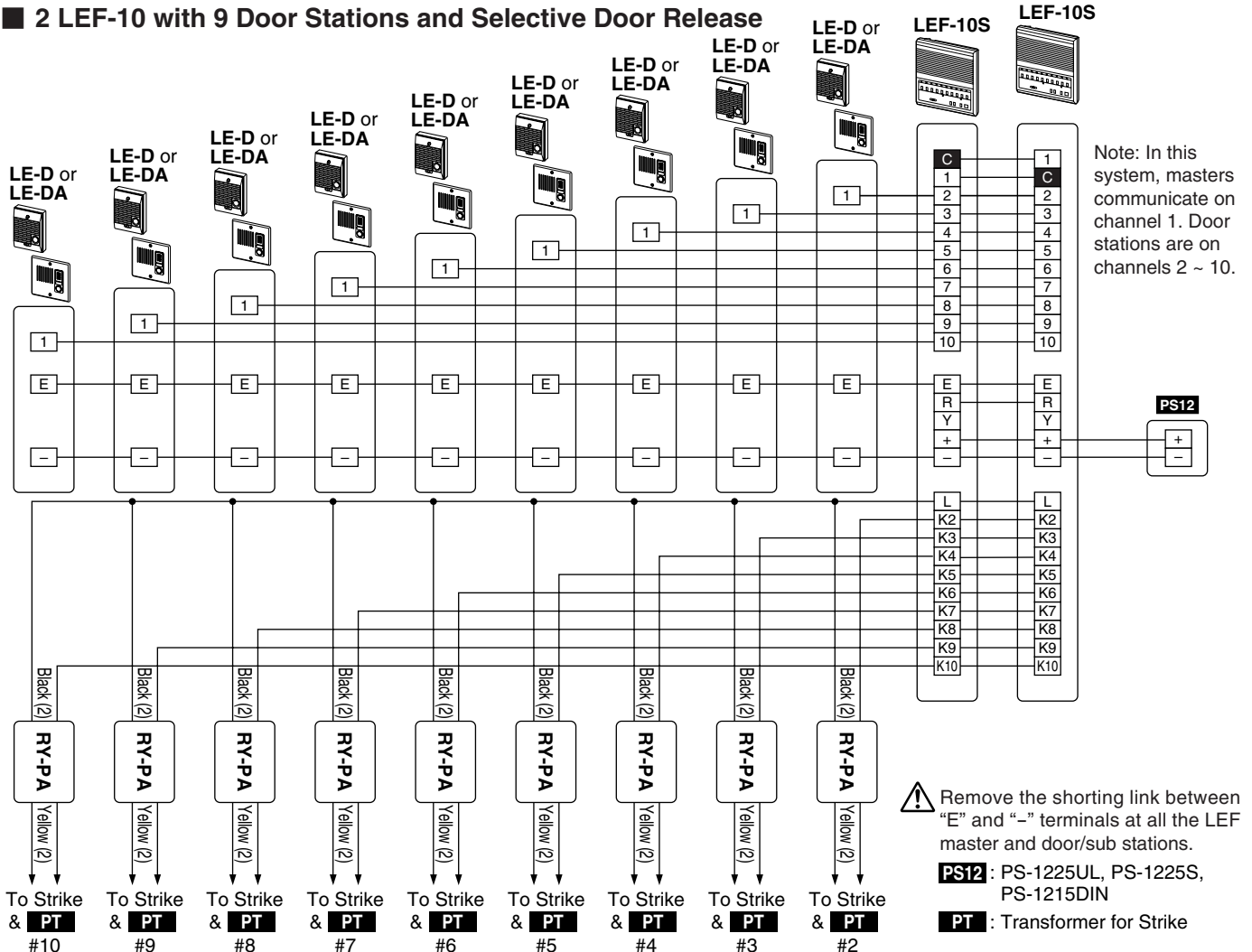
2 LEF-5, 2 Doors, 3 Speakers with Release and External Signaling



