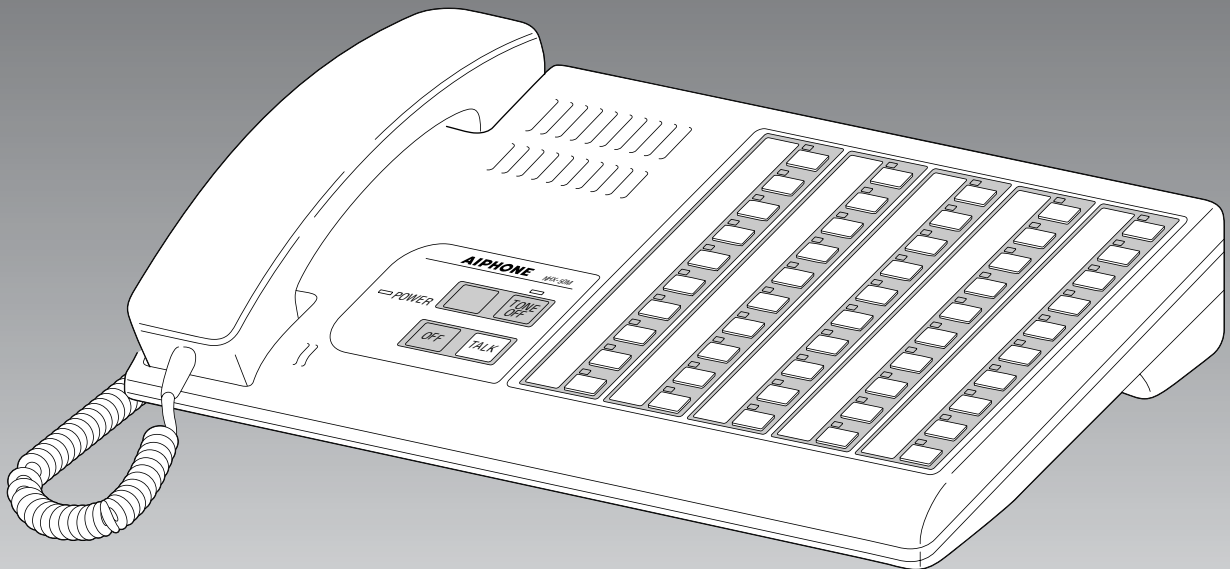


HEALTH CARE COMMUNICATION SYSTEM

NHX SYSTEM

OPERATION MANUAL



Listed UL1069



Certified for Canada

- Prior to use, the contents of the Operation Manual must be thoroughly read and understood for safe and proper operations of the NHX system. Please keep this Manual for future reference.



PRECAUTIONS ON NHX SYSTEM


WARNING


(Negligence could result in death or serious injury)


PRECAUTIONS

(Negligence could result in injury or damage to property)

GENERAL PRECAUTIONS








: Prohibitions to dismantle equipment.

: Prohibitions to subject the equipment to water.

: Take the unit to earth ground.




WARNING

1. Do not connect a power supply other than Aiphone Model PS-24E or PS-2420 to terminals +, – on NHX-80X. Doing so can cause fire or damage to the unit. 
2. Do not change or modify NHX equipment. 
3. The NHX equipment must not be exposed to water or any other liquid. 
4. Do not open NHX-80X without first unplugging power supply(ies) to prevent electric shock. 
5. Make sure wires are connected properly before plugging in the power supply(ies). 
6. Keep AC cord free from being pulled or crushed. 
7. Do not plug or unplug with wet hands. 
8. Keep AC outlet away from moisture and dust.



PRECAUTIONS

1. Mount the NHX-80X unit on wall in a convenient location, but not where it could be bumped or jarred.
2. Do not install NHX components in any of the following locations, as it may cause the system to malfunction;
 - High or extreme cold temperature area: under direct sunlight, near equipment that varies in temperature, in front of air-conditioner, inside a refrigerated area, etc. 
 - Places subject to moisture or humidity extremes.
 - Places subject to environmental conditions, such as oil, dust, chemicals, salt, etc.
 - Places subject to constant vibration or impact.
3. Take to earth ground every bed of metal pipe construction to protect Bedside sub stations and hand-held call buttons from ESD(Electrostatic discharge).



