



**IL600**  
**SECTION E**  
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**Tek-DIGICARE®**  
**NC205 Nurse Call System**

**UL® Listed 1069**

**INSTALLATION INSTRUCTIONS**  
**AND SERVICE MANUAL**



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**APPLICATION:** The NC205 Tek-DIGICARE® Nurse Call System is a microcontroller based system consisting of central equipment cabinet(s) along with patient/duty/staff/emergency/code/presence stations, dome/zone lights, and master stations.

The NC205 Series is designed for use in individual hospital wards, nursing homes, and congregate living centers.

## **Operation, Installation and Service Manual**

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## 1.0 SYSTEM INTRODUCTION

The NC205 Nurse Call System is a supervised, microcontroller based system that provides a complete range of two-way audio and visual signaling for staff-to-patient and staff-to-staff communications.

The NC250/NC230 Master Stations and NC255 Master Expander make up the control console where patient calls are registered and displayed. The control consoles provide facilities for:

- locating and dispatching staff personnel
- managing patient priority and privacy
- monitoring all emergency situations
- performing system configurations
- monitoring code, communication, station, and central equipment faults.

The NC205 Nurse Call System is complemented by a wide range of bedside stations and peripherals:

- duty and staff stations
- single and dual patient stations
- dome and zone corridor lights
- code, emergency, bath, and staff presence peripherals

The features of the master stations, bedside stations, and peripherals are discussed in greater detail in Section 3.0-System Equipment Description.

Simplified wiring and plug-in design provide ease of installation in new and/or existing facilities. Modular circuitry and interchangeable room stations permit the system to be easily upgraded and expanded at anytime.

### A WORD ABOUT ELECTROSTATIC DISCHARGE

**What Is It?** Static electricity is a result of triboelectric charging of two dissimilar nonconductive materials rubbed together, like rubbing your feet on a carpet on a cold winter day, or in a dry climate. The resulting charge is detected when you reach out to touch a doorknob or some other metallic object. The resulting discharge may be only startling, or in severe cases it may even be painful. The actual electrical charge is dependent on the materials rubbed together, humidity, rate of separation and other factors.

**What Can It Do?** While this effect may be disturbing to humans, the effect on electronic equipment is often more serious, ranging from disrupting the operation to actual damage of the components. These effects result from the high voltages that may be developed. The simple act of walking across a carpet may develop as much as 30,000 volts; changing a bed sheet may create a charge of 100,000 volts or more. Such voltages readily cause arcing (the spark you see in the dark when you grab the doorknob, after walking across the carpet, etc.). The arcing is evidence of a discharge path. Due to the high voltage involved, the discharge current can jump to any nearby metallic object. If the discharge is to or through an electronic device, such as the nurse call system, the operation of the device may be affected. If the discharge current passes through internal components, these components may be damaged or their operation degraded.

**What Can We Do About It?** The manufacturer of the nurse call equipment has already taken steps to protect the equipment from electrostatic discharge (ESD) effects. However, since the cause of the problem is not in the equipment, but in the environment, further measures are required of the installer and the user to achieve complete protection.

**What The Installer Can Do:** In humid climates or in places where the relative humidity is kept at 65% or greater, there will likely be few problems with ESD. Where problems may occur, the following measures can be taken.

1. Ground all exposed metal surfaces, such as patient station panels, etc. Grounding should be to a #14 or larger conductor.
2. Install nurse call system wiring in metal conduit. This conduit may also be used to ground panels. The conduit must be electrically continuous and be grounded.
3. Use shielded wire in cable for nurse call system station- to-station wiring. The use of open conductors invites inductive coupling of discharge currents which can cause the same problems as direct discharge currents.
4. Ground your body before handling system components. This can be done using a wrist strap, or simply by contacting a grounded surface. Use caution to avoid hazardous voltages while grounded.

**What The User Can Do:** The most common generation of ESD in hospitals is due to changing linen on hospital beds while the patient call cord or pillow speaker is still connected to the nurse call system. The following precautions will help.

1. Remove the call cord or pillow speaker from the bed before changing. It will be necessary for the nursing staff to discharge themselves by contacting a grounded metal object before placing the call cord or pillow speaker back on the bed; otherwise, a spark will jump to the nurse call equipment, causing the very damage they are trying to avoid. (To avoid a shock while discharging static electricity on the body, hold a metal object, such as a key, and use that object to contact the grounded surface.)
2. Ground the bed and use antistatic mattress covers in contact with the bed frame. For safety, it may be desirable to make the ground connection through a 1 megohm resistor. Nursing staff must be trained to disconnect and reconnect the ground whenever beds have to be moved.
3. Use grounded appliances and equipment near nurse call systems. The use of approved electrical equipment will usually take care of this.

This information is provided to make you aware of ESD problems so that precautions may be taken to avoid damage and disruption of system operation.



## 2.0 INSTALLATION PROCEDURE

*Read the following instructions concerning system equipment and determine installation methods before proceeding. Also review installation and power-up guidelines, section 2.9, when equipment has been received.*

- A. Determine equipment locations.*
- B. Install wiring.*
- C. Install housings.*
- D. Check wires.*
- E. Connect equipment.*
- F. Check connections.*
- G. Test system.*
- H. Configure system.*
- I. Train system operators.*

### 2.1 EQUIPMENT SUMMARIES

#### **NC260B Central Equipment**

The NC260B provides microcontroller, signaling, and power circuitry (except in applications requiring the PK261A) to operate the NC205 Nurse Call System. The central equipment may interface with up to four NC250/NC230 Master Stations and their NC255 Master Expanders, and one NC262A Central Equipment Expander. The central equipment consists of microcontroller, memory, interface, and power supply circuits. All outputs are protected by self-resetting current limiting circuitry. All equipment is completely contained in a hinged surface mount cabinet. A recommended backup battery kit is available.

#### **NC262A Central Equipment Expander**

The NC262A provides the additional circuitry necessary to interface with the NC260B Central Equipment and two additional PM261A Selector Cards. It also includes an additional power supply. This enables the system to be expanded to 128 remote stations.

NOTE: A 128 remote station (maximum) system would require:

- 1 - NC260B with 2 - PM261A's
- 1 - NC262A with 2 - PM261A's

#### **PK261A Dome Light Power Supply**

The PK261A Dome Light Power Supply provides power for dome lights connected to enhanced patients stations (IR254-259). Connections to dome light field wiring are provided via a plug-on connector.

#### **NC250 Master Station**

The NC250 utilizes digital technology to provide communications, fault monitoring, and programming for the NC205 Nurse Call System. The master station consists of a handset, volume control, speaker, microphone, 8 color-coded function buttons, 50 individual room selector buttons, and LED's for call priority, power, and fault. All LED's and buttons are on a spill-proof membrane switch assembly.

#### **NC230 Master Station**

The NC230 has the same functionality as the NC250 but provides 30 individual room selector buttons with LED's.

#### **NC255 - 50 Station Master Expander**

The NC255 provides the additional circuitry and buttons to expand the capacity of a master station by 50 rooms. Call LED's and selector buttons are on a spill-proof membrane switch assembly.

#### **PM261A Selector Card**

The PM261A provides connection points for up to 32 stations. Integrated digital and analog technology provide for reliable communications between system components. Each NC260B/NC262A is capable of supporting two PM261A Selector Cards to provide access for up to 64 IR Series Remote Stations.

#### **IR250 Standard Staff Station**

The IR250 provides reliable two-way, hands-free communication between the nurse master station and any location where staff members may need to originate calls or where cord sets are not required. It may also function as a push button patient station. The station contains a combination yellow "CALL-PLACED" indicator and "CALL" button, a combination red "IN-USE" indicator and "RESET" button, and a speaker/microphone. The IR250 is mounted on an attractive flame retardant type ABS plastic faceplate. The IR250 operates with single and dual lamp dome lights (LI381/LI382), and has inputs for "BATH/EMERGENCY" and "FIRE."

#### **IR251 Single/IR252 Dual Standard Patient Stations**

The IR251/IR252 stations include yellow "CALL-PLACED" indicator(s), patient call cord receptacle(s), a combination red "IN-USE" indicator and "RESET" button, and a speaker/microphone. The stations use 1/4" phone jack(s) and are mounted on attractive flame retardant type ABS plastic faceplates. Both provide outputs for single/dual light dome lights (LI381/LI382) and two peripheral devices ("EMERGENCY" and "FIRE").

#### **IR253 Standard Pull Cord Patient Station**

The IR253 has all the same functions as the IR251/IR252 Stations, but provides a patient pull cord instead of call cord jack. The IR253 consists of a yellow "CALL-PLACED" indicator, a combination red "IN-USE" indicator and "RESET" button, and a speaker/microphone. The IR253 is mounted on an attractive flame retardant type ABS plastic faceplate, and provides outputs for single and dual lamp dome lights (LI381/LI382) and two peripheral devices ("EMERGENCY" and "FIRE").

### **IR254 Enhanced Staff Station**

The IR254 provides reliable two-way, hands-free communication between the nurse master station and any location where staff members may need to originate calls or where cord sets are not required. It may also function as a push button patient station. The station has a combination yellow “CALL-PLACED” indicator and “CALL” button, a combination red “IN-USE” indicator and “RESET” button, and a speaker/microphone. The IR254 is mounted on an attractive flame retardant type ABS plastic faceplate. The IR254 includes supervision circuitry for code station and associated wiring, additional outputs for a three lamp (LI383) or four lamp dome light (LI387), and additional inputs for multiple peripheral devices. Power and select wires are supervised by central equipment.

### **IR255 Single/IR256 Dual Enhanced Patient Stations**

The IR255/IR256 have the same basic functionality as the IR251/IR252, but include microcontroller and supervision circuitry for code station and associated wiring, to interface with multiple peripheral devices. Both stations provide outputs for three lamp (LI383) or four lamp dome lights (LI387). Power and select wires are supervised by central equipment.

### **IR257 Single/IR258 Dual Enhanced Patient Stations**

The IR257/IR258 have all the same functions as the IR255/IR256 but use 8-pin modular jack receptacle(s) to interface with TekTone®’s SF301P Pillow Speakers or SF311/SF312 Series Call Cords.

### **IR259 Enhanced Multipurpose Station**

The IR259 is patterned after the IR254, but has no user controls. The IR259 is mounted on an attractive flame retardant type ABS plastic **blank** faceplate. It provides connections for **external** call and reset buttons, “CALL-PLACED” and “IN-USE” indicators, and an external speaker/microphone.

### **IR019C Speaker/Microphone Station**

The IR019C provides audio communication capabilities when used in conjunction with the IR259 Enhanced Multipurpose Station and features a durable stainless steel faceplate.

### **IR260A Duty Station**

The IR260A has all of the features and functions of the IR250, but includes an “EMERGENCY” LED indicator and microcontroller circuitry to display call information from specific zones on associated zone lights (see descriptions below). The IR260A also provides remote tone annunciation of calls placed from any one or all of eight programmable zones. **Note:** NC205 System is limited to 8 duty devices if the PK261A Dome Lamp Power Supply is not used. These duty devices may be LI388A or IR260A with dome lamps, in any combination, not to exceed 8.

### **LI381 Single/LI382 Dual Corridor Dome/Zone Lights**

The LI381/LI382 provides visual indication of calls originating from patient, staff, bath, and stand alone stations. Low priority calls are indicated by a white lamp. The LI382 provides an additional lamp (red) for indication of higher priority calls. The LI381/LI382 may also be used as zone lights when used with an IR260A Duty Station but will only display those calls associated with one or two lamps.

### **LI383/LI387 Corridor Dome/Zone Lights**

The LI383/LI387 provides visual indication of calls originating from patient, staff, and duty stations. The LI387 also provides visual indication of calls originating from code call stations. The LI383 consists of three incandescent lamps (red, green, and white) covered by a single polystyrene lens. The LI387 consists of four incandescent lamps covered by translucent polycarbonate (red, green, and blue) and polystyrene (white) lenses mounted on an attractive ABS plastic base. Call priority and staff presence are indicated by various flash rates applied to the appropriate lamp(s). The LI387 functions as a zone light when used with the IR260A Duty Station. The LI383 will also function as a zone light when used with the IR260A Duty Station but will only display calls that are associated with one, two, or three lamps.

### **LI388A Corridor Zone Light**

The LI388A is identical in appearance to the LI387, but contains microcontroller and support circuitry to display call priority indications from any or all of eight programmable zones. The LI388A serves the same functions as an LI387 that is connected to an IR260A. **Note:** NC205 System is limited to 8 duty devices if the PK261A Dome Lamp Power Supply is not used. These duty devices may be LI388A or IR260A with dome lamps, in any combination, not to exceed 8.

### **SF100C Visual Station**

The SF100C is used to operate “ROUTINE” signals. The station consists of an attractive flame retardant type ABS plastic faceplate, a yellow “CALL-PLACED” indicator, a “CANCEL” button, and a patient call cord receptacle (1/4" phone jack). The SF100C is a stand-alone device.

### **SF101C Visual Station**

The SF101C is used to operate “ROUTINE” signals. The station consists of an attractive flame retardant type ABS plastic faceplate, an amber “CALL-PLACED” indicator/push button, and a “CANCEL” push button. The SF101C is a stand-alone device.

### **BA002K Battery Kit**

The BA002K Kit provides battery backup for NC260B CE or NC262A CEE. The kit includes two BA001 Batteries (12 VDC, 2.0 AH) and connection harness.

### **SF337C Pull Cord Shower/Emergency Station**

The SF337C is used to operate “BATH/EMERGENCY” signals. The station consists of an attractive flame retardant type ABS plastic faceplate, a red pull down lever, 7' nylon cord with pendant, mounting screws, connector, a red “CALL-PLACED” indicator, and electronic circuitry mounted to the back of the faceplate. The SF337C is waterproof, *when mounted correctly*, and is provided with a white rubber gasket, mounting screws with “O” rings, and a circuit board with reed switches.

### **SF340B Pull Cord Emergency Station**

The SF340B is used to operate “BATH/EMERGENCY” signals. The station consists of an attractive flame retardant type ABS plastic faceplate, a red pull down lever, 7' nylon cord with pendant, mounting screws, connector, a red “CALL-PLACED” indicator, and electronic circuitry with a DPDT switch mounted to the back of the faceplate.

### **SF341B Code Call Station**

The SF341B is used to initiate “CODE” signals and is monitored for fault conditions by IR254-259 Enhanced Patient Stations. The SF341B consists of an attractive flame retardant type ABS plastic faceplate, a blue pull down lever, a 7' nylon cord with pendant, and mounting screws. A circuit board with a DPDT switch, connectors, a red “CALL-PLACED” indicator, and electronic circuitry is mounted to the back of the faceplate.

### **SF250 Staff Presence Station**

The SF250 provides push button registration of staff members at remote locations when used with IR254-IR259 Enhanced Patient Stations. The SF250 may also be used to transfer staff follower features from one room to another. The station's circuitry is mounted on an attractive flame retardant type ABS plastic faceplate and contains a push button and a green LED indicator.