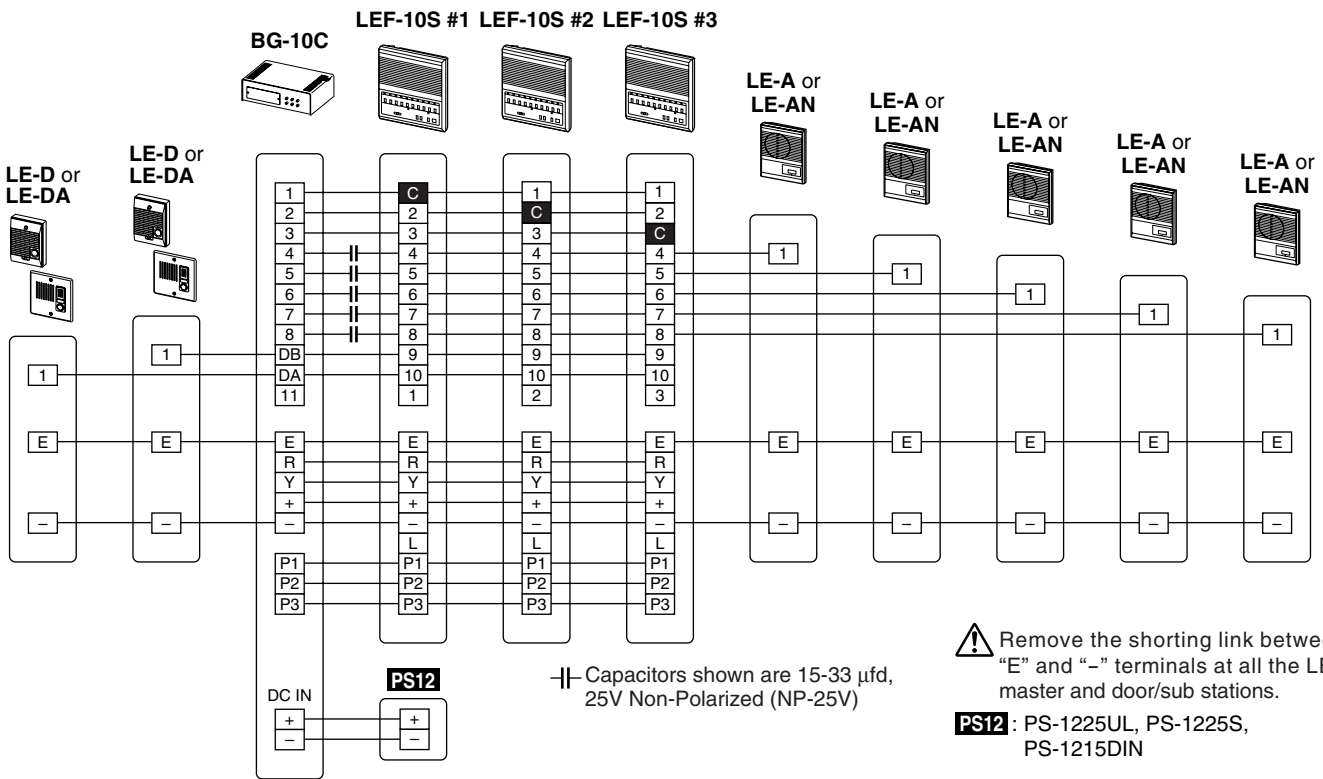
■ 9 LEF-10S with BG-10C and 1 Door Station