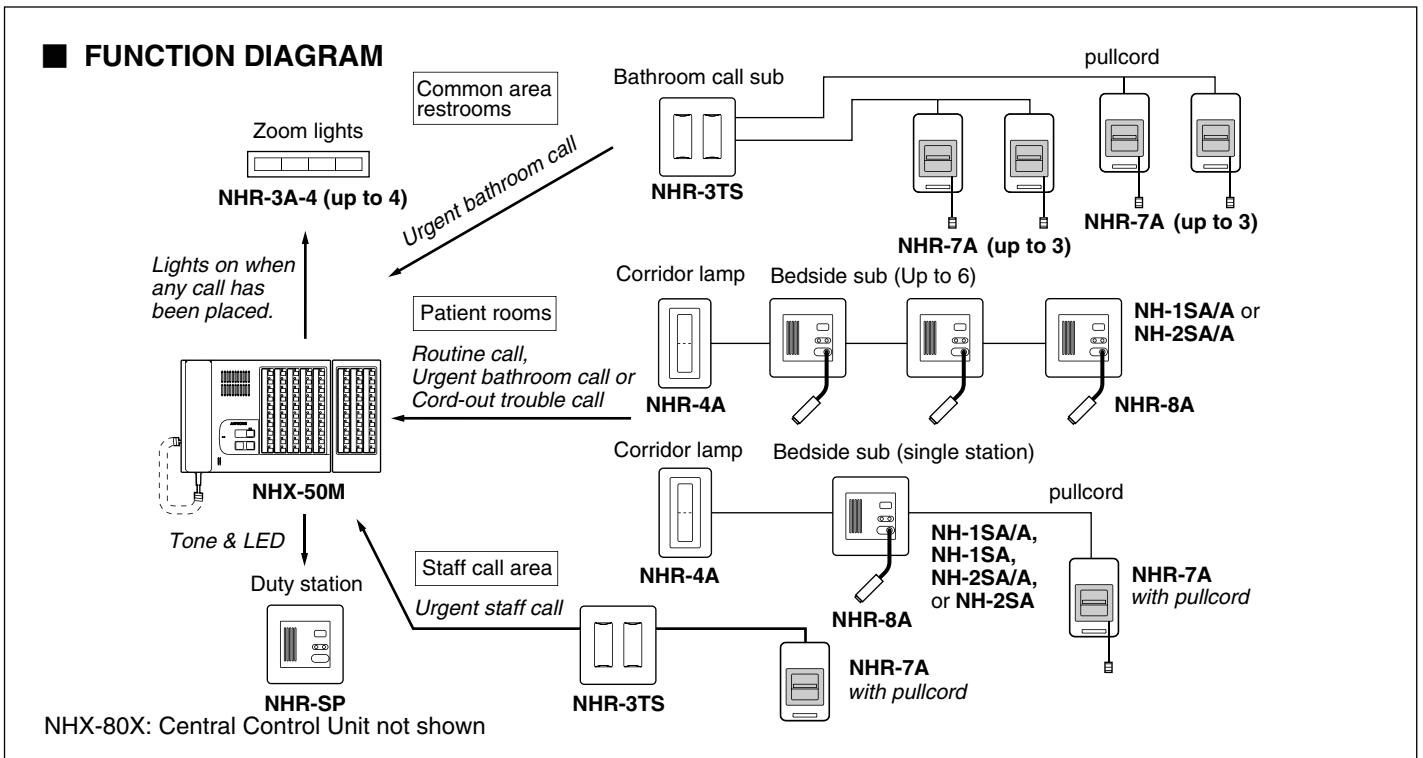
GENERAL PRECAUTIONS

1. NHX system is not operable during a power failure.
2. In areas where broadcasting station antennas are close by, NHX intercom system may be affected by radio frequency interference.
3. Keep all DC wiring at least 30cm, 20" away from AC100~240V wiring, fluorescent lighting, or dimmer switches. Cross AC wiring at a 90° angle.
4. Do not connect any devices other than the Aiphone Models covered in this Manual.

Bedside sub station models

NH-1SA/A or NH-2SA/A are bedside sub stations which can be installed multiply in multi-station patient room. Their appearance and operation are exactly the same as NH-1SA and NH-2SA, and differ only in lamp lighting conditions on the corridor when multiple calls of different levels have been placed within a room.

Outline of NHX system



Capacity

Single-master system with 50 station master and 30-station expander, for maximum capacity of 80 stations.

Communication

1. Communication is hands free at the room station, and push-to-talk or voice-actuated handset at the master station.
2. Three types of call-in signals : routine, urgent call, or cord-out trouble call, identified differently by tone and LED light.
3. Press TONE-OFF button at master to mute incoming call tone if necessary.
4. To begin communication, simply lift handset or press TALK button.
5. To initiate a call, press selector button. Corridor lamp and zone light do not light when a call is initiated from the master station.

Basic operations

Reply by intercom for routine calls only, or press CANCEL button on the bedside sub station. To respond to an urgent or cord-out trouble call, press TONE-OFF button at master and go directly to calling location. Reset the call at the calling station.

Bedside sub station

Bedside sub station hears a pretone when channel is selected, then the voice of the person calling from the master station.

Call-in priority

1. Master station automatically connects to the highest priority call first when multiple calls have been placed.
2. Call-in signals during communication light the LED on the master and have an audible tone.
3. Up to 5 incoming calls are displayed at the master at a time. Additional calls will be held in queue and will be displayed and answered in order of priority.

Accessories

1. Zone light will light when any call is placed (if stations are wired for zone lamp feature).
2. NHR-3TS Common area Call Station places an urgent bathroom call or urgent staff call in an area where there is not a bedside sub station.
3. Duty Station annunciates the call-in signal the same as at the master station.

Volume adjustments

Adjust receive and call tone volumes as needed (on side of master). Preset volume controls are on the bottom of the NHX-50M.