### **Call Cords**

For use with IR251/IR252/IR255/IR256 and SF100C :

- SF301 - Push button with 7' cord
- SF301G - Geriatric push button call cord
- SF301/10 - Push button with 10' cord
- SF302 - Dual push button with 7' cords
- SF302G - Geriatric dual push button call cord
- SF302/10 - Dual push button with 10' cords

For use with IR257/IR258 :

- SF301P Series - Pillow speaker
- SF311 - Push button cord w/modular jack
- SF311G - Geriatric/oxygen call cord
- SF312 - Dual push button cords w/modular jack
- SF312G - Geriatric/oxygen dual call cords

## **2.2 EQUIPMENT LOCATION**

Locate NC205 System equipment in accordance with the following information. *The installation of all system equipment must meet the requirements of the National Electrical Code, ANSI/NFPA #70, current edition.* Do not locate or install NC205 System components in or near areas of high humidity, static electricity, radiation, or heat.

**NOTE:** *Please observe the maximum wiring distance per NL205-H.*

### **NC260B Central Equipment**

The central equipment should be located in an accessible area near a dedicated AC source, preferably central to the associated master stations. For optimum operation, the central equipment should be located in an area with an operating temperature of approximately 26°C with 70-80% relative humidity. Equipment should be accessible to a good local earth ground using a minimum of #14 gauge wire. Location should have convenient cable runs to the master and patient stations. The central equipment may be wall mounted (surface or recessed). A battery backup kit is recommended and should be located within the central equipment.

### **NC262A Central Equipment Expander**

The central equipment expander should be located in an accessible area near a dedicated AC source. For optimum operation, the central equipment expander should be located in an area with an operating temperature of approximately 26°C with 70-80% relative humidity. Equipment should be within 18 feet of the NC260B. The location should have convenient cable runs to the central equipment and patient stations. The central equipment expanders may be wall mounted (surface or recessed). A battery backup kit is recommended and should be located within the NC262A Expander cabinet.

### **PK261A Dome Light Power Supply**

The dome light power supply should be located in an accessible area near a dedicated AC source. For optimum operation, the dome light power supply should be located in an area with an operating temperature of approximately 26°C with 70-80% relative humidity. Equipment should be accessible to the NC260B. Location should have convenient cable runs to the central equipment and patient stations. The dome light power supply may be wall mounted (surface or recessed).

### **PM261A Selector Card**

The selector cards are mounted inside the NC260B Central Equipment and the NC262A Central Equipment Expander.

### **NC250/NC230 Master Stations and NC255 Master Station Expander**

The master stations and expanders should be located on a desk or countertop within easy reach of operating personnel. Each master station is provided with 7' of cable and an 8 conductor modular connector. The expander(s) are provided with 1.3' of cable and an 8 conductor modular connector for connection to the masters. The master station(s) should be located within easy reach of the modular wall plate (TekTone® PL467) for cable termination. Locate the wall plate on a single gang ring or box. The operating temperature range of 10°C - 40°C should not be exceeded.

### **IR Series Stations**

The patient stations should be located where convenient for operation, most commonly at the head of the patient's bed. The operating temperature range of 10°C - 40°C should not be exceeded.

The IR250/IR254 Staff Stations should be located where convenient for operation in areas such as utility rooms, exam rooms, kitchens, and wherever staff members may need to originate calls. The IR250/IR254 may also be used as patient stations in rooms where cord sets are not required.

The IR259 Enhanced Multipurpose Station should be centrally located in regard to the remotely mounted initiation devices (switches, contact closures, loudspeakers, or other signal-originating equipment) with which it is used. No controls are provided.

The IR019C Speaker/Microphone Station should be located where audible in conjunction with the IR259. The IR019C is designed for use in high security areas, such as psychiatric wards. It is flush mounted, normally in the ceiling or out of the patient's reach.

The IR260A Duty Station should be located where convenient for operation in areas such as utility and exam rooms, or where a nurse may perform a function out of hearing or sight of the NC250/NC230 Master Station.

### **LI Series Corridor Dome/Zone Lights**

The dome lights should be located in the corridor above or beside the door of the associated room. The location should provide unobstructed visibility of the corridor light in both directions. The zone lights should be located in the corridor area nearest the nurses central monitoring station.

### **SF Series Peripheral Stations**

The SF100C or SF101C Visual Station should be located where convenient for operation, most commonly at the head of the patient's bed. The operating temperature range of 10°C - 40°C should not be exceeded.

The SF250 Staff Presence Station should be located for convenient operations, usually near the room entrance.

The emergency stations should be located where convenient for operation in areas such as toilets, baths, or shower rooms. The code call stations should be located for convenient operation in areas such as ICU/CCU, physical therapy rooms, and post-op recovery.

The SF337C Pull Cord Shower/Emergency Station may be used as a pull station or a pull cord station. To use as a pull cord station, thread nylon cord through hole provided in the guide tab on lower position of the faceplate and red pull down lever. Secure with a double knot; then mount station high enough for convenient operation by seated or prone patients. When used as a pull station, locate where access is convenient for both patients and nurses. *The SF337C is waterproof when properly installed.*

The SF340B Emergency Station may be used as a pull station or a pull cord station (as the SF337C). When used as a pull station, locate where access is convenient for both patients and nurses. Avoid areas where direct contact with water may occur.

The SF341B Code Call Station may also be used as a pull station or pull cord station to initiate the highest level of call priority.

### **Call Cords/Pillow Speakers**

The call cord/pillow speakers should be inserted into associated station jacks or receptacles. Call cords/pillow speakers should not be installed in patient areas that are electrically susceptible or in areas where flammable gases are used.

## **2.3 WIRING INSTALLATION**

NC205 system wiring should not be run with any other building wiring. All dead-metal parts of the NC205 system must be connected to a good local earth ground, and current carrying conductors must not be exposed. **DO NOT RUN CONDUIT OR WIRE TO BOTTOM KNOCKOUTS OF IR SERIES STATION BOX - NO ACCESS IS AVAILABLE. DO NOT USE KNOCKOUTS ON TOP OF NC260B OR NC262A CASES.**

Wiring conduit may be run from dome light to dome light, station to station, or a combination of the two, terminating at the Central Equipment.

***NOTE: Field wiring terminations should not be made within NC260B or NC262A enclosures. TekTone® recommends externally located connections (e.g., mounted terminal/barrier strips, etc.) used in conjunction with system cable assemblies to terminate field wiring.***



TekTone® recommends running conduit from dome light to dome light because of the reduced conduit lengths. Each run must be limited to no more than 8 stations, with or without dome lights. Select conduit size to accommodate the appropriate cables. Run station wiring in accordance with the following information and notes provided on the block wiring diagrams NL205-A, NL205-B, NL205-C, and NL205-D.

**NOTE:** *Please observe the maximum wiring distance per NL205-H.*

### **NC260B Central Equipment and NC262A Central Equipment Expander**

The central equipment should use a dedicated, computer-grade power line (120 VAC, 60 Hz, 20 A - contact factory for other power options). This line should also be connected to an emergency power feed that conforms to UL® 1069 Standards. Power supplies and all dead-metal parts of the NC205 System must be connected to the NC260B chassis ground lug, which is in turn connected to a good local earth ground. Recommended power devices include AC power surge suppressors, line conditioners, and uninterruptable power sources (UPS). All devices must be UL® Listed and rated for the appropriate load.

### **PK261A Dome Light Power Supply**

The dome light power supply should use a dedicated, computer grade power line (120 VAC, 60 Hz, 20 A - contact factory for other power options). This line should also be connected to an emergency power feed that conforms to UL® 1069 Standards. Power supplies and all dead-metal parts of the NC205 System must be connected to the PK261A chassis ground lug, which is in turn connected to the NC260B chassis ground lug. Recommended power devices include AC power surge suppressors, line conditioners, and uninterruptable power supplies (UPS). All devices must be UL® Listed and rated for the appropriate load.

### **NC250/NC230 Master Station**

Run 4 conductor #18 stranded shielded and 4 conductor #18 stranded from supplied wallplate to central equipment. Each master station must be home run to the central equipment.

### **IR Series Stations**

Run 1 twisted shielded pair #18 stranded common, plus 4 conductors #18 stranded common, plus 1 conductor #22 stranded selective per IR Series Station, to central equipment. (If enhanced stations are used with dome lamps add one additional #18 common, if standard stations are used with peripherals add an additional #18 for slow flash buss for emergency stations. Add additional #18 for fast flash buss for smoke detectors or code switches.)

### **LI Series Corridor Dome/Zone Lights**

Run up to 7 conductor #18 stranded per light according to type and location.

### **SF Series Peripheral Stations**

Run #22 stranded to patient station, or if stand alone run #18 stranded to central equipment.

## **2.4 HOUSING INSTALLATION**

### **NC260B Central Equipment and NC262A Central Equipment Expander**

The central equipment and expander are self-contained in a hinged door cabinet. The units may be wall mounted using hardware provided.

### **PK261A Dome Light Power Supply**

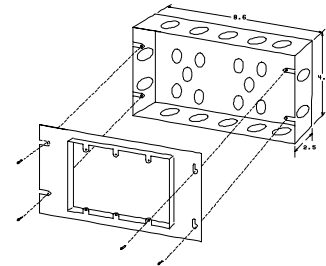
The dome light power supply is self-contained in a hinged door cabinet. The unit may be wall mounted using hardware provided.

### **NC250/NC230 Master Stations and NC255 Master Station Expander**

The master stations and master station expanders are designed to be desk or wall mounted.

### **IR Series Stations**

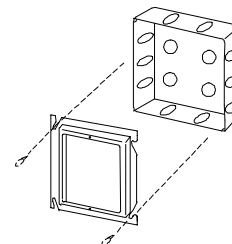
Install the back box TekTone® #IH353, (Steel City #H3BD or exact equivalent) with TekTone® #IH352 (Steel City #3GC plaster ring or exact equivalent), as shown in *Figure 1* for each station in system. Minimum dimensions of the back box to be not less than 8.6" x 4.5" x 2.5". Minimum clearance from live parts on the station to dead metal parts to be not less than 1/2".



*FIG. 1: IH352 Ring and IH353 Housing Installation*

### **LI Series Corridor Dome/Zone Lights**

Install the two gang back box (Steel City #H2BD or exact equivalent) with the two gang plaster ring (Steel City #2GC or exact equivalent), as shown in *Figure 2* for each station in system. Minimum dimensions of back box to be not less than 2-3/4" x 2-3/4". Minimum clearance from live parts on the station to dead metal parts to be not less than 1/2". Minimum clearance from live parts on the station to dead metal parts to be not less than 1/2".



*FIG. 2: IH357 Ring and IH358 Housing Installation*

### **SF Series Peripheral Stations**

Install the back box TekTone® #IH358 (Steel City #52171 or exact equivalent) with TekTone® #IH357 (Steel City #52C14 plaster ring or exact equivalent), as shown in *Figure 2*, for each station in system. Minimum clearance from live parts on the station to dead metal parts to be not less than 1/2". To insure a seal between the SF337C faceplate and wall, the gasket must be mounted between the faceplate and wall. The mounting screws with "O" Rings must be used to further insure that there is a water-tight installation. Take care that housing location will be such that the finished wall provides a flat, even surface (installation of the housing in the seams of tile will require additional caulking between gasket and wall).

## **2.5 WIRE CHECK-OUT**

- A. Use an ohm meter or other continuity checking device to test for shorts or grounds. If shorts or grounds are encountered, find and correct the problem before continuing. ***All shield drain wires must show continuity throughout the cable run.***
- B. Drains must be kept separate from all other conductors and cannot be touching any part of metal conduits or boxes. Drains should be taped back at the end of cable runs. All drains should return back to the central equipment (NC260B) and connect to a good earth ground. ***NOTE: Audio shields should be connected to a dedicated earth ground with the system common at one point. These shields should be continuous until the end of the run, where they will be taped back and isolated. Any unused wires in the common control cables or in the selective line cables should be grounded at the central equipment with their other ends left floating. If selective line cable has a shield, the shield should be grounded at the central equipment as well.***
- C. Make sure the minimum number of conductors needed for all of the equipment being used in the system are available. Make sure the maximum wiring distances are not exceeded (see NL205-H).

## **2.6 WIRE CONNECTION**

Make wire connections in accordance with the following information and WIRING DIAGRAMS NL205-A thru NL205-S. All stations and central equipment are supplied with cable assemblies terminated by plug-in type connectors for easy wiring.

***NOTE: Field wiring terminations should not be made within NC260B, NC262A enclosures. TekTone® recommends externally located connections (e.g. mounted terminal/barrier strips, etc.) used in conjunction with system cable assemblies to terminate field wiring.***

### **NC260B Central Equipment**

Ground the central equipment chassis to a good earth ground. 120 VAC must be provided to the central equipment. ***Do not apply power until all connections to equipment have been checked.*** If necessary, call the factory for other power options. (Refer to NL205-E.)

### **NC262A Central Equipment Expander**

NC262A Central Equipment Expander use 25 pin (DB25) and 2-pin headers to interconnect. 120 VAC must be provided to the NC262A expander. (Refer to NL205-F.)

### **PK261A Dome Light Power Supply**

Ground the dome light power supply chassis ground lug to the chassis ground lug of the NC260B. 120 VAC must be provided to the dome light power supply. DO NOT apply power until all connections to equipment have been checked. If necessary, call the factory for other power options. (Refer to NL205-R.)

### **NC250/NC230 Master Stations**

The master station(s) cable assembly should be plugged into the wall plate supplied with each master station. Run cable from the wall plate to the appropriate cable assembly at the central equipment. (See *Figure 3* and NL205-G for details.)

### **NC255 Master Station Expander**

Plug cable provided into appropriate jack located in back of the NC250 or NC230 Master Stations. (Refer to NL205-G.)

### **IR Series Stations**

Each station is provided with cable assemblies terminated by plug-in type connectors. Connect field wiring according to wiring diagrams.

(CAUTION: Static electricity can cause damage to the stations.)

### **LI Series Corridor Dome/Zone Lights**

Connect wires as shown in wiring diagrams.

### **SF Series Peripheral Stations**

Plug in connector/cable assembly supplied with each station. Connect wires as shown in wiring diagrams.