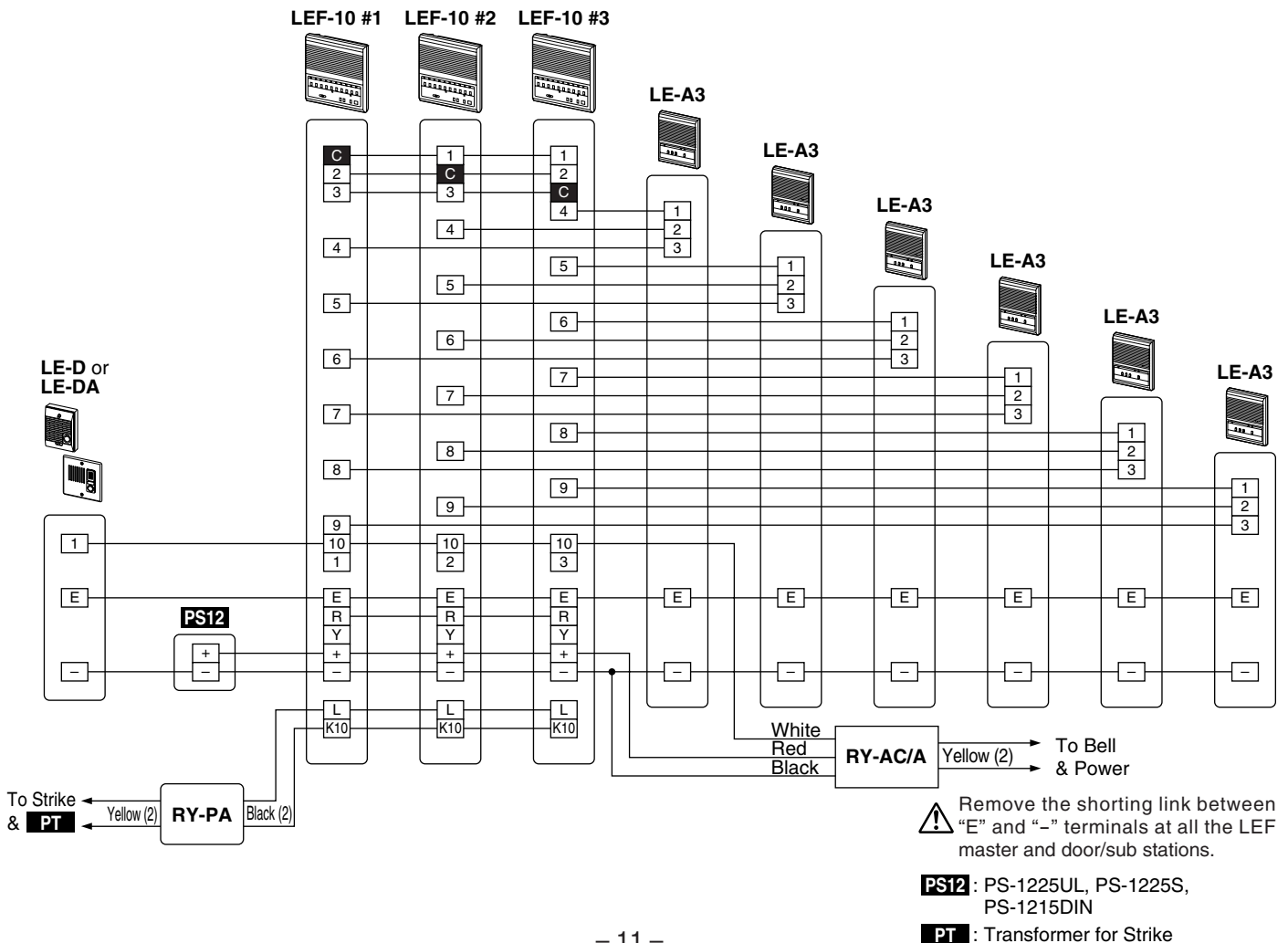
■ 2 LEF-10 with 9 Door Stations and Selective Door Release



■ 3 LEF-10S, 5 Indoor Subs, 2 Door Stations with BG-10C for Chime & All Call

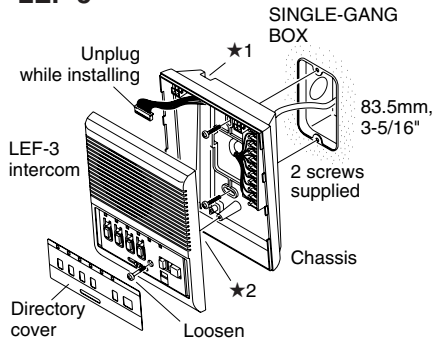


■ 3 LEF-10, 6 3-call Subs, and 1 Door Station with External Signaling and Door Release

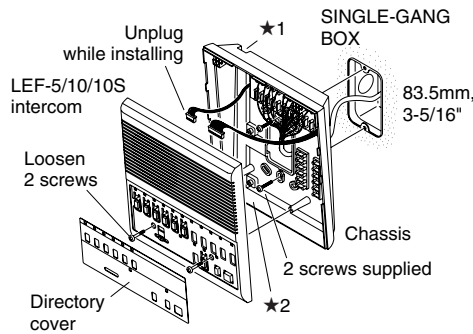


5 MOUNTING

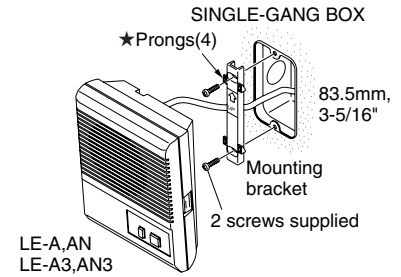
• LEF-3



• LEF-5, 10, 10S



• LE room subs



★ 1, 2 : When running cable on the surface, pass cable through the top or bottom of the chassis and fasten with the wire clamps (attached, one outside and one inside chassis.).