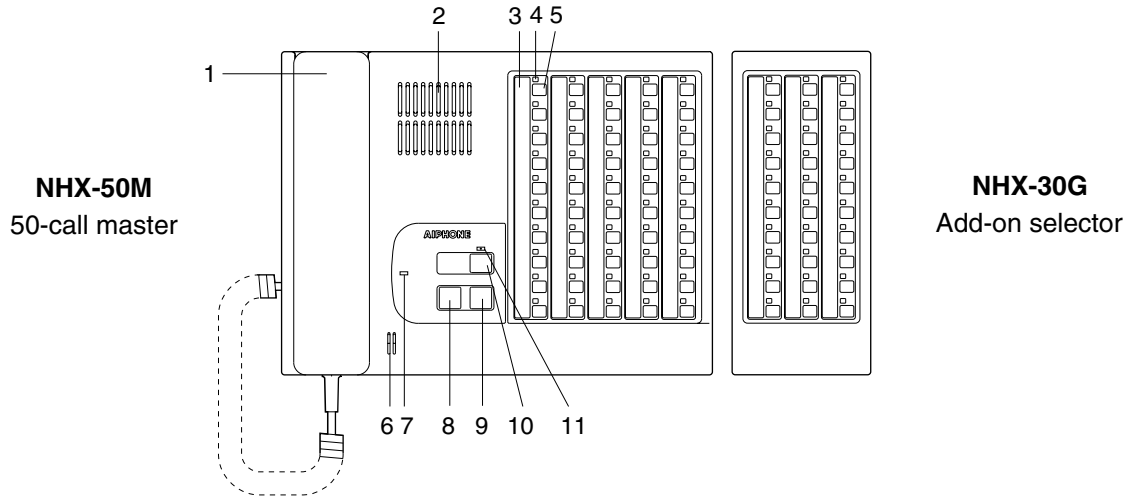
Resetting system

System resets itself when NHX-80X power switch is turned off and back on again.

Line-off Trouble indication

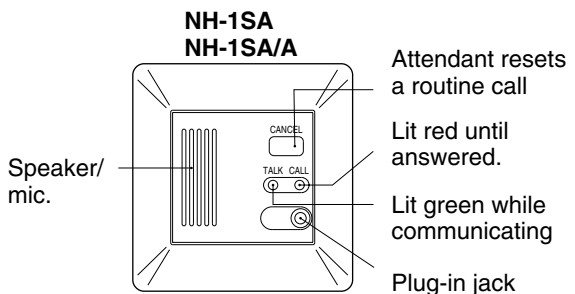
Line-off Trouble at the NHX-50M sounds when wires to the sub stations or duty station are shorted or broken.

NHX-50M Master Station



- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Handset 2. Speaker 3. Zone directory 4. Sub call-in LED 5. Sub selector button 6. Mic. 7. Power on LED 8. OFF button 9. TALK button 10. TONE-OFF button 11. Attendance LED | <p>Used for private communication, voice-actuated. Simply pick up when called.</p> <p>Annunciates sub station voice or call tone, with adjustable volume.</p> <p>Fill in room No. of each zone.</p> <p>Illuminated when Sub station calls in. Blinking indicates level of urgency.</p> <p>Used only when initiating a call for verbal communication.</p> <p>Activated in press-to-talk mode. Indicates the powered status.</p> <p>Concludes press-to-talk communication for standby.</p> <p>When called, simply press TALK button to establish channel.</p> <p>For any call, press TONE-OFF button and immediately go to the calling location. (no communication)</p> <p>When TONE-OFF button is pressed, the LED call-in lights remain lit until the call has been acknowledged.</p> |
|--|---|

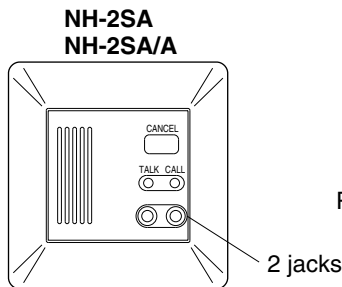
NH-1SA/A, NH-1SA, NH-2SA/A, NH-2SA Bedside Sub Stations



- **To activate a call;**
 - Routine call:** Push button on hand-held call cord.
 - Bathroom call:** Pull down cord of bathroom call switch.
 - Cord-out trouble call:** Pull the hand-held call cord out of the room station.

- **Receiving;**

In standby, pre-tone sounds, or when NHX-50M replies to the call, person at master begins speaking. Reply toward the unit hands free.

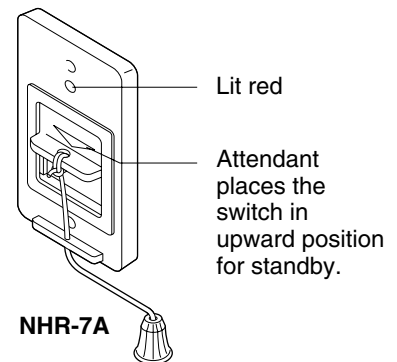


- CANCEL:** Attendant presses the button to cancel call signal.
- TALK:** Green LED is on during communication.
- CALL:** Red LED is lit until answered at master or reset at room.

★The NHR-8A must be securely plugged into the jack, otherwise a call to the NHX-50M will not be completed. If a call button is not used, plug in the NHR-DP dummy plug.