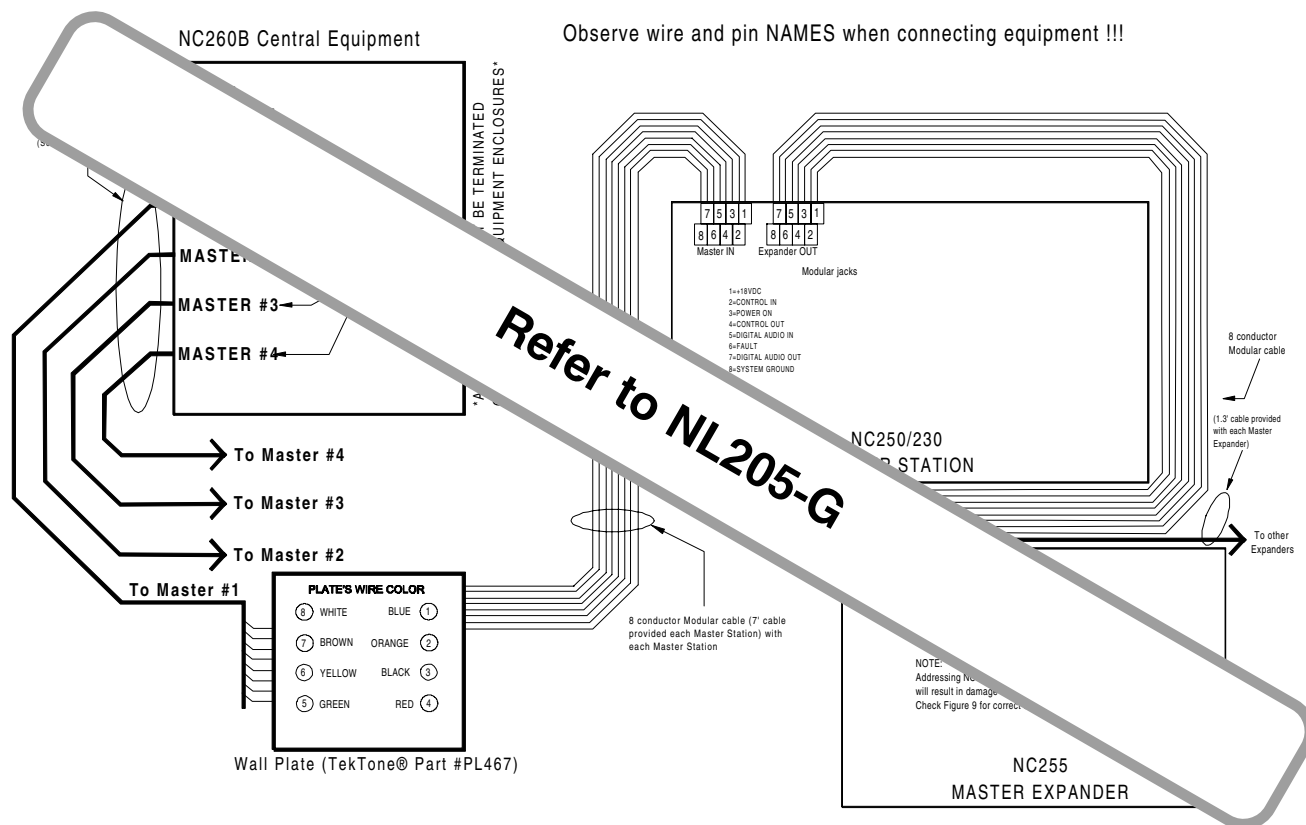


FIG. 3: Master Station Cable Assembly Wiring

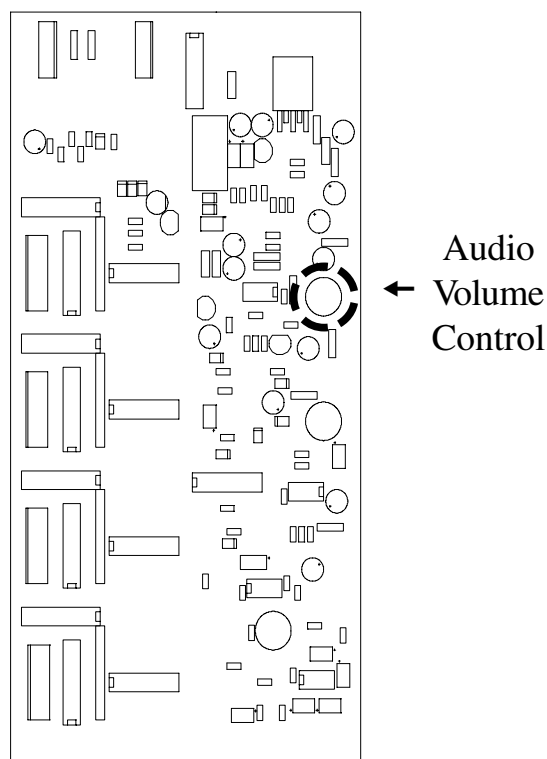
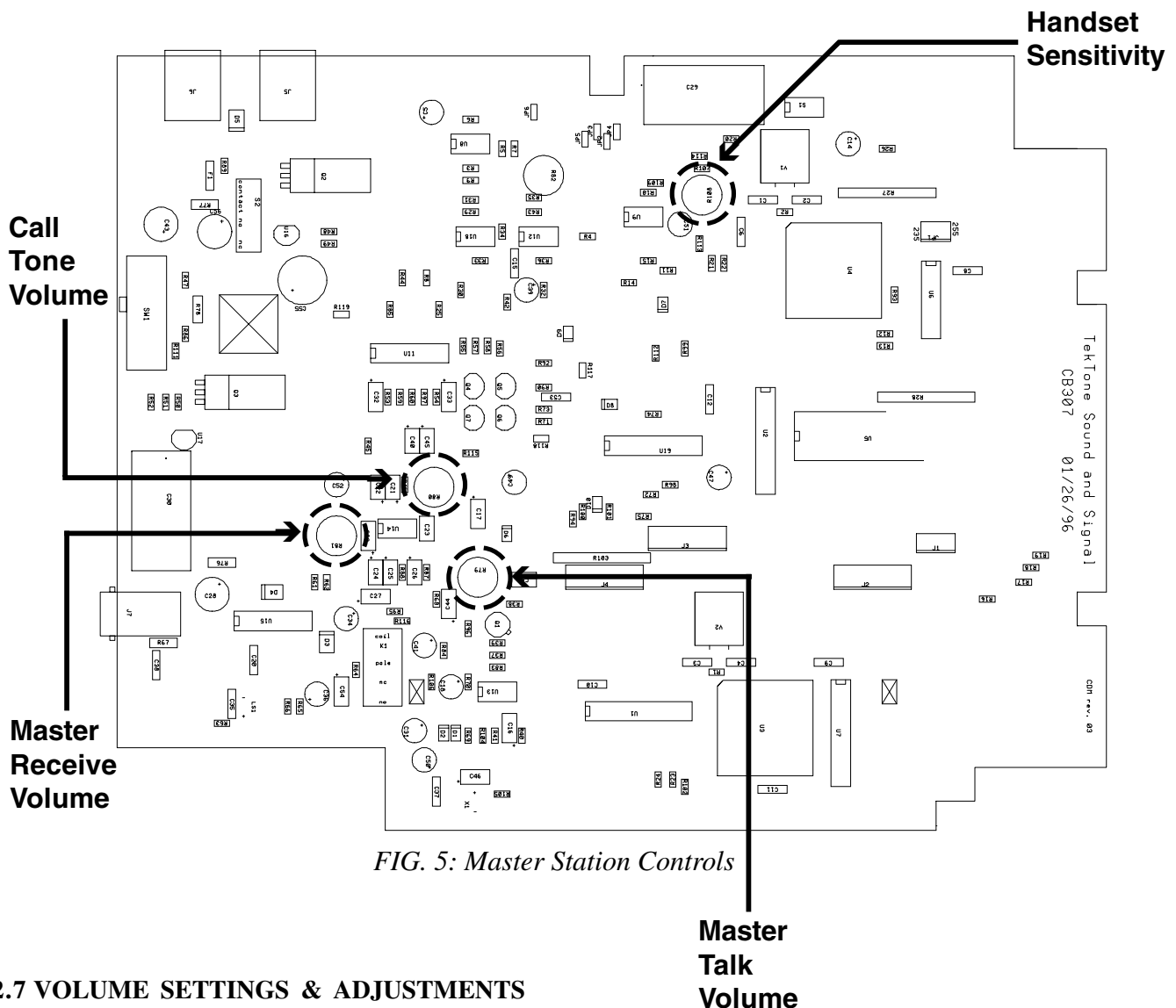


FIG. 4: PM261A Selector Card



## 2.7 VOLUME SETTINGS & ADJUSTMENTS

### PM261A Selector Cards

The audio volume control is located on the selector card (PM261A) as shown in Figure 4. Turn control counter-clockwise to increase outgoing volume to patient stations. (The PM261A is located within the NC260B/NC262A.)

**NOTE:** Opening the master station requires a Scrulox® size 0 screwdriver (available from TekTone®, part number HT004).

### NC250/NC230 Master Stations

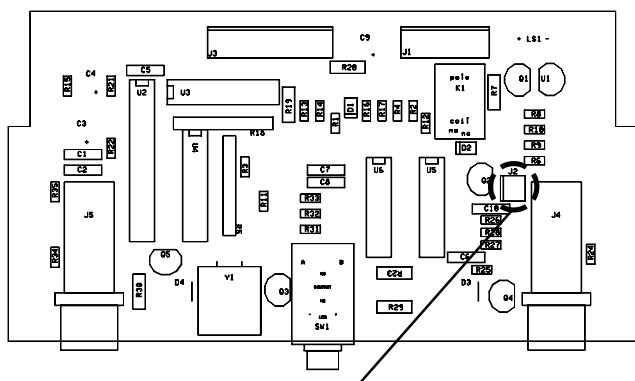
All controls are preset at factory. The following lists the volume controls found in Figure 5.

Call Tone Volume: Controls volume of incoming call tones.

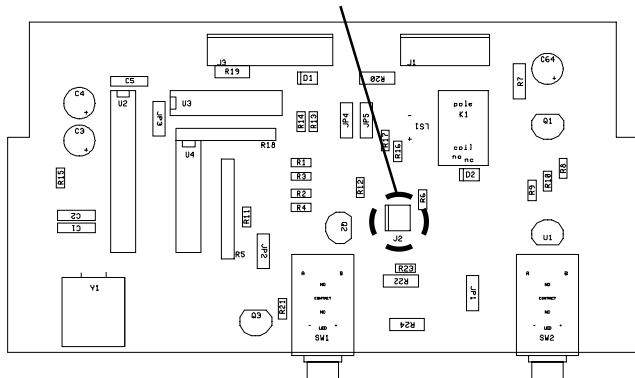
Master Receive Volume: Controls talk volume from stations to master.

Master Talk Volume: Controls talk volume from master to stations.

Handset Sensitivity: Controls handset voice circuit sensitivity (VOX).



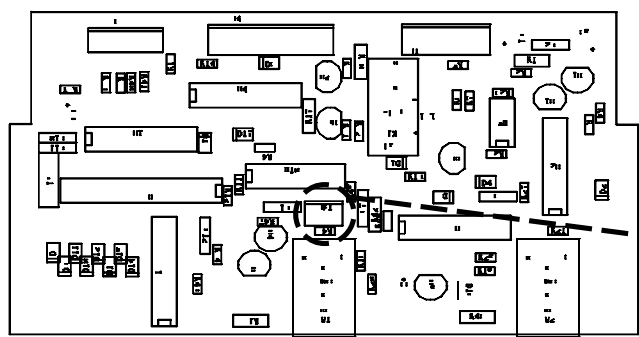
*Code Fault Jumper on IR254-IR259 will be in one of the 2 indicated positions.*



**FIG. 6: Code Fault Jumper**

### **IR254-IR259 Enhanced Patient Stations**

To enable code fault reporting, remove the 2-pin jumper, see *Figure 6*, from the station(s) circuit board header (excludes IR250-253 and IR260A).



**FIG. 7: IR260A Duty Station**

### **IR260A Duty Station**

The duty station call tone volume is adjustable via the 3-pin header located as shown in *Figure 7*.

To assign zones for remote call annunciation, move the DIP switch that corresponds with the desired zone number to the “up” or “on” position. Any, all, or none of these switches may be set in this manner. Move the switch “down” or “off” to disable responses for that zone. The DIP switch is located on the circuit board of the IR260A and must be set before installation is complete and the power has been applied. (The IR260A will not respond to the DIP switch settings until it has been reset by powering it “off” and then back “on”.)

### **LI388A Corridor Zone Light**

Remote call annunciation zones are assigned in the same manner as the IR260A.

## **2.8 CONNECTIONS CHECK-OUT**

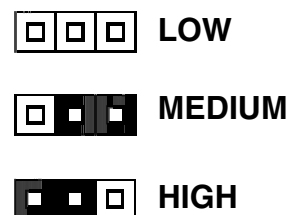
Re-check all connections to equipment. If all wires and connections are satisfactory, plug in central equipment to dedicated outlet. Follow NC205 installation and power up guidelines (Section 2.9), perform “System Test” (Section 7.0) then configure system as desired (Section 5.0).

## **2.9 NC205 Installation and Power Up Guidelines**

***Note: NC205 equipment should not be powered up until these guidelines have been followed!***

The equipment that comprises the NC205 System is ESD sensitive and ESD precautions must be taken when handling. The use of properly rated ESD ground straps during installation is imperative. The NC205 System equipment is shipped in ESD protective materials that should be retained for handling during equipment installation.

### **VOLUME CONTROL**



### **When your equipment is received:**

The ground clip of a ground strap should be connected to the chassis ground lug in NC260B unit prior to working with NC205 equipment.

#### **Step 1:**

Locate the following devices:

- Master station(s) (NC230 or NC250) and associated CA037/7
- Master station wall plate(s) (PL467) and connector harness(es) (CT308/24)
- Master station expander(s) (if used) (NC255) and associated CA037
- Central equipment (NC260B) and associated ground interconnect cable
- Central equipment expander (if used) NC262A, associated CT261, and associated ground interconnect cable
- Selector card(s) (PM261A)
- Common wire harness and selective wire harness from PM261A selector card (CT306/24 and CT308/24)
- Remote (patient, staff, or duty) station (IR250 - IR258 or IR260A)
- AC power cords (CA038), one for NC260B and (if used) one for NC262A
- Remote stations common wire harness and (CT307)

#### **Step 2:**

If selector cards are already installed, skip to step 3. It is important that selector card #1 be installed before power is supplied to the system. Install the selector cards onto 15 pin connectors near the top edge of PM260B Motherboard in the NC260B Central Equipment as indicated in NL205-E. It is very important to ensure that all pins are inserted properly. Improper pin insertion or pins not inserted will cause damage to PM260B or PM261A modules. If an NC262A Central Equipment Expander is used, insert associated PM261A modules also, referencing NL205-F.

***NOTE: The NC260B Central Equipment includes a removable “sled” that allows for the removal of the PM260B Motherboard and associated PM261A selector cards (reference label inside of NC260B for removal instructions). The sled should be removed during IH260 housing installation process to prevent damage to electrical equipment or PM261A selector card replacement for ease of card installation.***

#### **Step 3:**

Locate the associated PL467 and CT308/24 for each master station. The CT308/24 should be connected to the PL467 as shown in NL205-G of the IL600 manual, creating a master wiring harness. A harness should be made for each master station.

#### **Step 4:**

Plug the 8 pin connector of a master wiring harness to master connector number 1 as indicated in NL205-E and NL205-G.

#### **Step 5:**

Insert one end of CA037/7 cable (included with master station ) into the PL467 plate of the master wiring harness.

#### **Step 6:**

Select a master station and insert the other end of CA037/7 cable into the master station receptacle referred to as “Master IN” in NL205-G.

#### **Step 7:**

The master station used should be set to address number 1. This is accomplished by setting all four dipswitches (accessible via an opening in back of master cabinet) to the “OFF” or “UP” position as indicated in figure 9.