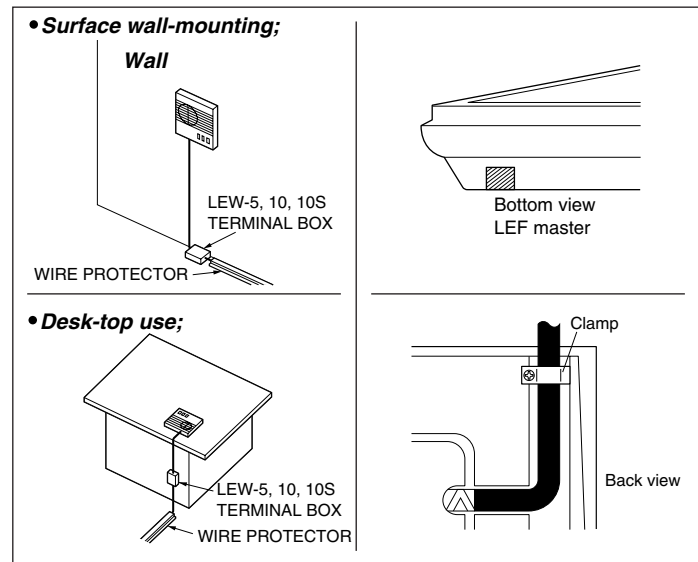
★ Slide LE sub down until it locks onto the prongs.

■ Wall-mounting

1. Remove the directory cover by pressing down on one side and lifting off from the middle. Remove the paper directory card as well, and set aside with directory cover.
2. Loosen the two screws in the front case. (Do not remove screws from front case.)
3. Disconnect LEF intercom from the chassis by carefully unplugging the connectors.
4. Mount the back chassis to a single-gang box.
5. Terminate wires on screw terminals inside the chassis.
6. Reconnect intercom with connectors and mount to chassis, tightening the two screws. Replace the directory card and cover. (Make sure directory cover is under the small tab at the top when reinstalling.)

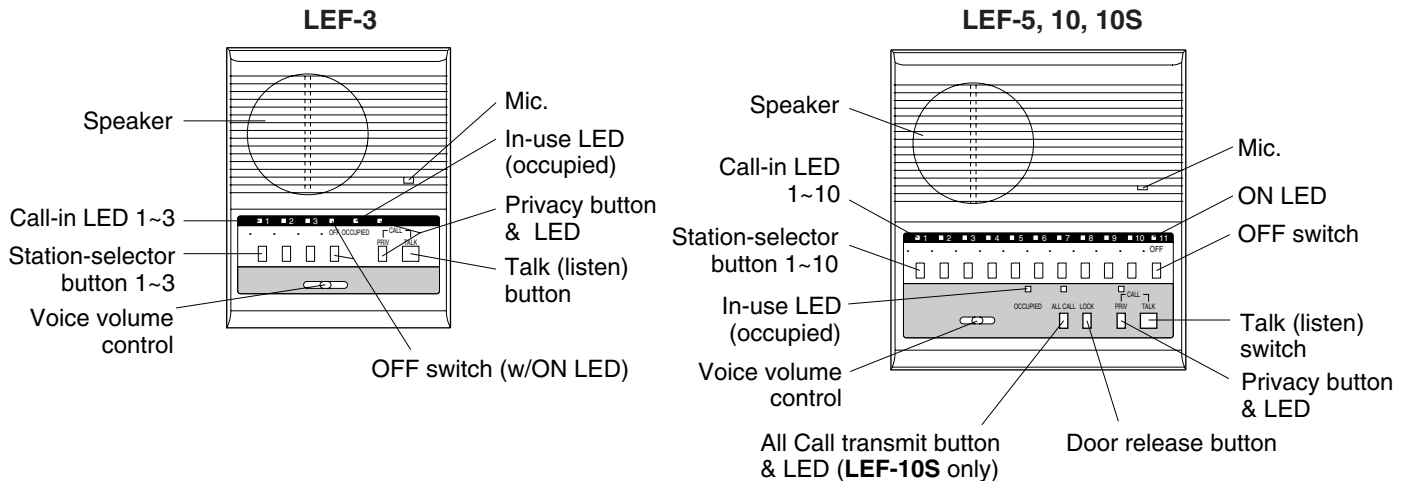
■ Desk mount with LEW Desktop Terminal Box