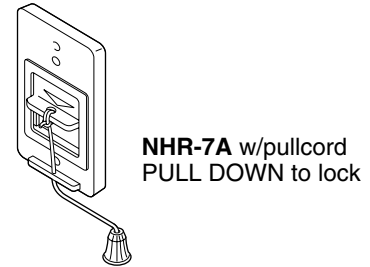
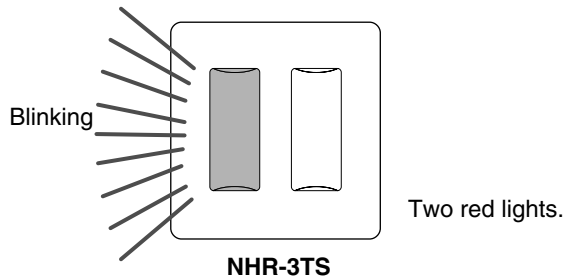
• In bathroom



NHR-3TS Bathroom Sub Station

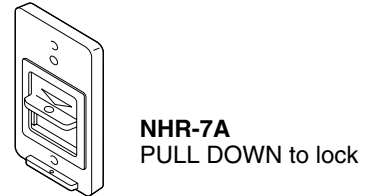
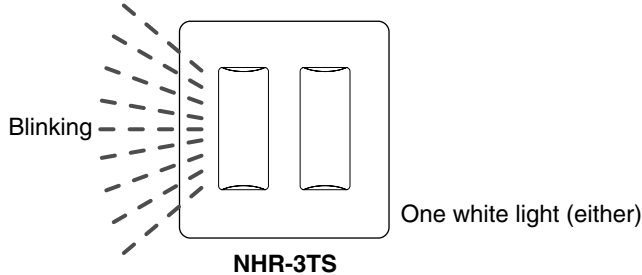
NHR-3TS is acknowledged as sub station. Pull down on NHR-7A switch to call. The NHX-50M is notified with tone and LED of urgency level. Press TONE-OFF and go to calling location.

- **At common area bathroom**



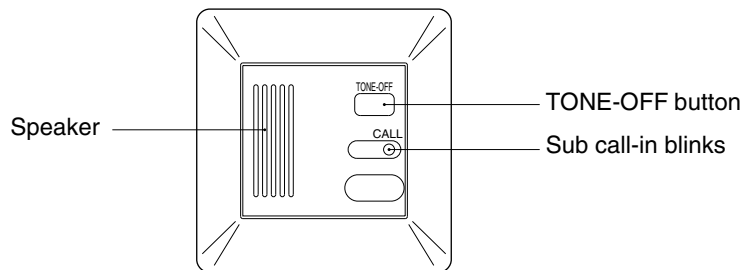
At bathroom, pull down on cord to activate a bathroom call. The NHR-3TS corridor lamp will blink red.

- **In the hallway**



In the hallway, pull down lock switch for calling staff. The NHR-3TS corridor lamp will blink white.

NHR-SP Duty Station



* **Speaker volume is adjusted at the NHX-50M.**

When a bedside sub station has placed a call of any level, Duty station annunciates by tone & light.

1. Call tone sounds and the CALL LED blinks the same as on the NHX-50M.
2. Press TONE-OFF button to silence tone.
3. The NHX-50M keeps on ringing. Look at NHX-50M to identify calling room.

Notes:

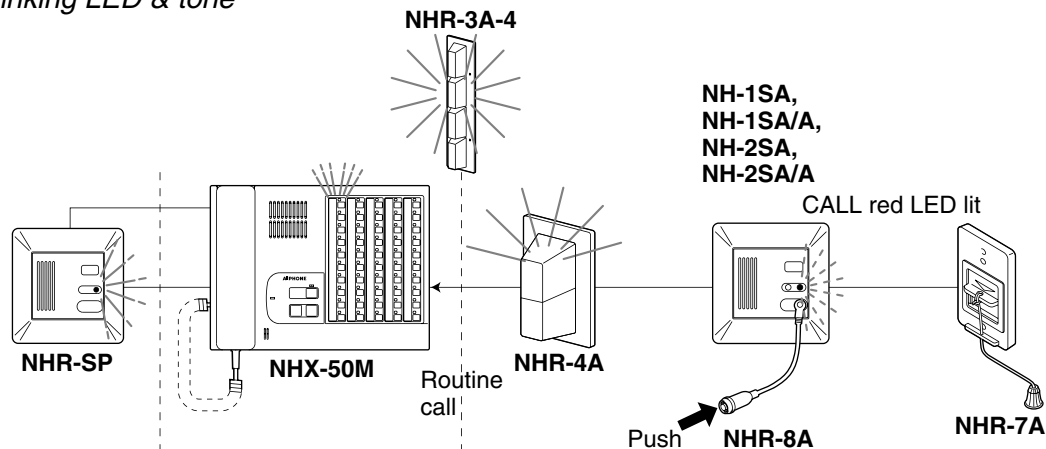
1. When the NHX-50M begins communication, both tone and LED are deactivated.
2. The NHR-SP will sound the call tone every 90 seconds after call is placed. It will no longer sound when TONE-OFF button is pressed. (Tone will resume when another sub calls in).

Routine Call

Bedside sub station: NH-1SA/A, NH-1SA, NH-2SA/A or NH-2SA usually calls in by pressing hand-held call button.

Duty station	Master station	Zone light	Corridor lamp	Bedside sub station	Bathroom pullcord
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Blinking LED & tone



Step	Stations	Tone	Light	Operations
1.	Bedside sub station	—	CALL LED (red)	Initiator: Press hand-held call cord.
2.	Corridor lamp	—	White lamp steadily lit.	Press TONE-OFF and go to master to see which station is calling.
2.	Zone light	—	One lamp is lit (1~4).	
2.	Master station	Single chime every 6 sec.	Sub call-in LED (red) blinking, every 2 sec.	
2.	Duty station	Single chime every 6 sec.	CALL blinking red every 2 sec.	
3.	Attendant (Master station)			Lift handset or press TALK button. Talkpath is automatically established. Speak via handset, or use push-to-talk button.
4.	Bedside sub station		TALK LED (green)	After NHX-50M replies, talk hands free.
5.	Attendant (Master station)			To conclude; Replace handset or press OFF button to reset the call, or press TONE-OFF button. Go to calling station. Press CANCEL button to reset the call.