#### **Step 8:**

Locate the CT306/24, CT308/24, and CT307 connectors. Connect them together as shown in NL205-E, NL205-I, NL205-J, NL205-K, NL205-L, NL205-M, NL205-N depending on the type of station used for test. This station connector harness will serve to connect the remote station to the NC260B for this procedure.

#### **Step 9:**

Plug the 6 pin connector of station connector harness on to either 6 pin common connector of the PM261A Selector Card, within NC260B, as referenced in NL205-E.

#### **Step 10:**

Plug 8 pin connector of station connector harness on to bottom most 8 pin selector connector of the PM261A Selector Card as referenced in NL205-E.

#### **Step 11:**

Plug 7 pin connector of station connector harness on to the 7 pin connector of test remote station. Reference NL205-I, NL205-K, NL205-L, NL205-M, or NL205-N depending on the type of station used for test.

#### **Step 12:**

Set dipswitch number 1 on the PM260B Motherboard to the “ON” position as referenced in section 5.4-1, Central Equipment Reset Procedure. This dipswitch setting will cause the “flash-ram” in the NC260B to be cleared on power up.

#### **Step 13:**

***NOTE: Only qualified technical personnel should make 110 VAC connections! Do not connect CA038 to 110 VAC outlet until 110 VAC terminal block connections are made and the safety cover is reinstalled onto the terminal block.*** Remove the end of the CA038 cable that does not have the 110 VAC connector on it. Strip back the cable so that the 3 conductors are exposed and insert them into the 110 VAC

terminal strip in the NC260B housing as referenced in NL205-Q.

**Step 14:**

Insert other end of CA038 cable into 110VAC outlet.

Wait until the LEDs on the PM261A Selector Cards begin to flash. NOTE: Flashing pattern is irregular and is not an indication of a FAULT condition. Return dipswitch number 1 on the PM260B Motherboard to its original "OFF" position. If PM261A LED(s) do not flash, re-check master station wiring.

At this time the NC205 set up should be operating properly with no "FAULT" LEDs lit on the bottom edge of the PM260B Motherboard.

**Step 15:**

The master station's "flash-ram" must now be cleared. To accomplish this, set dipswitch number 4 to the "ON" or "DOWN" position. Now set dipswitch number 1 to the "ON" or "DOWN" position and then return it to the "OFF" or "UP" position. Wait, before proceeding, to verify that the master stations's "TALK" LED illuminates for a brief period of time (*NOTE: This should occur within 10 to 15 seconds.*) If this does not occur, perform step 15 again. Return dipswitch 4 to the "OFF" or "UP" position.

At this time, no "FAULT" conditions should be annunciating from the master or central equipment. If any "FAULT" LEDs are lit, note the "FAULT" as shown in section 5.6-2, Faults (for central equipment) or in section 3.3, Master Station and Expander Displays (for master station). Once the "FAULT" condition has been noted, remove power from the system.

If no "FAULTS" have occurred, place a call from the remote station by depressing the call button on the station or associated call cord. This call should be annunciated at the master station by a beeping tone and a flashing yellow LED. Press the selector button associated with the LED and the master station will open an audio path to the station. This will be indicated by the red "IN-USE" LED lighting on the remote station. There will be some acoustic feedback due to the close proximity of the master and station.

As the procedure is followed, the operation of the system should be observed for the introduction of functional problems and audio noise each time equipment is added. If a problem becomes apparent, the last system addition should be suspect.

**Step 16:**

Power down system by removing the CA038 from the 110 VAC outlet.

**Step 17:**

If master station expanders are used on the system, select one unit and set its address to be master expander number 1

as per figure 10. The master expander's case will need to be opened to allow access to the dipswitch. Set switch 1 to the "ON" or "UP" position, leaving switches 2 and 3 in the "OFF" or "DOWN" position. Switch 4 will be factory set as per Figure 10.

**Step 18:**

Insert one end of the master expander's CA037 interconnect cable into the master station receptacle referred to as "Expander OUT" in NL205-G.

**Step 19:**

Insert the other end of the CA037 interconnect cable into the master expander receptacle referred to as "Expander IN" in NL205-G.

**Step 20:**

Repeat steps 12 - 15 to power up system.

**Step 21:**

Repeat steps 16 - 20 until all master expanders for the master station are connected. *NOTE: Each master station expander must have a unique address as per figure 10. Connection of incorrectly addressed master expanders will result in damaged equipment.* Additional expanders will connect to the "Expander OUT" receptacle of the previous master expander. Reference NL205-G.

**Step 22:**

Repeat steps 4 - 21 until all master stations and master expanders are connected. *NOTE: Each master station should have a unique address indicated by figure 9.* Each master station's address should correspond to the connector it is plugged into on the PM260B motherboard as indicated by NL205-E and NL205-G. (I.e., master number 2 should be plugged onto master connector number 2 and so on, respectively.)

**Step 23:**

If a central equipment expander is used, locate and address all three sets of dipswitches within the NC262A Central Equipment Expander to number 1 by sliding dipswitch 1 to the "ON" or "UP" position. Dipswitches 2, 3, and 4, should be set to the "OFF" or "DOWN" position.

**Step 24:**

Connect the NC262A to the NC260B unit by inserting the male end of the CT261 into the female DB25 receptacle within the NC260B chassis. Reference NL205-E and NL205-F.

**Step 25:**

Take the ground interconnect cable from the NC260B Central Equipment and connect to the NC260B chassis ground lug. Take the ground interconnect cable from the NC262A and connect to the NC262A chassis ground lug. Connect the NC262A chassis ground lug to the NC260B chassis ground lug (wire nuts or electrical tape is suggested for insulation of

connections). Reference NL205-E and NL205-F for locations to insert ground interconnect cables within the NC260B and NC262A chassis. NOTE: The NC262A unit requires a 110 VAC connection source for power (reference step 13 for connection). ***NOTE: Only qualified technical personnel should make 110 VAC connections! Do not connect CA038 to 110 VAC outlet until 110 VAC terminal block connections are made and the safety cover is reinstalled on to the terminal block.***

#### **Step 26:**

Follow steps 12 - 15 to power up system and test the NC262A unit.

Personnel planning to install this equipment should take this opportunity to familiarize themselves with basic system operations. See section 4.0, Operational Procedures, for operational instructions of the NC205 system.

#### **When your equipment is installed:**

The above listed procedure should be followed at the jobsite and operation of the NC205 equipment should not change. Usually, this setup will be performed in an electrical or other dedicated room once the NC260B and NC262A housings have been mounted.

***NOTE: The CA038 is not intended for field installation and should be removed prior to site installation!***

Once the installation personnel have achieved the operational state described in the above steps 1- 30, connection of field devices may commence, following the procedure listed below.

#### **Step 1:**

Ensure that NC205 system is powered down and that dipswitch number 1 on the PM260B motherboard is in the "ON" position to allow new equipment to be recognized. After each power up the installation personnel should wait for the PM261A Selector Card(s) LED(s) to begin flashing and then dipswitch number 1 should be returned to the "OFF" position. Observe the PM260B Motherboard for "FAULT" indications.

#### **Step 2:**

The wiring to the first master station should be verified and checked for shorts and grounds from the central equipment location to first master station location. Once done, the first master station, and associated master station expanders, may be connected at its field location. The system should be powered up and checked for fault conditions. If fault conditions occur, they should be noted and then the system should be powered down. The wiring should be re-checked for problems. If problems are located, correct and proceed with step 2 again.

The audio quality should be observed and if noise is present the shields for the master cable wiring (which should be connected to the NC260B chassis ground lug as indicated by NL205-E) should be checked for proper connection and undesired grounds. The earth ground connection to the NC260B chassis should also be checked.

Once the master station and master station expanders are operating properly, proceed to step 3.

#### **Step 3:**

Repeat steps 1 and 2 for each master station, until all masters and master station expanders are operational. The operation of the system should be observed each time for the introduction of functional problems and audio noise. If a problem becomes apparent, the last system addition should be suspect.

#### **Step 4:**

Ensure that the NC205 system is powered down and that dipswitch number 1 on the PM260B Motherboard is in the "ON" position.

#### **Step 5:**

The wiring to the first remote station common wire cable run should be verified and checked for shorts and grounds. Reference NL205-I, NL205-J, NL205-K, NL205-L, NL205-M, NL205-N, NL205-O and NL205-P. Connect the common wires of the first station run to the PM261A Selector Card common connector as indicated by NL205-E.

#### **Step 6:**

The wiring to the first remote station selective wire cable run should be verified, checked for shorts and grounds. Connect the selective wires of the first station run to the PM261A Selector Card selective connector(s) as indicated by NL205-E.

#### **Step 7:**

The local peripheral wiring for each remote station connected to the first cable run should be verified and checked for shorts and grounds. Reference NL205-I, NL205-J, NL205-L, NL205-M, NL205-N, NL205-O and NL205-P.

#### **Step 8:**

Power up the NC205 system and wait for the LED(s) on the PM261A Selector Card(s) to begin flashing. Return dipswitch 1 on the PM260B Motherboard to the "OFF" position. Observe the PM260B Motherboard for "FAULT" indications.

#### **Step 9:**

A call should be placed and answered by a master station from each remote station connected to the first run. The system should be observed so that operational anomalies may be identified. During observation, each peripheral device connected to the remote station(s) should be activated.



**Step 10:**

Repeat steps 4 - 9 for each remote station cable run, until all remote stations are operational. The operation of the system should be observed each time for the introduction of functional problems and audio noise. If a problem becomes apparent, the last system addition should be suspect.

**Common Mistakes**

Compiled below is a brief list of items to pay extra attention to during this procedure and all other facets of the NC205 installation.

- Incorrectly addressing NC250/NC230 Master Stations or NC255 Master Station Expander
- Plugging the cable from the PL467 Wall Plate into the wrong socket on the back of the NC250/NC230 Master, or plugging the cable from a NC255 Master Expander into the wrong socket on the back of the NC250/NC230 Master.
- Folded or missing insulator label on back of PM261A Selector Card
- Powering up PK261A Dome Lamp Power Supply without first powering up NC260B Central Equipment
- Powering up NC260B Central Equipment without powering up NC262A Central Equipment Expander
- Ensure that any spare selector lines are grounded in addition to selective ground lines

***NOTE: Damage to NC205 equipment can occur from the above items!***



### 3.0 SYSTEM EQUIPMENT DESCRIPTIONS

The following section provides complete operating information for all NC205 System Equipment in addition to drawing references for use in locating and describing all controls and indicators. System operators should read the following instructions concerning system equipment and terms used in conjunction with the equipment.

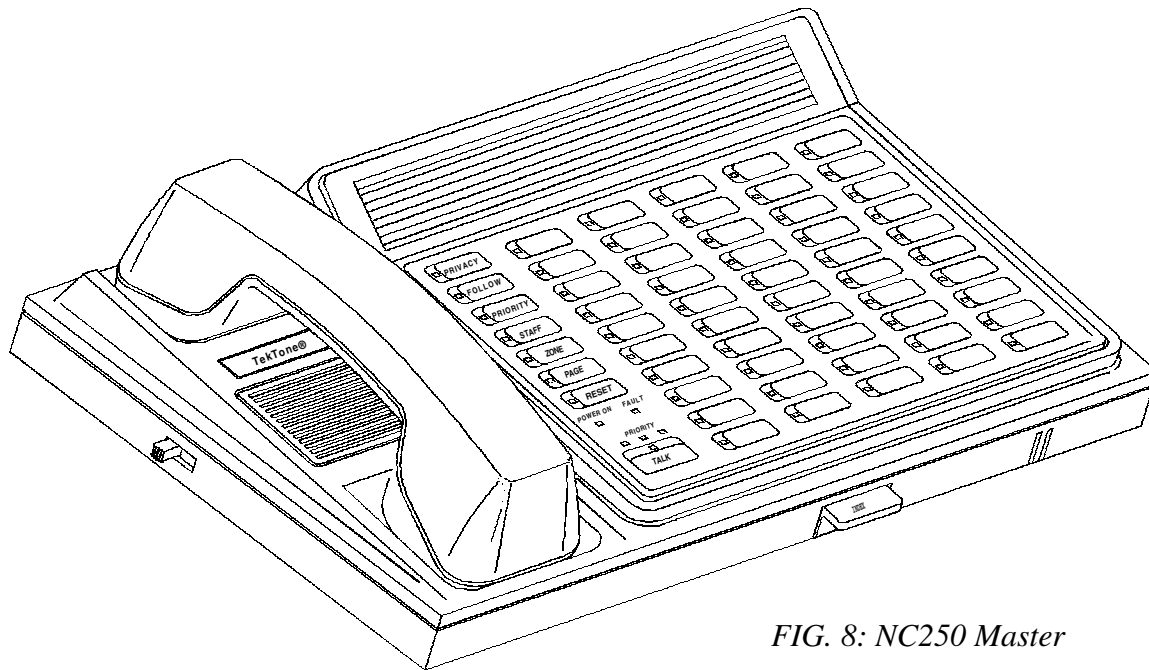


FIG. 8: NC250 Master

#### 3.1 NC250/NC230 MASTER STATION

Refer to Figure 8 for locations and names of controls and indicators. A brief description of the operating controls for the NC250/230 follows.

##### Function Buttons

These buttons select system functions as described below.

- PRIVACY** (red) : Toggles a station's privacy; also displays stations in privacy mode (enhanced PC's only).
- FOLLOW** (orange): Initiates staff and/or room follower operations. LED will light while master is in follower mode.
- PRIORITY** (yellow): Upgrades a station's call priority level; also displays stations at "PERSONAL ATTENTION" (enhanced PC's only) and "EMERGENCY" priority levels.
- STAFF** (green) : Enters or cancels a staff service request; also used to view stations where staff presence is registered or needed.
- ZONE** (blue) : Displays zone assignments and status information for masters and stations; also used for zone paging functions and to display faulty stations.
- PAGE** (violet) : Used for zone, all call, and staff paging.
- RESET** (black) : Terminates most operations; also indicates that the system is processing information by flickering its LED (USER MUST WAIT).
- TALK** (dark gray) : Talk/Listen button for audio communications between stations and masters. Talk LED solid indicates that audio path has been established; flashing indicates station busy.

##### Numerical Keys

These are dual function buttons. Under normal operation they are station selector buttons. They are also used to assign and reassign specific zones to stations and masters, and for master-to-master selections (see Section 5.0).

- "0"** : Clears all zone assignments from stations or masters.
- "1" - "8"** : Deletes or adds zones 1-8 to masters and stations; also indicates current zone assignments for stations and/or masters.
- "9"** : Adds all zones to masters or stations.

##### Alpha Keys

These are dual function buttons. Under normal operation they are station selector buttons. They are also used to program and display the status of stations or masters.

- "B" = PRIVACY** : When lit, indicates a pre-selected station is in privacy.
- "C" = PAGE INHIBIT** : When lit, indicates a pre-selected station is blocked from receiving "PAGE"; can be toggled ON/OFF.
- "D" = PRIORITY** : Displays stations whose priority has been upgraded (standard stations only).
- "E" = BATH** : Marks a peripheral device as an "EMERGENCY/BATH" stand alone station (when unmarked, a stand alone registers "HIGH" priority).
- "F" = FAULT** : Used to disable fault inspection for a pre-selected station (must be marked for IR250/IR251/IR252/IR253/IR260A and stand alone stations).