1. Plug in CN-1 & CN-2 connectors of LEW-5, LEW-10, or LEW-10S to multi-pin sockets inside LEF master (Connectors from chassis remain disconnected). Use clamps on LEF back case to secure the cable.
2. Install the terminal box in a convenient place with the field wiring connected inside. The cord from the box to the LEF unit is approximately 7'7" (2.5m) long.
3. Please note that the "K" terminals are not included in the LEW Desktop Terminal Box. The "K" terminals are only located in the back of the LEF master.



6 OPERATIONS on LEF

- ★ LEF is a single talkpath system. While the Occupied LED is lit, do not attempt to select a station or initiate an All Call.
- ★ If called by a master and sub at the same time, reply to the master's call handsfree first. When the Occupied LED goes off, select the sub station that called.



■ Calling a master or sub:

1. Depress a station selector button 1 ~ 10.
2. Press the TALK button to speak, and release to listen to the reply.
3. If you wish to ring a tone as an attention-getter, press the PRIV (privacy) and TALK buttons together. Release the PRIV button and hold the TALK button down to speak to the called station.
4. To conclude, depress OFF button.

■ Receiving a call from a sub station:

1. Sub station calls in with tone and LED, which stays lit for 20 seconds.
2. Depress the lit station selector button.
3. Press the TALK button to speak, and release to listen.
4. Depress OFF button when finished.

■ Receiving a call from another master:

1. When a master calls to another master, no station LEDs light up, and the responding master answers back handsfree.
2. The Occupied lamp will be on while the initiating master has a station selected.
3. Do not press any buttons on the master when responding to another master's call. If the privacy feature is engaged, press TALK button momentarily to release before responding. To set the master in privacy mode after communication, press PRIV button again.

■ Door answering (from a master station only):

1. Audio door station calls in with an electronic call tone & LED, which stays lit for 20 seconds.
NOTE: A 4-stroke chime tone can be heard through the inside stations when a door station calls in if the BG-10C is included in the system. (Up to 3 door stations can activate chime sound.)
When PanTilt MK door station calls in, MYH-CU monitor turns on, and will stay on for approximately 45 seconds.
2. Depress the lit selector button, then press TALK to speak, release to listen.

■ Door release with "LOCK" button:

LEF-5, LEF-10, and LEF-10S provide selective door release to multiple doors (One RY-PA for each door). When communication is established to a door station, press the "KEY" button to release the corresponding door strike.

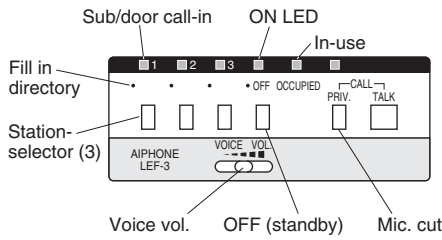
■ All Call with "ALL CALL" button:

On LEF-10S station only, the ALL CALL feature allows an announcement to be made to all the stations in the system.

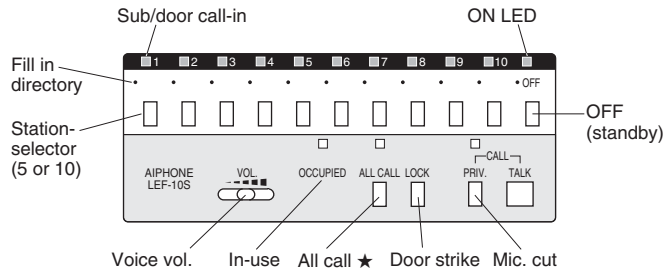
IMPORTANT: The BG-10C is required to make this feature operable.