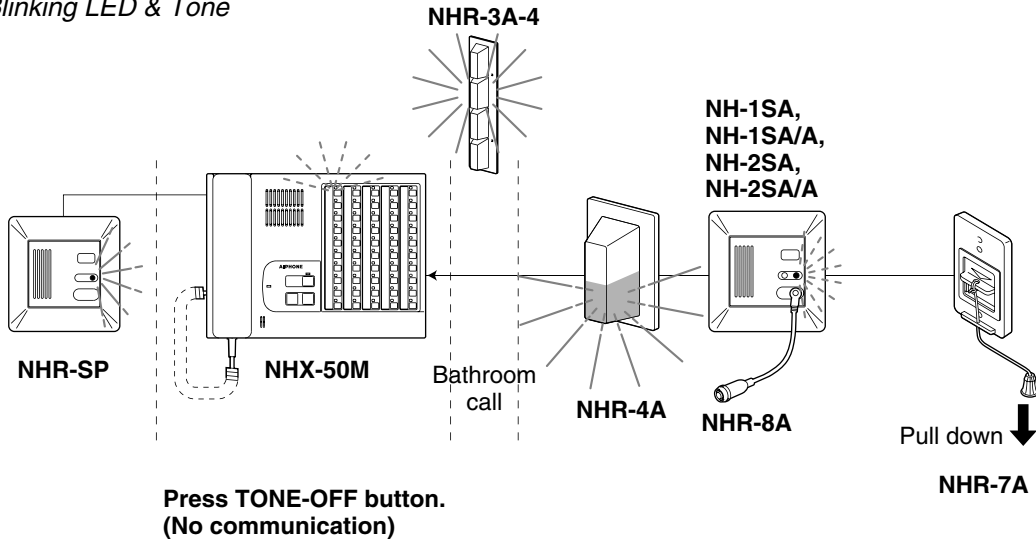
Note: Both tone and light turn off on duty station when NHX-50M begins communication.

Bathroom Call

Bathroom call is an urgent call originated from bathroom pullcord switch, wired to each Bedside sub station. The call-in lights on the same bedside sub station selector, but LED blinks twice as fast on the same LED.

Duty station	Master station	Zone light	Corridor lamp	Bedside sub station	Bathroom pullcord
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Blinking LED & Tone

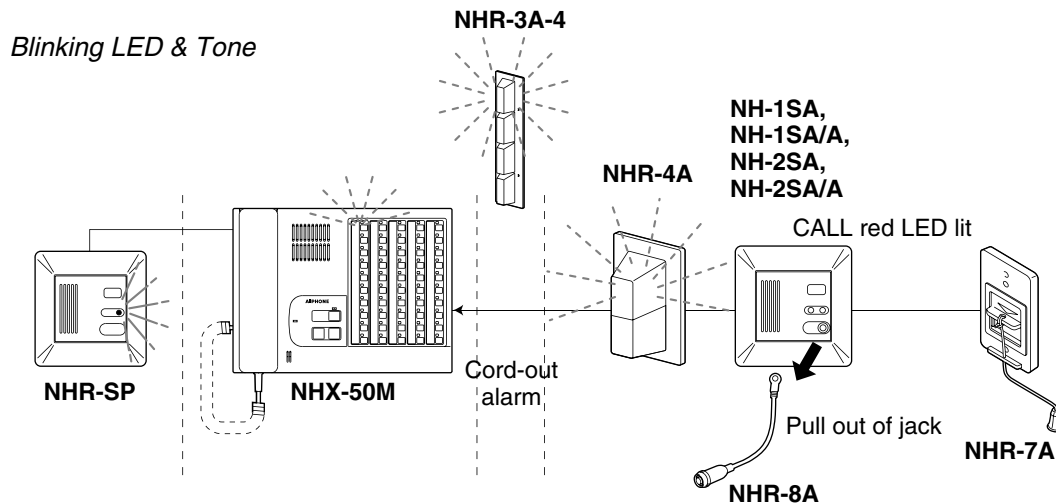


Step	Stations	Tone	Light	Operations
1.	Bedside sub station Bathroom pullcord	— —	— Red LED lit	Initiator: Pull down cord.
2.	Corridor lamp	—	Red lamp blinking	Press TONE-OFF button and go to master or room.
2.	Zone light	—	One lamp is lit (1~4).	
2.	Master station	Single chime every 2 sec.	Sub call-in LED (red) blinking, every 1.8 sec.	
2.	Duty station	Single chime every 2 sec.	CALL blinking red every 1.8 sec.	
3.	Attendant (Master station)			Press TONE-OFF button. Go to the Sub station.
4.	Bedside sub station Bathroom pullcord			Attendant: Move switch up to reset the call.

Cord-out Trouble Call

Bedside sub station activates a cord-out trouble call to the NHX-50M if the hand-held call button is unplugged.