- “G” = FIRE : Used to toggle stations from announcing “CODE” to announcing “FIRE” calls. When lit, indicates any station that has been set to annunciate “FIRE” type calls (smoke detector connections).
- “H” = STAFF : Used to mark stations for master-to-staff communications.
- “I” = MASTER : Used to mark buttons for master-to-master communications.
- “T” = BEEP TONE : Toggles beep tones (when a button is pressed) at the master.
- “J” = ANNOUNCE : Toggles pre-announce tones (beep when a call is placed) at the master.

### **Station Selector Buttons**

Used to select stations for initiating calls, responding to calls, and programming.

### **Power ON LED**

Indicates AC power to the system.

### **Fault LED**

The fault LED is steadily illuminated when failure of a station or the master station is detected. The fault LED flashes when a central equipment fault is detected.

### **Priority LED'S - GREEN, AMBER, and RED**

The master will display the highest priority of all incoming calls. For low priority calls, the GREEN LED will light and be accompanied by a call tone once every eight seconds. For medium priority calls, the AMBER LED will light and be accompanied by a slow repeating tone. For high priority calls the RED LED will light and be accompanied by a fast repeating tone. (Code is indicated by steady RED priority LED, fire is indicated by flashing RED priority LED).

### **DIP Switch**

The master control DIP switch is located on the rear of the NC250/NC230 Master Stations. Refer to *Figure 9* for location and function of control switches.

### **Handset**

The handset is used to provide confidential conversation when loudspeaker communication is not desired, or to permit conversation when high ambient noise is present. To use, simply pick up handset.

### **Hook Switch**

The hook switch activates or terminates handset operation.

### **Volume Control**

The volume control permits adjustment of the incoming voice communication. Slide switch towards front of unit to increase volume; towards back to decrease (3 positions).

### **Speaker**

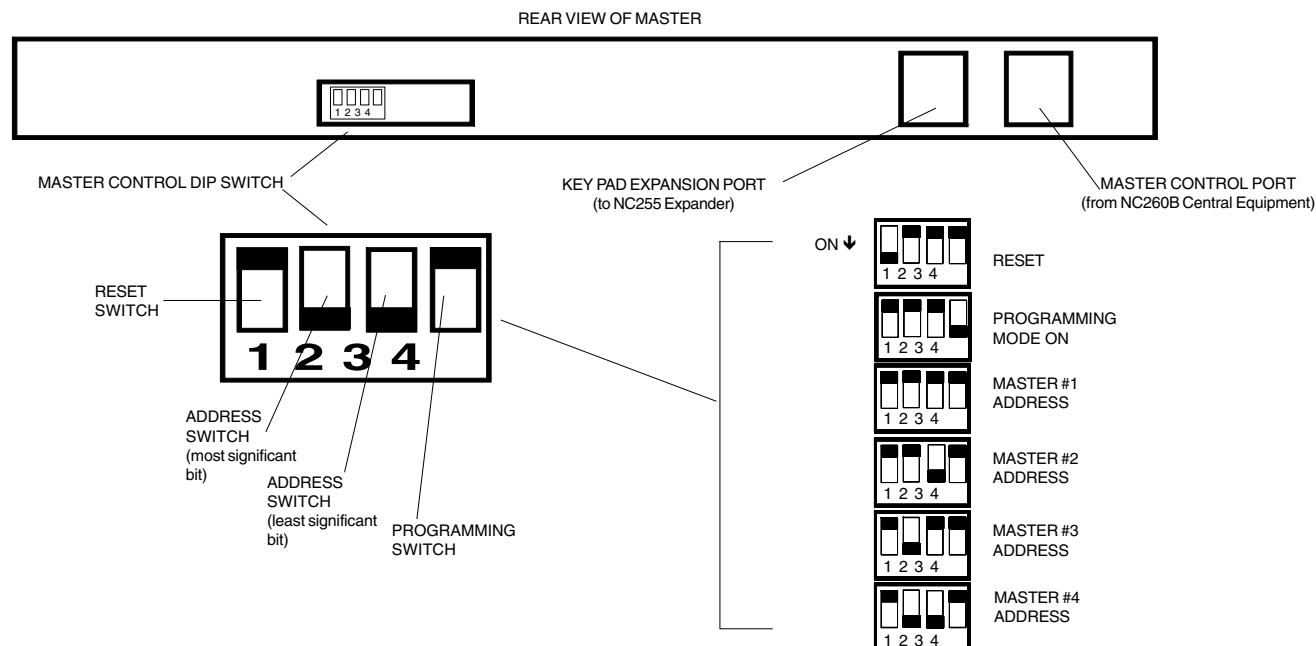
The speaker is used to listen to remote stations or other masters and to annunciate call tones.

### **Microphone**

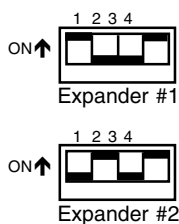
The microphone is used to talk to remote stations or other masters.

### **Tray**

The tray holds the Quick-Reference Guide to system operations.



*FIG. 9: NC250/230 Master DIP Switch Controls*



NOTE: Switch settings as shown are for NC255-50 station expanders.

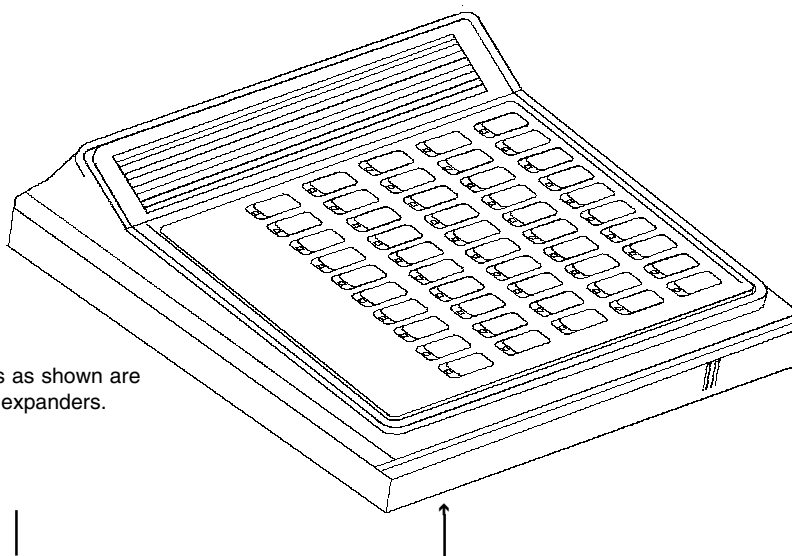


FIG. 10: NC255 Master Expander

### 3.2 NC255 MASTER EXPANDER

Refer to *Figure 10* for NC255 Master Expander DIP switch settings. A brief description of the operating controls for the NC255 follows.

#### Station Selector Buttons

Used to select stations for initiating calls, responding to calls, and programming. The NC255 has 50 buttons.

#### DIP Switch

The DIP Switch is located within the NC255 Master Expander. Positions “1” and “2” select the address of expander. Refer to *Figure 10*.

### 3.3 MASTER STATION & EXPANDER DISPLAYS

There are three basic levels of calls:

<b>High Priority:</b>	FIRE* (supplementary only, see note) CODE
<b>Medium Priority:</b>	BATH/EMERGENCY CORDOUT/PRIORITY
<b>Low Priority:</b>	PERSONAL ATTENTION ROUTINE

\*NOTE: The NC205 is not tested as a fire alarm system and is not intended as a primary indication means for evacuation.

**Call Location:** Indicated by the station selector buttons.

**Fire Calls:** Are indicated by the rapid flashing of the specific station’s selector button LED, the rapid flashing of the RED priority LED, and a rapid pulsating call tone.

**Code Calls:** Indicated by the rapid flashing of the specific station’s selector button LED, steady illumination of the RED priority LED, and a rapid pulsating call tone.

**Emergency/Bath/Priority/Cord Out Calls:** Are indicated by the medium flashing of the specific station’s selector button LED, steady illumination of the AMBER priority LED, and a medium pulsating call tone.

**Personal Attention & Routine Calls:** Are indicated by the slow flashing of the specific station’s selector button LED, the steady illumination of the GREEN priority LED, and a slow pulsating call tone (once every eight seconds).

**System Fault Indications:** System faults are cancelled only at such time as the fault is corrected (see Section 5.6-2 for complete list of faults). Faults will appear as listed below:

**CODE FAULT:** Indicated at the Master Station by a solid illumination of the Fault LED. Pressing the Zone Button twice will cause the affected station’s selector LED to flash at a slow rate for eight (8) seconds. Refer to section 5.6-2 for further information.

- Wires between a code station and a patient station are defective.
- The code station is defective.
- The patient station is defective.

**STATION FAULT:** Indication at the Master Station the same as described above. Refer to section 5.6-2 for further information.

**MASTER FAULT:** Indication at the Master Station by a solid illumination of the Fault LED. Refer to section 5.6-2 for further information.

**CENTRAL EQUIPMENT OR MASTER FAULT:** Indication by a rapid flashing of the Fault LED at the Master Station. No indication at the Central Equipment.

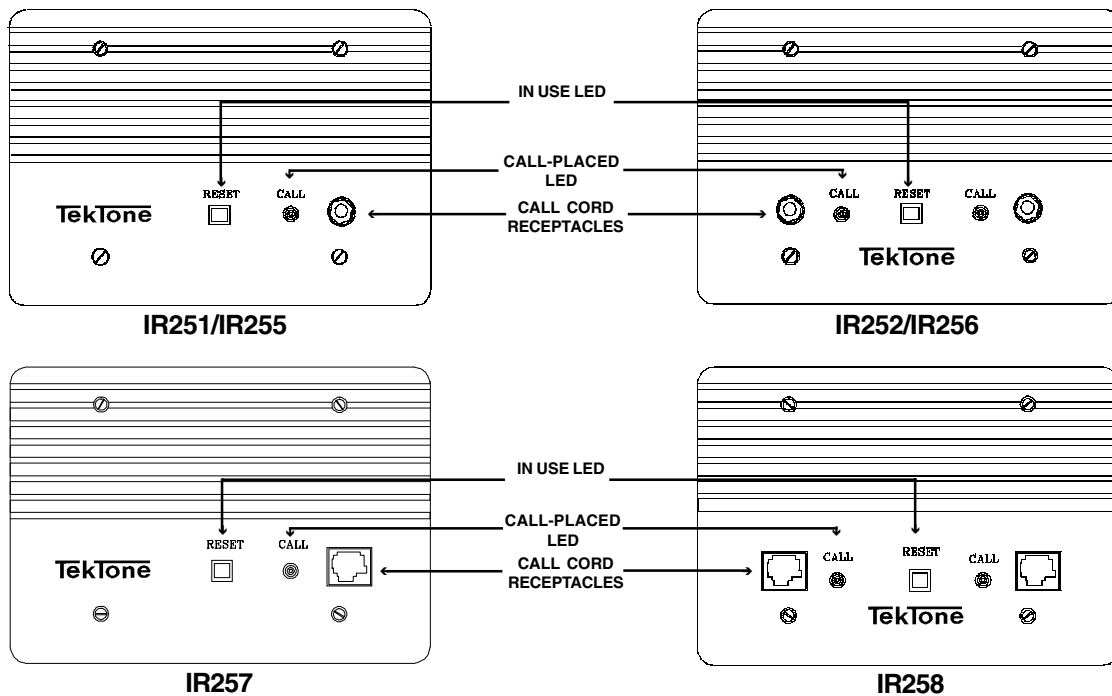


FIG. 11: IR251/IR252 Standard and IR255/IR256/IR257/IR258 Enhanced Patient Stations

### 3.4 PATIENT STATIONS

TekTone® IR Series Stations use high quality speaker/microphones for voice communications and tone signaling. Due to the high sensitivity of the microphone, it is not necessary for the patient to move close to the unit or to raise the voice above a normal speaking level to be heard.

Refer to *Figure 11* for locations and names of controls and indicators. A brief description of the operating controls for the patient stations follows:

#### 3.4-1 IR251/IR252 Standard Stations

These stations **do not** provide supervision circuitry, outputs for three or four lamp dome lights, or inputs for presence and code stations.

##### Reset Button/In-Use LED

The “RESET” button is used to cancel a call placed from the station. The LED illuminates whenever communication to the master station is engaged.

##### Call-Placed LED

The “CALL-PLACED” LED is steadily illuminated whenever a call is placed from the station and flashes slowly during a cord out condition.

##### Call Cord Receptacle

There are two kinds of call cord receptacles. The modular (rectangular) type is for use with SF301P Pillow Speakers or SF311/SF312 Call Cords. The 1/4" phone jack (round) type is for use with SF301/SF302 Call Cords. Single bed stations have one call cord receptacle; dual bed stations have two.

#### 3.4-2 IR255-IR258 Enhanced Stations

These stations provide outputs for three or four lamp dome lights, and additional inputs for presence stations, code stations, and smoke detectors. These stations provide circuitry for supervision of code station and associated wiring. Power and select wires are supervised by central equipment.

##### Reset Button/In-Use LED

The “RESET” button is used to cancel a call placed from the station. The LED illuminates whenever communication to the master station is engaged. The “RESET” button can also be used to cancel a staff request at a station.

##### Call-Placed LED

The “CALL-PLACED” LED is steadily illuminated whenever a call is placed from the station. The LED flashes when a call cord is pulled from its socket.

##### Call Cord Receptacle

There are two kinds of call cord receptacles. The modular (rectangular) type is for use with SF301P Pillow Speakers or SF311/SF312 Call Cords. The 1/4" phone jack (round) type is for use with SF301/SF302 Call Cords. Single bed stations have one call cord receptacle; dual bed stations have two.

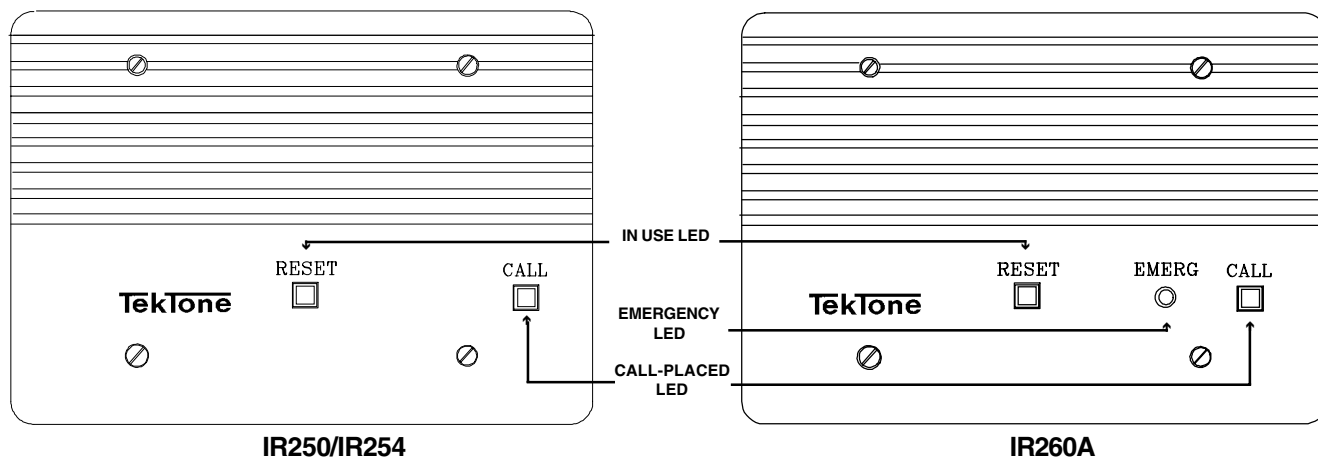


FIG. 12: IR250 Standard/IR254 Enhanced Staff Stations and IR260A Duty Stations

### 3.5 IR250 STANDARD/IR254 ENHANCED STAFF & IR260A DUTY STATIONS

The IR250 **does not** provide supervision circuitry, outputs for three or four lamp dome lights, or inputs for presence and code stations. These features are found on the IR254. Refer to *Figure 12* for locations and names of controls and indicators. A brief description of the operating controls for the staff and duty stations follows:

#### Reset Button/In-Use LED

The “RESET” button is used to cancel a call placed from the station. The LED illuminates whenever communication to the master station is engaged. (See special features below for additional uses of the “RESET” button on the IR260A Duty Station.)