1. Press ALL CALL button.
2. Press TALK to make an announcement.
3. Press ALL CALL button again to release.

OPERATION PANEL FOR LEF-3



OPERATION PANEL FOR LEF-5, 10, 10S



★ LEF-10S only

■ BG-10C All Call, Chime, and Music Adaptor:

Music is selectively distributed to all LEF station speakers, controlled by switch settings in BG-10C. When any station initiates a call, the music mutes automatically. When door station calls in, chime tone is transmitted to selected inside stations, controlled by switch settings.

■ Privacy (PRIV) feature:

When PRIV button is depressed, the calling master can call into a station in “privacy” mode, but the “listen” mode is cut off. To release from PRIV, press TALK momentarily.

■ LE sub stations:

To call a master station:

1. Simply press the CALL button, which rings an electronic tone (for as long as button is held). The corresponding LED will be lit for approximately 20 seconds.
2. When master replies, speak handsfree.
3. LE-A3 and LE-AN3 can selectively call to up to 3 LEF master stations.

■ When called by a sub station while talking to another station:

The station’s LED will light for 20 sec., but call tone is muted. (NOTE: If A/B switch is set to “B” position, the call tone will be heard at a muted level, even if the receiving station has another station selected.) Depress OFF button to disconnect from original call, the depress the selector button with lit LED to answer the next call.

7 LEF system Troubleshooting Guide

	Problem	Solution
Single-master system	1. No call tone or LED when sub calls master (2-wire connection).	Make sure jumper is installed between E and – at the subs and the master station.
	2. Call tone works, but no communication, or communication works, but no call tone.	Same as above; E & – jumper must be in place. If 3 wires are used, 1 & – are for call-in, and 1 & E are for communication. Check continuity and connection of wires.
Mult-master system	3. Master stations cannot call each other.	The “C” terminal of the master means “CALL”, and allows master-to-master communication. Make sure the “C” terminal of each master is connected to a designated # terminal on all other masters. (example: C at master 1 connects to the “1” terminal of all other masters.)
	4. Call tone is too loud or too soft.	Adjust call tone volume with slide switch located under directory cover. (Remove cover and use small screwdriver to adjust.)

	Problem	Solution
Mult-master system	5. LED lights don't light up when calling master-to-master.	Station LEDs only light when a sub station calls. A responding master answers handsfree, and therefore does not have to select a station number.
	6. Occupied light is always on.	Make sure all masters are in the OFF (standby) position. The station whose LED above the OFF button is lit is the one that's on. Check "R" wire for a short to ground. Take R wire off of terminal. If Occupied light remains lit, the unit is damaged and needs repair.
	7. Call tone and LED from subs work fine, but no communication, or vice versa.	Check E and – wires from sub for proper connection to master. See # 2 solution above.
	8. When sub calls in, multiple LED lights come on.	Make sure station number wires are not shorted together. Remove all jumpers between E & – (in multi-master system). Test master station by taking wires off of affected station #'s, then touch a jumper wire between a station number and negative. If multiple LEDs light up, the unit has sustained power surge damage and must be sent in for repair.
	9. Door release doesn't work.	RY-PA relay is required for each door to be released. Connect black wires to L & –. For selective door release, connect RY-PA between K# (matching station # that door is on) and L, which provides 12V DC when "key" button is pressed.
	10. All Call from LEF-10S doesn't work.	All Call requires the BG-10C Adaptor with PS-1225UL power supply.
	11. Chime from door station doesn't work.	BG-10C must be installed. Wire from door station must connect to BG-10C, "1" of door to DA/DB/DC of BG-10C. Neg. (–) must be connected from LEF master to BG-10C.
	12. Chime from door works, but electronic call tone in LEF masters also is heard.	Door station should be wired directly to BG-10C or first master. Make sure the A/B switch on the back of the LEF master is in the "A" position. Make sure "R" line is connected between LEF master and BG-10C.
	13. All Call doesn't work, but BG-10C is included in system.	Check connection from P1, P2, P3 terminals from LEF-10S to BG-10C. P1 should be 10V DC or higher when All Call button is engaged. P2 and P3 carry the voice signal from the initiating master to the BG-10C. Be sure to press TALK while making an All Call announcement, and press All Call button when finished.
	14. All Call pretone and voice volume are too loud or too soft.	Adjust volume levels on front of BG-10C (located behind metal cover plate).
	15. When an All Call is initiated, all of the LEDs corresponding to sub station channels light up.	Make sure jumpers between E & – are removed. When using the BG-10C for All Call in a system with sub stations, a non-polarized capacitor (NP-25V) must be installed in series on each station # line that a sub station is on between the BG-10C and LEF-10S. (See diagram on pg. 11)
	16. Feedback is heard between intercom stations in adjacent rooms.	Intercom stations should not be mounted back-to-back on the same wall. If they are, they must be installed at least two feet (60cm) apart with insulation isolating them. Adjust voice volume control downward to eliminate feedback.
	17. Communication to another station is very weak.	Adjust "Voice Vol." upward. Make sure the "1 and –" terminals from sub to master are not reversed.
	18. LEF system has AC hum when listening to another station from a master station.	System wiring must be run at least 20" (50cm) away from AC wiring, fluorescent lights, or dimmer switches. Wires can cross AC at 90 degrees. If shielded wire was used, tie all of the shields together and ground one end to an earth ground. If noise persists, isolate source of the noise and separate the intercom from the source.