Duty station	Master station	Zone light	Corridor lamp	Bedside sub station	Bathroom pullcord
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**Press TONE-OFF button.
(No communication)**

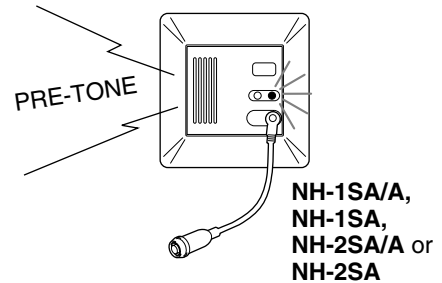
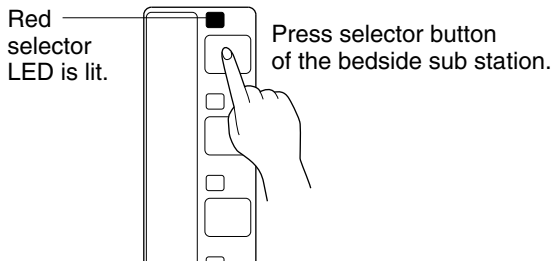
Plug into jack to reset the call.

Step	Stations	Tone	Light	Operations
1.	Bedside sub station	—	CALL LED(red)	Initiator: Pull Call button out of jack.
	Bathroom pullcord	—	—	
2.	Corridor lamp	—	White lamp blinking	Press TONE-OFF button and go to master or room w/lit corridor lamp.
2.	Zone light	—	One lamp is lit (1~4).	
2.	Master station	Single chime every 0.5 sec.	Sub call-in LED (red) blinking fast, every 0.4 sec.	
2.	Duty station	Single chime every 0.5 sec.	CALL blinking red every 0.4 sec.	
3.	Attendant (Master station)			Press TONE-OFF button. Go to the Sub station.
4.	Bedside sub station			Attendant: Plug cord into the jack to reset the call.

⚠ THE NHR-8A CALL BUTTON MUST BE SECURELY PLUGGED INTO THE JACK. OTHERWISE, CALL TO THE NHX-50M WILL NOT BE COMPLETED.

Placing a call to Bedside sub

The NHX-50M initiates a selective call to a bedside sub station NH-1SA/A, NH-1SA, NH-2SA/A or NH-2SA.



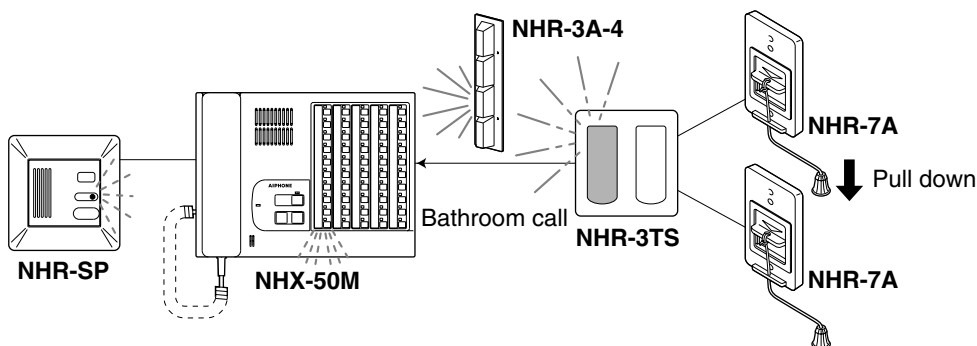
1. Press the selector button of the sub station desired.
2. Either press TALK button or lift handset, and the channel is established.
3. Communicate with the bedside sub.
4. At conclusion, hang up handset or press OFF button.

At sub station;

A call from the NHX-50M is initiated with a pre-tone. When communication is heard from NHX-50M, simply talk back toward the sub station.

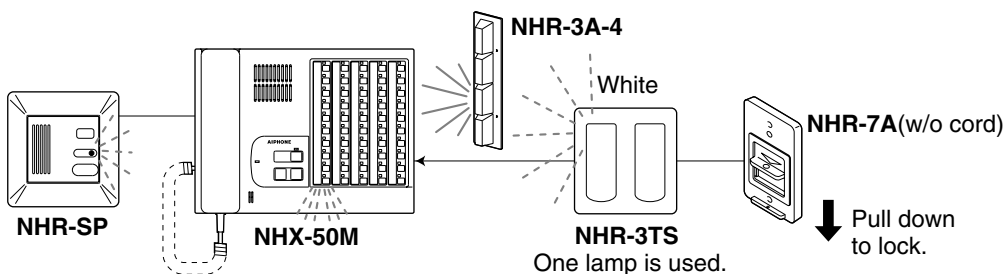
Note; The NHX-50M has 15-second selection timer. Within that time, the last sub communicated with will be connected if the handset is picked up or TALK button is pressed.

Common Area Urgent Bathroom Call



1. Pull down Pullcord on NHR-7A.
2. NHR-3TS corridor lamp blinks red.
3. The NHX-50M master station is called by tone & LED (urgent call level).
4. Press TONE-OFF button, and go to calling location. Unlock the switch by sliding it upward.

Common Area Urgent Staff Call



1. Slide down switch on the call station.
2. NHR-3TS corridor lamp blinks white.
3. The NHX-50M master station is called by tone & LED (urgent call level).
4. Press TONE-OFF button and go to calling location. Unlock the switch by sliding it upward.