#### Call Button/Call-Placed LED

The “CALL” button is used to place a call to the master. The LED illuminates when a call is placed.

#### IR260A Duty Station Special Features

The IR260A **does not** provide supervision circuitry or inputs for presence and code stations. The “RESET” button may be used to silence the tone signal for low priority calls. Medium and high priority tone signals cannot be silenced. The tone will return only after all low priority calls have been cancelled, or a medium or high priority call is placed.

*Low Priority Calls:* A call tone is repeated once every 8 seconds.

*Medium Priority Calls:* The “EMERGENCY” LED will flash and a slow, repeating tone is heard from the speaker.

*High Priority Calls:* The “EMERGENCY” LED will flash and a fast repeating tone is heard from the speaker.

*Fire:* The “EMERGENCY” LED will flash at a fast rate and a fast repeating tone will be heard from the speaker.

### 3.6 IR253 STANDARD PULL CORD PATIENT STATION

The IR253 **does not** provide supervision circuitry, outputs for three or four lamp dome lights, or inputs for presence and code stations. Refer to *Figure 13* for locations and names of controls and indicators. A brief description of the operating controls for the pull cord patient station follows:

#### Reset Button/In-Use LED

The “RESET” button is used to cancel a call placed from the station. The LED illuminates whenever communication to the master station is engaged.

#### Call-Placed LED

The “CALL-PLACED” LED is steadily illuminated whenever a call is placed from the station.

#### Pull Cord

The IR253 is supplied with a 6' nylon pull cord and pendant.

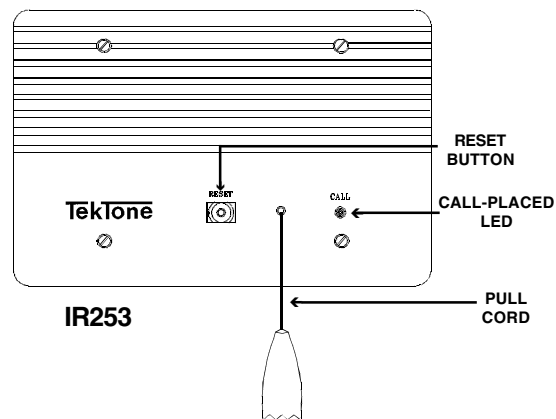


FIG. 13: IR253 Standard Pull Cord Patient Station

### 3.7 IR259 ENHANCED MULTIPURPOSE STATION

Refer to *Figure 14* for a display of the IR259. The IR259 circuitry is mounted on a blank faceplate and provides external connections for a “CALL” button, a “RESET” button, and peripheral devices. The device(s) used to emulate the “CALL” and “RESET” buttons must use momentary contacts. Normally open or double pole/double throw switches can be used. (Refer to NL205-O for wiring instructions.)

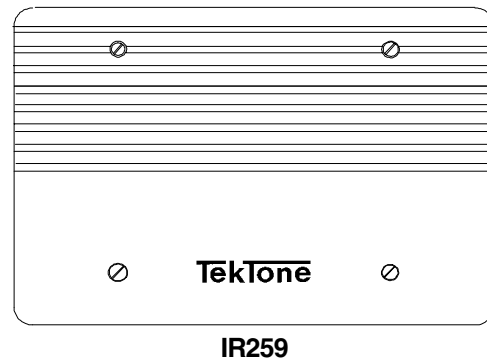


FIG. 14: IR259 Enhanced Multipurpose Station

### 3.8 SF100C VISUAL STATION

Refer to *Figure 15* for location and names of controls and indicators. The SF100C is intended to be used as a stand-alone station. A brief description of the operating controls for the SF100C follows:

#### Call-Placed LED

The “CALL-PLACED” LED is steadily illuminated whenever a call is placed from the station or a call cord is pulled from its socket.

#### Call Cord Receptacle

The 1/4" phone jack (round) is for use with SF301/SF302 Call Cord.

#### Cancel Button

The “CANCEL” button is used to cancel a call placed from the station.

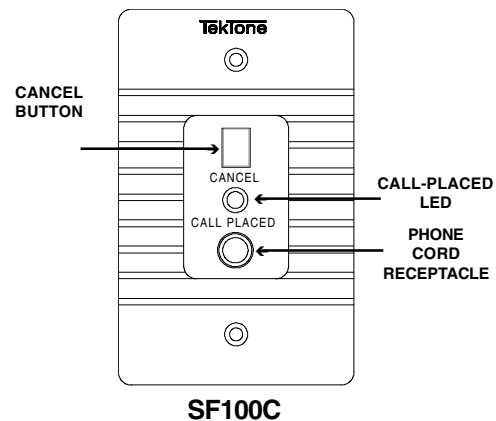


FIG. 15: SF100C Visual Station

### 3.9 SF101C VISUAL STATION

Refer to *Figure 16* for location and names of controls and indicators. The SF101C is intended to be used as a stand-alone station. A brief description of the operating controls for the SF101C follows:

#### Call-Placed LED/ Push button

The “CALL-PLACED” LED/ Push button is steadily illuminated whenever a call is placed from the station.

#### Cancel Button

The “CANCEL” button is used to cancel a call placed from the station.

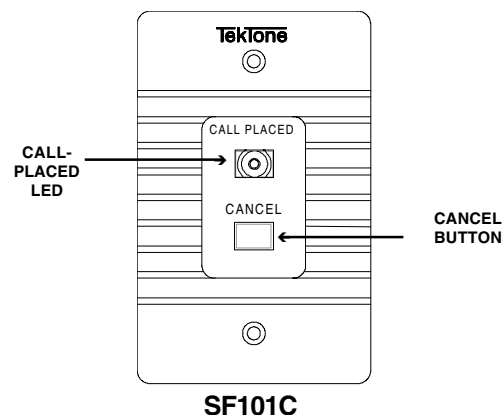


FIG. 16: SF101C Visual Station



### 3.10 SF250 STAFF PRESENCE STATION

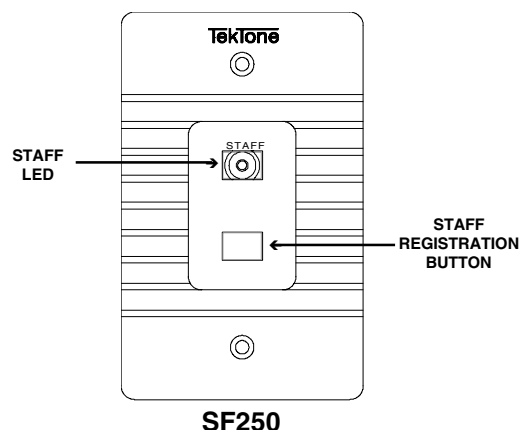
Refer to *Figure 17* for location and names of controls and indicators. A brief description of the operating controls for the SF250 follows:

#### **Staff Registration Button**

The “STAFF REGISTRATION” button is used to register staff presence in a room and resets any routine, personal attention, or priority calls made. The same button is used to cancel the staff presence indication.

#### **Staff Registration LED**

The green LED flashes to indicate staff presence required and lights steadily while the staff member is registered.



**SF250**

*FIG. 17: SF250 Staff Presence Station*

### 3.11 SF337C/SF340B PULL CORD SHOWER/EMERGENCY STATION

Refer to *Figure 18* for locations and names of controls and indicators. A brief description of the operating controls for the SF337C/340B follows:

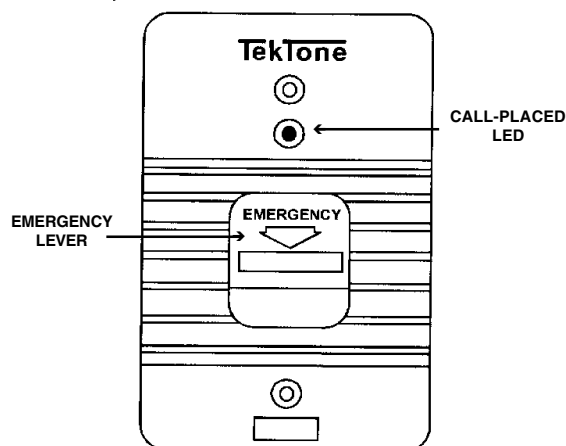
#### **Emergency Pull Down Lever**

The “EMERGENCY” pull down lever is used to place and cancel “EMERGENCY” and “BATH” calls.

#### **Call-Placed LED**

The red LED flashes to indicate call placement.

**NOTE:** Refer to NL205-P for stand alone operation wiring.



**SF337C/SF340B**

*FIG. 18: SF337C/SF340B Pull Cord Shower/Emergency Station*

### 3.12 SF341B CODE CALL STATION

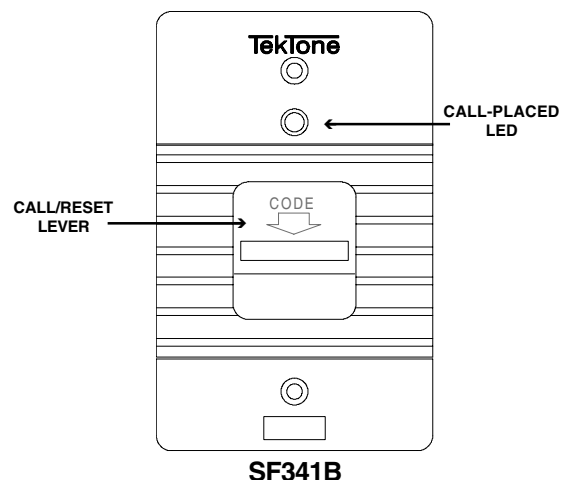
Refer to *Figure 19* for locations and names of controls and indicators. A brief description of the operating controls for the SF341B follows:

#### **Call/Reset Lever**

The “CALL/RESET” lever is used to place and reset “CODE” priority calls.

#### **Call-Placed LED**

The red LED flashes to indicate call placement.



**SF341B**

*FIG. 19: SF341B Code Call Station*

### 3.13 LI SERIES CORRIDOR DOME/ZONE LIGHTS

The LI381/LI382/LI383/LI387/LI388A Corridor Dome/Zone Lights provide for indications of call origin, call priority, and staff presence through the use of red, green, blue, and white lamps. When used in association with a remote station, all calls originating from that room will be indicated by lamp signal(s).

#### Dome Lights

The LI381 consists of one incandescent light (white); LI382 consists of two incandescent lights (white and red); and the LI383 consists of three lights (red, green, and white). All are covered by one single polystyrene lens. (Refer to *Figure 20*.)

The LI387 consists of four incandescent lights covered by translucent polycarbonate (red, green, and blue) and polystyrene (white) lenses. (Refer to *Figure 21*.)

Light signals for the LI381/LI382/LI383/LI387 are as follows:

**High Priority:** FIRE - Red flashing (supplementary only) at fast rate.  
\* CODE CALL - Blue flashing at fast rate.

**Medium Priority:** BATH/EMERGENCY - Red flashing  
\* PRIORITY  
CORD OUT - White flashing  
\* STAFF REQUEST - Green flashing  
\* CODE FAULT - Blue flashing at slow rate

**Low Priority:** \* PERSONAL ATTN. - White steady  
ROUTINE - White steady  
\* STAFF PRESENT - Green steady

\*These light signals are available only on IR254-IR259 Enhanced Patient Stations.

Refer to wiring diagrams for wiring outputs provided for dome light indication.

#### Zone Lights

The LI387 and LI388A consist of four incandescent lights covered by translucent polycarbonate (red, green, and blue) and polystyrene (white) lenses. (Refer to *Figure 21*.)

When the LI387 is used with an IR260A Duty Station, all calls originated from the zones to which the duty station is assigned will be indicated by light signal(s).

The LI388A is a stand alone zone activity indicator that performs the same light signaling functions as an LI387/IR260A combination.

Light signals for the LI387/IR260A and LI388A are as follows:

**Highest Priority:** FIRE - Red flashing (supplementary only) at fast rate

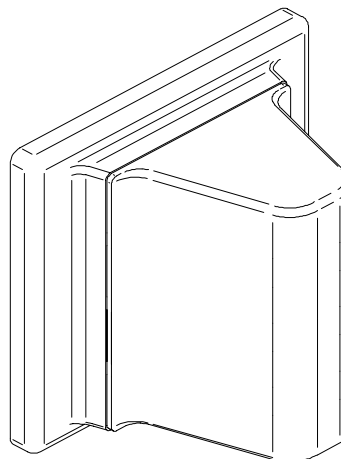


CODE CALL - Blue flashing at fast rate  
BATH/EMERGENCY/CORDOUT  
- Red flashing at slow rate  
STAFF REQUEST - Green flashing at slow rate  
PERSONAL ATTN/ROUTINE  
- White steady

**Lowest Priority:** STAFF PRESENT - Green steady

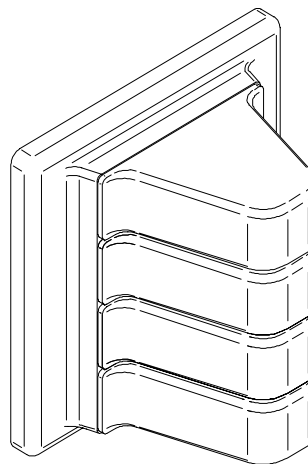
The LI388A and LI387/IR260A will indicate the highest priority of all calls in the zones to which they are programmed to respond.

**NOTE:** Any LI Series Dome Light can function as a zone light when used in conjunction with an IR260A Duty Station. Only calls associated with the light's color (red, green, or white) will be displayed.



**LI381/LI382/LI383**

*FIG. 20: LI381/LI382/LI383 Corridor Dome/Zone*



**LI387/LI388A**

*FIG. 21: LI387/LI388A Corridor Dome/Zone*

## 4.0 OPERATIONAL PROCEDURES

### 4.1 MASTER STATION & EXPANDERS

#### 4.1-1 Calling

NOTE: All follower functions must be reset before calling functions can be engaged.