8 TECHNICAL PRECAUTIONS

IMPORTANT:

- Aiphone Corporation is not responsible for improper installations of its product which result in interference generated by dimmer switches, fluorescent lighting fixtures or other similar electrical devices. Any such installation must be corrected at the source by the installing party. Aiphone also recommends that when installing any of its communication products that the intercom wiring be run at least 20 inches (50 cm) away from any AC wiring.
- In an LEF/MK video system, run a separate LEF audio cable and MK video cable. Using the same cable for both audio and video systems will cause severe interference with the LEF audio communications.
- ★ Clean your LEF equipment with a soft cloth dampened with neutral household cleanser. Never use an abrasive cleaner or cloth.

9 SPECIFICATIONS (LEF)

- Power source:** 12V DC, 300mA per station.
Use one PS-1225UL (or PS-1225S) power supply (2.5A) per system.
- Communication:** Press-to-talk, release-to-listen at master station.
★ Master-to-master calling does not turn on station LED at receiving master.
- Talk channel:** 1 channel (talkpath). Occupied LED is lit when the system is in use.
- Output:** 800mW at 20 Ω (reception). 500mW at 20 Ω (transmission).
- Wiring:**
- Single-master system: 2 wires homerun.
 - Between LEF masters: Min. 5 common(*) + total No. of stations in the system, looped (See pg. 4)
(*)9 common wires are required if All Call and Door Release are included, plus total number of stations in the system (plus add'l wire per door if selective door release is included).
 - Intermixed system: 3 wires per sub, homerun to the nearest master, or 2 common + 1 individual wire per sub, looped.
- Door release button contact:** 30V DC, 0.1A (resistance load). ("LOCK")
- Select switch contact:** 12V DC, 30mA (for external device control).
- Wiring distance:**
- | | | | | | |
|----------|---------|---------|-------|--------|--------|
| 0.65mm φ | 0.8mm φ | 1.0mm φ | 22AWG | 20AWG | 18AWG |
| 200m | 300m | 480m | 650' | 1,000' | 1,600' |
- Dimensions & weight:**
- LEF-3: 180 H x 143 W x 55 D (mm). 7-1/16" H x 5-5/8" W x 2-3/16" D.
420g, 0.93 lbs. approx.
- LEF-5, 10, 10S: 206 H x 190 W x 55 D (mm). 8-1/8" H x 7-1/2" W x 2-3/16" D.
550g, 1.21 lbs. (LEF-5). 650g, 1.43 lbs. (LEF-10, 10S).

WARRANTY

Aiphone warrants its products to be free from defects of material and workmanship under normal use and service for a period of one year after delivery to the ultimate user and will repair free of charge or replace at no charge, should it become defective upon which examination shall disclose to be defective and under warranty. Aiphone reserves unto itself the sole right to make the final decision whether there is a defect in materials and/or workmanship; and whether or not the product is within the warranty.

This warranty shall not apply to any Aiphone product which has been subject to misuse, neglect, accident, or to use in violation of instructions furnished, nor extended to units which have been repaired or altered outside of the factory.

This warranty does not cover batteries or damage caused by batteries used in connection with the product.

This warranty covers bench repairs only, and any repairs must be made at the shop or place designated in writing by Aiphone. Aiphone will not be responsible for any costs incurred involving on site service calls.