■ Call tone & light annunciation

(*) Tone ring & light duration time is approximate.

Type of calling		Call tone	Light
At NHX-50M Master station			
• Receiving	Routine call	Single chime, every 6 sec.	Blinking, every 2 sec.
	Bathroom call (urgent)	Single chime, every 2 sec.	Double blinking, every 1.8 sec.
	Cord-out trouble call	Single chime, every 0.5 sec.	Blinking fast, every 0.4 sec.
• Line-off trouble	Bedside sub from Trunk	Slow buzzer, intermittent	Lit 0.2 sec., every 2 sec.
	Duty station from NHX-80X	Faster buzzer, intermittent	No light
• When called while busy		Call tone audible as above.	Call-in LED steadily lit

At NH-1SA/A, NH-1SA, NH-2SA/A or NH-2SA Bedside Sub station

• Placing	Routine call	—	CALL steadily lit
	Bathroom call (urgent)	—	CALL lit on
	Cord-out trouble call	—	CALL steadily lit.
• While talking		—	CALL is off, and TALK is on.
• When master calls in		Pre-tone	TALK is on

At NHR-4A Room Corridor lamp (white/red)

• When Sub placed a call	Routine call	—	White steadily lit
	Bathroom call (urgent)	—	Red blinking
	Cord-out trouble call	—	White blinking
	While talking	—	Not lit

At NHR-3A-4 Zone light

• When Sub called	Routine call	—	} 1 ~ 4 lamp turns on for any call from Bedside sub or NHR-3TS.
	Bathroom call (urgent)	—	
	Cord-out trouble call	—	

At NHR-3TS sub station (w/corridor lamp) in Common area or Hallway

Placing	Bathroom call (urgent)	—	Red blinking on NHR-3TS
	Staff call (urgent)	—	White blinking on NHR-3TS

At NHR-SP Duty station

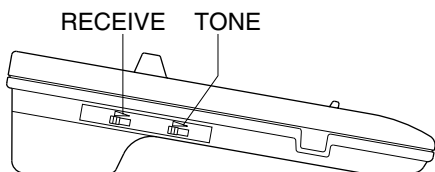
• When Master received	Routine call	Single chime, every 6 sec.	CALL blinking, every 2 sec.
	Urgent call	Single chime, every 2 sec.	CALL double blinking, every 1.8 sec.
	Cord-out trouble call	Single chime, every 0.5 sec.	CALL blinking fast, every 0.4 sec.
While Master talking		—	Not lit

Calling from NHX-50M

When NHX-50M has called a bedside sub station, no light turns on the corridor lamp or zone light, and sub station's TALK LED is lit green.

TECHNICAL PRECAUTIONS

1. Volume adjustments

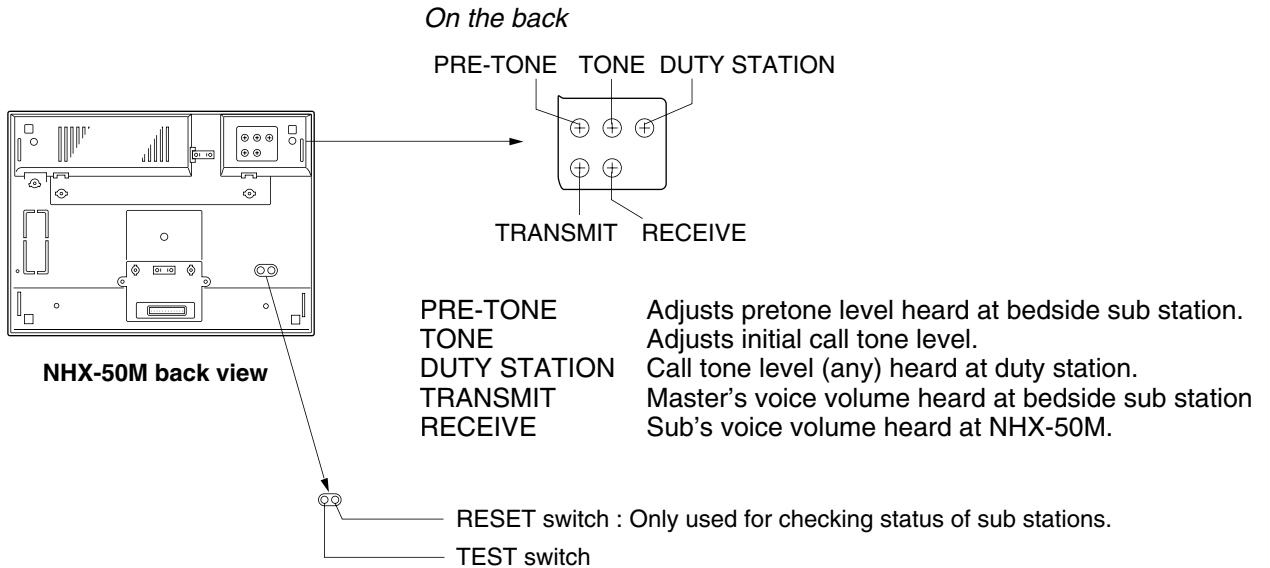


NHX-50M side view

On left side

RECEIVE Adjusts speaker voice volume, 3 positions.
TONE Call tone, 3 positions.