- A. *To answer a call*, press the illuminated station selector button and wait for “TALK” LED to light; then press the “TALK” button while speaking and release to listen, or pick up the handset (if the handset is being used, it is not necessary to press the “TALK” button). The call tone will be silenced and communications will be established to the selected room. If pre-announce call tones are “ON”, a one second tone will be heard at the master and room station when the station selector button is first pressed.

When answering multiple calls, the call in progress must be reset before attempting to selectively answer a subsequent call. To reset the current call, the “RESET” button may be pressed, or the handset must be placed in its cradle—the user **must wait** for the new call to be registered before attempting to establish communications (**do not** attempt to use the hook switch to reset the call).

Calls can also be answered by pressing the “TALK” button without first selecting a station. When used in this manner, the higher priority calls are answered first. Once these calls have been cleared, then the lower priority calls are answered next.

NOTE: If a high or medium priority call is placed while a master station is in communication with another station, the “TALK” function with the current low priority call will only be active for 8-10 seconds; then the current call will be placed on hold, and the higher priority call will automatically reactivate the call tones at the appropriate rate. “TALK” must be pressed to connect audio; once the higher priority call is reset, the lower priority call can be answered again.

- B. *To place a call*, press the desired station selector button; then press the “TALK” button or pick up the handset. If pre-announce call tones are “ON”, a one second tone will be heard at the master and room station when the station selector button is first pressed. Calls may be placed to patient, staff, or duty stations in the same manner. Calls placed from master stations must be reset at the master.

If a called station is in communications, a busy indication will be given by a flashing “TALK” LED. No other visual or audible signals will be generated.

*To place a call to another master*, press the desired master selector button. The master receiving the

“CALL” must have its own selector pushed before communication path will open. (All master to master communications are push to “TALK” only.)

**NOTE:** *If a patient station is in privacy mode, no audio can be heard at the calling master from that station. Privacy does not affect calls initiated from the patient station.*

- C. *To cancel a call*, press the “RESET” button or hang up the handset. Medium, high priority, and personal attention calls must be reset at the point of origin.
- D. *To upgrade calls in progress*, press the “PRIORITY” button while the master is in communication with the station (see Section 4.1-5C).

If master stations are in communication, each can discontinue communications in order to respond to another station by pressing the “RESET” button. Incoming high or medium priority calls automatically cancel master-to-master communications after eight seconds.

#### 4.1-2 Staff Service

Staff service functions are not available on IR250-IR253 and IR260A Standard Patient and Duty Stations.

- A. *To request staff service*, press the station selector button followed by the “STAFF” button; then press “RESET”.
- B. *To cancel a staff service request or staff presence*, press the station selector button followed by the “STAFF” button; then press “RESET”, or cancel at patient station by pushing the “RESET” button.
- C. *To view staff status*, press the “STAFF” button. Stations with staff requests pending will be indicated by the fast flashing of that station’s selector button LED. Stations that have staff presence registered will be displayed with a slow flash rate. This display will clear after eight seconds or when the “RESET” button is pressed (see System Programming Section 5.3-1).

#### 4.1-3 Paging

Paging communications are uni-directional (master-to-stations). See System Configuration/Programming Section 5.2-1 for Programming Station Zone Assignments.

- A. *To page a specific zone*, press the “PAGE” button followed by the numerical button (“1”-“8”) representing the requested zone. Note: Stations paged must also be on the same selector card.
- B. *To page master preset zones*, press the “PAGE” button followed by the “ZONE” button. This will page all zones in the master’s current setup.
- C. *To page all stations on the system “ALL CALL”*, press the “PAGE” button followed by the numerical “9” key.  
**NOTE: Only one master at a time, per system, may be in paging communications.**
- D. *To page a staff member*, press the “PAGE” button followed by the “STAFF” button. This will open audio communications with all stations marked as staff stations and all stations where staff presence is registered.
- E. *To discontinue paging*, press “RESET”.

#### 4.1-4 Follower Functions

- A. *To follow a staff member*, press the “FOLLOW” button followed by the “STAFF” button. Call tones will be sent to rooms in the preset zones where staff presence is registered, as well as stations that are marked as staff stations.
- B. *To follow to a specific room*, press the “FOLLOW” button, then select the room. Call tones will be sent to the selected room only.
- C. *To discontinue the follower function*, press “RESET”.

#### 4.1-5 Station Functions

- A. *To view a station’s zone assignments and status*, press the individual station’s selector button followed by the “ZONE” button. A display will appear showing the zones assigned to the station in the numerical key column. The alpha key column will display the station’s status indicators. Press “RESET” when finished.

NOTE: Station’s selector button LED will light momentarily and then extinguish before the zone information is retrieved. (See System Configuration/Programming Section 5.2-1.)

- B. *To view and/or change stations in privacy mode*, press the “PRIVACY” button. Stations in privacy mode will display with a flashing LED on their selector button. This display will clear after eight seconds or when the “RESET” button is pressed. To place a station in privacy mode, the station must first be selected and “PRIVACY” pressed followed by “RESET”. This same procedure is used to release a station from the privacy mode.
- C. *To change the priority status of a station*, press the station’s selector button followed by the “PRIORITY” button; then press “RESET”. This will upgrade the station’s low priority call from a **Routine** level to **Personal Attention** which must be reset at the station (**Personal Attention** not available on IR250-IR253 and IR260A.) Pressing the station’s selector button, “PRIORITY”, and then “RESET” again (immediately following the first upgrade) will upgrade the station’s low priority call from a **Personal Attention** level to **Priority**—the call will register at the master as a medium priority call and must be reset at the station. Following the select- “PRIORITY” - “RESET” procedure, once again will revert the station’s status back to a **Routine** level for low priority calls. For IR250-IR253 and IR260A Standard and Duty Stations, follow the same procedure as above. However, these stations only have **Routine** and **Priority** levels.

- D. *To view the priority status of stations*, press the “PRIORITY” button. Stations upgraded to **Priority** will be indicated by the fast flashing of that station’s selector button LED. Stations that have been upgraded to **Personal Attention** will be displayed with a slow flash rate (excludes IR250-IR253 and IR260A). This display will clear after eight seconds or when the “RESET” button is pressed.

#### 4.1-6 Master Functions

- A. *To enable room monitoring*, simply press the desired station selector button(s). Multiple rooms (up to a maximum of 20) may be monitored by simply selecting them one after another (all stations must be on the same selector card and in the same zone). Press the “RESET” button to discontinue the monitor function.
- B. *To view the master’s zone assignments and status*, press the “ZONE” button. A display will appear showing the zones assigned to the master in the numerical key column. (The alpha key column will display the master’s status indicators. See System Configuration/Programming Section 5.1-1.) Press “RESET” to conclude this function.

## 4.2 IR SERIES STATIONS

*To reply to a call, speak in a normal voice when spoken to.*

*To cancel a call (excluding IR259), press the “RESET” button located on the front faceplate of the station. To cancel a “CORD OUT”, simply reinsert the call cord plug into its receptacle.*

### 4.2-1 IR251/IR252 Standard and IR255/IR256 Enhanced Patient Stations

- A. *To place a call, press the “CALL” button located on the end of the call cord. A medium priority call will automatically be placed if the call cord is pulled from its receptacle (“CORD OUT”).*
- B. *To cancel a call, press the “RESET” button located on the front faceplate of the station.*

### 4.2-2 IR257/IR258 Enhanced Patient Stations

- A. *To place a call, press the red “CALL” button located on the SF Series Pillow Speaker. A medium priority call will automatically be placed if the call cord is pulled from its receptacle (“CORD OUT”).*
- B. *To control the television, press the “TV” button located on the SF Series Pillow Speaker. If the TV is off, pressing this button will turn it on. Continue pressing this button until the desired channel is reached. The TV will turn off when the “OFF” channel is selected on the TV. The volume control will adjust only the TV’s volume.*
- C. *To cancel a call, press the “RESET” button located on the front faceplate of the station.*

### 4.2-3 IR250 Standard & IR254 Enhanced Staff Stations

- A. *To place a call, press the yellow “CALL” button located on the faceplate of the station.*
- B. *To cancel a call, press the “RESET” button located on the front faceplate of the station.*

### 4.2-4 IR253 Standard Pull Cord Station

- A. *To place a call, pull the call cord.*
- B. *To cancel a call, press the “RESET” button located on the front faceplate of the station.*

### 4.2-5 IR259 Enhanced Multipurpose Station

- A. *To place a call, the device connected to the IR259 must be activated.*
- B. *To cancel a call, deactivate the device.*

## 4.2-6 IR260A Duty Station

- A. *To place a call, press the yellow “CALL” button located on the faceplate of the station.*
- B. *To adjust the announcement volume, move the supplied jumper to the appropriate position on the 3-pin header of the IR260A (see Volume Settings and Adjustments Section 2.7, Figure 7).*
- C. *To cancel a call, press the “RESET” button located on the front faceplate of the station.*

## 4.3 SF SERIES PERIPHERAL STATIONS

### 4.3-1 SF100C Visual Station

- A. *To place a call, press the “CALL” button located on the end of the call cord. A low priority call will automatically be placed if the call cord is pulled from its receptacle (“CORD OUT”).*
- B. *To cancel a call, press the “CANCEL” button.*

### 4.3-2 SF101C Visual Station

- A. *To place a call, press the “CALL” button. The “CALL” button will light to indicate a call has been placed.*
- B. *To cancel a call, press the “CANCEL” button.*

### 4.3-3 SF250 Staff Presence Station

- A. *To register staff presence, push the button under the “STAFF” LED.*
- B. *To clear staff presence, push the button under the “STAFF” LED.*
- C. *To clear a staff request at a station, press the “RESET” button on the station (IR254-IR258).*

### 4.3-4 SF337C/SF340B Pull Cord Shower/Emergency Station

*Calls made from these stations must be reset at the point of origin.*

- A. *To place a call, pull down the red “EMERGENCY” lever or pull the call cord.*
- B. *To cancel a call, push the red “EMERGENCY” lever to the up position.*

### 4.3-5 SF341B Code Call Station

- A. *To place a call, pull down the blue “CODE” lever or pull the call cord.*
- B. *To cancel a call, push the blue “CODE” lever to the up position.*



## 5.0 SYSTEM CONFIGURATION/PROGRAMMING

The following information should be programmed into the NC205 System by qualified administrative personnel prior to general staff operation. *Figure 22* shows the NC250/NC230 Master Station inserts included for system programming. The personnel responsible for programming should see to it that these inserts are not destroyed, distributed, or changed. Information programmed after this time should require few changes. During programming, please ensure that all key strokes are deliberate and that there is a momentary pause between operations.

The numerical selector button LED's are the first column of LED selector buttons on the NC250/NC230 Master Station. The alpha selector button LED's are the second column of LED selector buttons. These columns serve dual purposes; the numerical column serves as zone programming switches, the alpha column serves as master and station status programming switches, and both columns serve as normal station selector buttons.

### 5.1 MASTER STATIONS

Zoning assignments are for use in controlling the patient, staff, and duty stations to which the master station may communicate. They may also be used to control paging, staff follower, and other system functions. Master stations may be assigned to one, all, or any combination of the eight zones supported by the NC205 System. Master stations default to all eight zones.

In multiple master systems only one conversation to one of eight audio paths may occur. The stations are pre-wired to these paths through the default hardware zone number of the PM261A Selector Card to which it is connected (each card represents one audio path/hardware zone).

Refer to Section 5.3 for additional features such as making a system non-square, adding an expansion keypad, etc. Refer to Section 5.5 for instructions on adding master stations to a system.

#### 5.1-1 Entering the Programming Mode

*To configure the master*, press the "ZONE" key (system must be on but not being used). A display will appear showing the pre-programmed zones in the numerical key column. The status of the master is displayed in the alpha key column. Once these displays have appeared, the master is in the programming mode.

- A. *To select zone presets*, press the desired alpha key. The zones assigned to this alpha preset are then displayed in the numerical key column (the master will respond to only these zones). Alpha keys "A" - "H" are used for these zone presets.
- B. *To program master zones*, press zone key 2 more times, then press the numerical key that corresponds to number of the zone. If the zone is programmed, that number's LED will light. Pressing the numerical key again will turn off the LED and unprogram that zone. A display of "ZONE # 0" indicates that no zones are programmed (master is off-line). Pressing the "9" key will set all zones "ON".

- C. *To program master status*, press the corresponding alpha key for:

PRESETS="A" - "H"

These keys indicate the alpha keys used for preset zones. "A" is the default preset.

BEEPTONE="T"

When lit, this key indicates that a button pushed on the master keypad will generate a short beep tone. To turn off this feature, press the alpha key so that the LED is off.

PRE-ANNOUNCE TONE="J"

When lit, this key indicates that a call tone is introduced at both the station and the master when a call is placed. To turn off this feature, press the alpha key so that the LED is off.

- D. *To view station fault list*, press the "ZONE" button while in the master programming mode. Stations that have reported a fault since the last fault scan will appear with rapidly flashing LED's. Press the "ZONE" button again to return to the master programming mode (display will clear itself after eight seconds).

#### 5.1-2 Exiting the Programming Mode

*To exit the programming mode*, press the "RESET" button. (The display will clear eight seconds after entering the programming mode.)

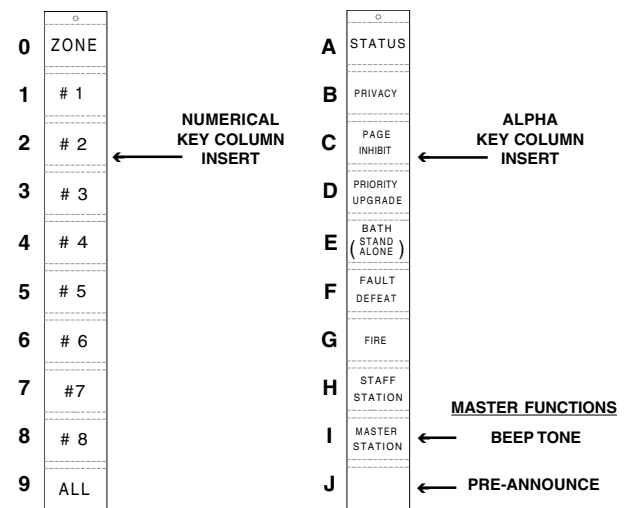


FIG. 22: NC250/230 Programming Inserts

## 5.2 PATIENT STATIONS

Assign station zone assignments following the procedures listed below. The NC205 System should be on but not in use while zone assignments are being entered.

Zoning assignments for each station default to the selector card number they have been connected to (in the NC260B Central Equipment or NC262A Central Equipment Expander). Stations must be assigned to at least one of the eight zones supported by the NC205 System, but may be assigned to additional zones, if desired. Zoning assignments are used to direct station calls to masters that are zoned for those calls.

### 5.2-1 Entering the Programming Mode

To choose the station to be programmed, press the appropriate station selector button on the NC250/NC230/NC255. The LED associated with that selector button will light as the central equipment establishes communications with the station. Now press the “ZONE” button. The station LED will extinguish and a display showing the zones assigned to the station will appear in the numeric key column; the station’s status will display in the alpha key column.

To recall what station is being programmed, simply push the “ZONE” button again. This will temporarily light the LED of the station originally chosen with a rapid flash. Press the “ZONE” button again to return to programming (display will clear after eight seconds).