1. Volume adjustments (continued)



2. NHX system is not operable during a power failure. Battery backup must be provided by installing contractor for continuous operation during power outage.
3. All NHX station models are electrical devices, which must not be exposed to water or any other liquid.
4. The system is rated to operate at temperatures 10°C ~ +49°C (50°F ~ +120°F).
5. If NHX system does not operate properly, turn power switch on the NHX-80X off, then on again. If system is not restored to normal operation, call installing dealer or Aiphone.

6. Line-off trouble

This feature is a buzzer tone annunciation when wires to the subs, bathroom station, or duty station are shorted or broken. The tone cannot be muted by pressing the TONE-OFF button.

If a slower buzzer sounds and a station's call-in LED blinks on a particular sub selector, try communication by either lifting the handset or pressing the TALK button. (The tone will stop if the station is operational.)

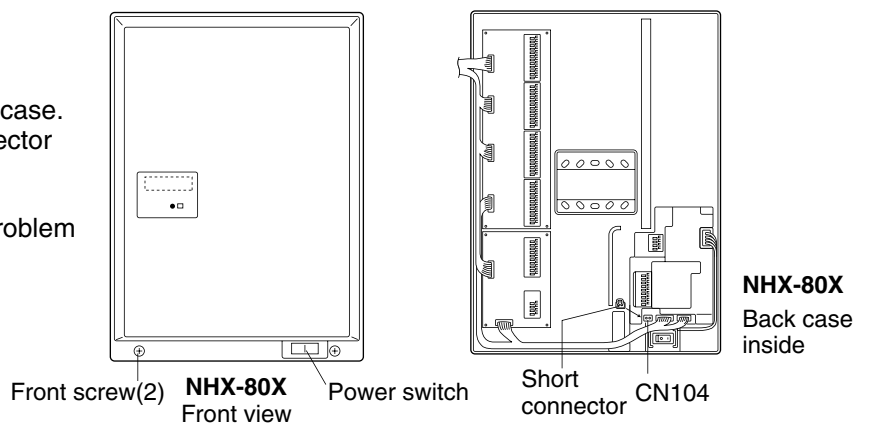
If a buzzer tone is faster with no LED blinking, the line is broken to the Duty station.

As a temporary solution to stop the buzzer, plug in short connector (CN104) located on bottom section of NHX-80X Control Unit. Call the installing dealer or Aiphone immediately.

To stop the line-off trouble of Duty station;

1. Turn off the power switch.
 2. Loosen screws on front panel.
 3. Pull at bottom, and lift the cover off the back case.
 4. Locate the CN104 and install the short connector (attached to internal wires).
 5. Turn the power switch back on.
- NHR-SP will no longer be operational until problem is resolved and CN104 is disconnected.

To restore, call the installing dealer or Aiphone.



7. Operational modes in multi-station patient room application (only for NH-1SA/A & NH-2SA/A)

When single or multiple calls have been placed from the same patient room corridor lamp will be activated as follows;

Type of calls placed			Corridor lamp	
Sub1	Sub2	Sub3	Red	White
Routine	—	—	—	Steady
—	Bathroom	—	Blinking	—
—	—	Cord-out	—	Blinking
Routine	Bathroom	—	Blinking	Steady
Routine	—	Cord-out	—	Blinking
—	Bathroom	Cord-out	Blinking	Blinking
Routine	Bathroom	Cord-out	Blinking	Blinking

7. Cleaning

Clean the NHX stations with a soft cloth dampened with neutral household cleanser.
Never use any abrasive cleaner or cloth.

8. Markings

In accordance with CSA C22.2 No.125-M1984, the 4th Edition Standard For Electromedical Equipment the following NHX Series units are provided with the "Risk Class 1 Part" (and in French-"Risque La Pièce Class 1") marking.
Model: NH-1SA, NH-2SA, -1SA/A, -2SA/A Patient Stations;
Model NHR-7A Bath Pull-Cord Stations;
Model NHR-8A Call Cord.

SPECIFICATIONS

- Power source: NHX-80X: DC 24V. 4A (max.).
- Power supply: Two PS-24E or PS-2420 power supplies are connected to NHX-80X CCU.
- Station capacity: 50 bedside sub stations, including bathroom call sub stations (NHR-3TS). Expandable to 80 sub stations. Install the NHR-30K Expansion Card and add NHX-30G to the NHX-50M.
- Communication: Handset voice-actuation or press-to-talk communication at NHX-50M master (on single and non-open channel). Hands free at bedside sub stations.
- Call-ins:
 1. Routine call from bedside sub station.
 2. Bathroom call (urgent) with pullcord.
 3. Cord-out trouble call at bedside sub.
 4. Common area urgent bathroom call
 5. Hallway urgent staff call
- Priority: In the order of time of call and urgency level;
Up to 5 calls displayed. At the end of each call, the next call is automatically connected.
- Warning tone: Line-off trouble (See Technical Precautions section).
Off-hook alarm after the handset is off-hook for 90 seconds with no communication established.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Increase the separation between the equipment and receiver.
- Consult the dealer or an experienced radio/TV technician for help.

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.

AIPHONE CO., LTD., NAGOYA, JAPAN
AIPHONE CORPORATION, BELLEVUE, WA, USA
AIPHONE EUROPE N.V., ANTWERP, BELGIUM

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