- A. To assign zones, press the numerical key that corresponds to the number of the desired zone. If the zone is programmed, that number’s LED will light. Pressing the numerical key again will turn off the LED and unprogram that zone. Pressing the “9” key will toggle the state of all zones.

NOTE: DONOT assign “ZONE0” to stations; this will render them off-line. To reactivate a station that has been taken off-line, place a call from that station or re-assign it to a zone other than “0”. The central equipment will then validate the station and assign it to all zones.

- B. To program station status, press the corresponding alpha key:

#### “A” = STATUS

When lit, this key indicates that the station is in a standard mode of operation; no special functions (“B” - “I”) have been assigned. IR254-259 Stations default to the “A” Status. IR250-253 and IR260A Stations default to “F” (Fault Defeat) and “G” (Fire).

#### “B” = PRIVACY

When lit, this key indicates that audio communications from the station are inhibited. If a call originates from the station, then normal two-way communications are established. If the call originates from a master, then no audio will be heard from the station at the master, but audio from master will be heard at station.

#### “C” = PAGEINHIBIT

When lit, this key indicates that paging functions (preset, zone, and all-call paging) are ignored by the station.

#### “D” = PRIORITY UPGRADE

This key is used to indicate that a station’s **Routine** call has been upgraded to the **Priority** level. (Used for IR250-IR253 and IR260A only).

#### “E” = BATH (STAND ALONE)

This key is used to mark devices (Emergency Call Stations, Smoke Detector Contacts, etc.) as stand alone bath/emergency stations. These stations will generate medium priority (EMERGENCY) calls. By default, stand alone stations that are not marked as BATH/STAND ALONE will generate high priority (CODE or FIRE) calls.

#### “F” = FAULT DEFEAT

This key is used to disable the central equipment’s fault scan for the station. It can be used to temporarily mask a faulty station while repairs are underway. *This key must be set for all IR250/IR251/IR252/IR253, IR260A and stand alone devices.*

#### “G” = FIRE

When lit, this key indicates that high priority calls from this station are recognized as FIRE calls. (NOTE: The NC205 is not listed as a fire alarm system. It is not intended as a primary indication means for evacuation.)

#### “H” = STAFF STATION

This key is used to mark a station as a STAFF station. The stations will be included in staff paging and follow functions.

#### “I” = MASTER STATION

This key is used to assign a selector button to a master for master-to-master communications. All masters must have the same assigned room number (251-254) available. Refer to Section 5.3-1.



To turn off any feature, simply press its associated alpha key so that its LED is off. Widely used programming functions (PRIVACY, PRIORITY UPGRADE, etc.) should be accomplished by use of the master function keys so marked.

- C. *To program a selector key for master-to-master communication*, press “I” to mark the key as a master. Then press the numerical number of the desired master (1 through 4). All masters must be programmed to have their own selector buttons, in addition to selector buttons representing other masters. For example, if master-to-master communication is desired on a system with only two masters, each master must have one selector button programmed for itself and another selector button programmed for the other master. (Note: 251, 252, 253, 254 are the default keys for master-to-master communication. 251 is used for master #1, 252 for master #2, and so on.)

NOTES: Master-to-master communications are restricted to “push-to-talk” only (no handset). See Section 5.3 for additional details.

Using this method, all master-to-master communications can be programmed at one master. At all other masters, the same buttons are programmed automatically for each master.

## 5.2-2 Exiting the Programming Mode

To exit the programming mode, press the “RESET” button. The “RESET” LED will flash until the information has been stored.

## 5.3 MASTER KEY PROGRAMMING/CONFIGURATION

The NC250/NC230 Master Stations provide extended features to allow non-square system configurations, easy keypad expansion, and custom key configurations.

This section explains the methods used to accomplish these functions.

### 5.3-1 Entering the Programming Mode

NOTE: When erasing the flash memory or adding an expansion keypad, custom configurations (“non-square” and/or “specific selector buttons”) must be reprogrammed. During programming, the fault light may illuminate momentarily—a normal condition.

To place a master station into the programming mode, turn on (down) the programming switch SW4, as shown in Figure 23. The following features are then available:

- A. *To reset a master station to default values (erase flash memory)*, turn SW4 on, toggle SW1, wait for “TALK” LED to light (indicating proper operation) and turn SW4 off.

By default, masters begin room numbering at the first column’s top selector button and continue from top to bottom, left to right, until all keys have been numbered (including all expansion keypads). Other default values include PRESET “A” on, BEEPTONE on, and PRE-ANNOUNCE TONE off.

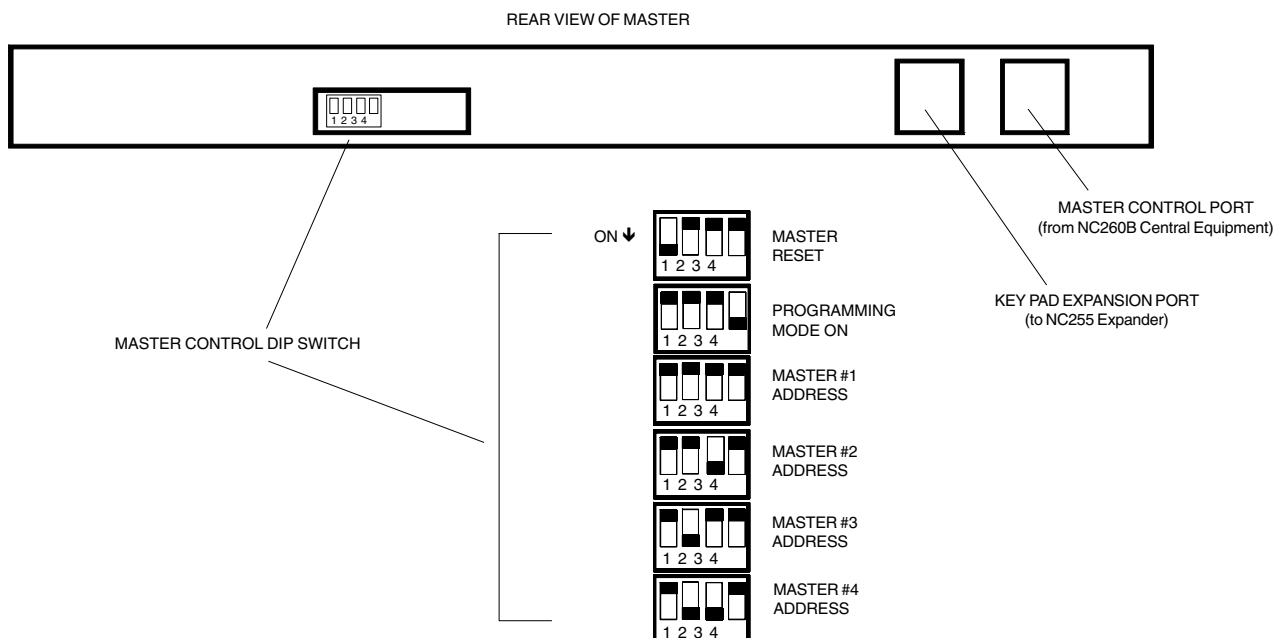


FIG. 23: NC250/230 Master DIP Switch Controls

- B. *To add an expansion keypad (NC255) connect to master and refer to section 5.5-4.*

- C. *To make a master “non-square”, press the ZONE button, then key in the numerical value of the room number that the master is to begin from. The TALK LED will flash and a beep tone will sound when the information has been accepted. The programming mode may then be exited.*

The term “non-square” means that the master can begin its selector key assignment from a room number other than #1. For example, to program an NC250 master (50 key) to begin responding with room number 15, follow the procedures listed above. Key in “0”, “1”, and “5” for the numerical room value. When completed, the master will respond to rooms 15 (first selector button) through 65 (last selector button).

- D. *To custom configure a specific selector button, press the target selector button. Using the numerical key column, key in the desired value of the room to which the target selector key will be assigned. The TALK LED will flash and a beep tone will sound when the information has been accepted. The programming mode may then be exited.*

The procedure described above can be used to assign individual out of sequence room numbers to a selector button. The same procedure is used to mark a selector button as a master station for master-to-master communication. Room numbers 251, 252, 253, and 254 are reserved for masters #1, #2, #3, and #4 respectively. Do not use these room numbers for any other purposes. (Refer to Section 5.2-1C.)

NOTE: Using this method, the master-to-master communications must be programmed at each master. This method is useful if the same buttons for master-to-master communication cannot be used at each master.

- E. *To set the system time, flip dipswitch #4 down, press the “Privacy” button. Enter a two digit hour setting using the numeric keys, and then enter a two digit minute setting using the numeric keys. Finally, set AM or PM by pressing the “0” key for AM or the “1” key for PM. Return dipswitch #4 to its original position. The programming mode may then be exited.*

### **5.3-2 Exiting the Programming Mode**

*To exit the programming mode, return SW4 to the off position and then toggle SW1. This procedure releases the master from programming mode and then resets it.*

## **5.4 EQUIPMENT RESET PROCEDURES**

### **5.4-1 Central Equipment**

- A. *To reset the central equipment, remove batteries and power down the entire system. Then wait 30 seconds before reapplying power, and reinstall batteries.*
- B. *To reset the flash memory, turn SW1 on and power down the system per 5.4-1A. Wait until LED’s on the PM261A Selector Card begin to flash, then turn SW1 off.*
- C. *To disable system programming from masters (programming lock), turn SW2 on.*

### **5.4-2 Master Stations**

- A. *To reset a master, toggle SW1 (see figure 9).*
- B. *To erase flash memory, refer to section 5.3-1A.*

## **5.5 EXPANDING/UPGRADING THE SYSTEM**

The NC205 Nurse Call System provides features to allow easy upgrading and expansion. This section explains the methods used to accomplish these functions. The system capacity is 128 stations including the master stations.

### **5.5-1 Adding Central Equipment Expander**

- A. Inspect and confirm wiring.
- B. Disconnect system power at the central equipment (including backup batteries).
- C. Make wiring connections in accordance with Section 2.6 and wiring diagrams.
- D. Once wiring has been validated, power may be reapplied to the system (NC260B, NC262A, and batteries).
- E. Reset the flash memory on the NC260B Central Equipment (Section 5.4-1B).
- F. Verify that the activity LED’s on the PM261A Selector Cards are flashing (see Section 7 for testing).

### 5.5-2 Adding Battery Backup

- A. Inspect and confirm wiring.
- B. Make wiring connections in accordance with Section 2.6 and wiring diagrams.

NOTE: Battery power should be connected after system power up. If batteries are drained from use, they should be removed to power system back up and then reinserted into connector.

### 5.5-3 Adding Master Stations

- A. Inspect and confirm wiring.
- B. Disconnect system power at the central equipment (including backup batteries) and NC262A expansion unit.
- C. Make wiring connections in accordance with Section 2.6, and wiring diagrams.
- D. Verify the DIP switch settings on the master to be installed. The master's address should be set to the next available address (sequentially), the programming mode should be off, and the reset switch should be up (off).
- E. Once the DIP switch settings and wiring have been validated, power may be reapplied to the system (NC260B, NC262A, and batteries).
- F. Reset the NC260B Central Equipment. (See Section 5.4-1).

### 5.5-4 Adding Master Expanders

- A. Inspect and confirm wiring.
- B. Verify the DIP switch settings on the master expander to be installed. The expander's address should be set to the next available address (sequentially). The expander's type switch SW4 ("on" for NC255), must be set correctly. (Refer to Section 3.2.)
- C. Make wiring connections in accordance with Section 2.6 and NL205-G.
- D. Place NC250/230 Master into the programming mode (see Section 5.3-1, and 5.3-1B).
- E. Reset the NC250/NC230 Master (see Section 5.4-2A). The "TALK" LED will flash and a beep tone will sound once the master has acknowledged the expansion.
- F. Return the master to normal operation (see Section 5.3-2).

### 5.5-5 Adding Remote Stations

- A. Inspect and confirm wiring.
- B. Plug system connector onto station.
- C. Place a call from the station. Once the central equipment has acknowledged the existence of the call, the master(s) that have been zoned to respond to calls from the station's zone will display the call. The call may then be answered from that master (see Section 7 for testing).

### 5.5-6 Adding Peripheral Devices

- A. Inspect and confirm wiring.
- B. Plug peripheral connector onto station.
- C. To test SF Series peripherals, activate the call button, switch, or lever (see Section 7 for testing).
- D. To test LI Series peripherals, activate the call(s) associated with the particular lamp(s) color (see Section 7 for testing).
- E. For stand alone devices, verify that the device is programmed for "PRIVACY" and "FAULT DEFEAT" at the associated master station.

## 5.6 VIEWING SYSTEM INFORMATION

The NC205 Nurse Call System provides various methods of displaying system information. The display pages are timed out and will clear after eight seconds or when the "RESET" button is pressed.

### 5.6-1 Status Display Pages

- A. *Privacy display* - press the "PRIVACY" key. A display will appear showing stations which have been set for **Privacy** with a slow flash of the station's LED.
- B. *Priority display* - press the "PRIORITY" key. A display will appear showing stations which have been set for **Personal Attention** by a slow flashing of the station's LED. Stations which have been upgraded to **Priority** will display a rapid flashing of the station's LED.
- C. *Staff display* - press the "STAFF" key. A display will appear showing stations which have staff presence registered by a slow flashing of the station's LED. Stations where staff presence is requested will be displayed by a rapid flashing of the station's LED.

## 5.6-2 **Faults**

The NC205 System scans for fault conditions approximately once every six minutes. Faults are displayed through LED's on master stations, selector cards, and the central equipment.

Faults are displayed on the NC260B by a row of three LED's, (D1, D2, & D3—from left to right) located at the bottom center of the motherboard. These LED's will show the detected fault condition via a fault code.

The PM261A Selector Card displays central equipment faults with a single red LED. If the LED is off or steadily on, this will indicate a problem of the central equipment. A flashing LED indicates normal operation. Note: the flashing of this LED is irregular.

- A. *Master station fault* - indicated by LED "D1" on continuously. Other master stations will light their fault LED's.
- B. *Code circuit fault* - indicated by LED's "D1" and "D2" illuminated. See section 3.3 for indication at master station.

Code faults are displayed at stations with LI387 Dome Lights by a slow flashing blue lamp. Only IR254/IR255/IR256/IR257/IR258/IR259 stations include code supervision circuitry.

- C. *Station fault* - indicated by LED's "D1", "D2", and "D3" illuminated. The affected station will be indicated on the master station via lighting the station's keypad LED and the "FAULT" LED will be continuously illuminated. See section 3.3 for indication at master station. This could also indicate a nurse or priority line fault.

All fault indication which has originated from the central equipment will be indicated by the "FAULT" LED on all master stations being illuminated continuously. The central equipment must then be checked for specific fault indication. The "FAULT" LED flashing at a fast rate will indicate no interrogation from the central equipment for more than eight (8) seconds, indicating a central equipment failure.

To view the fault list, press the master's "ZONE" button twice. This will display the master's status information on the first button press; the second button press will display stations that have reported faults since the last central equipment fault scan. They will be indicated by a fast flashing of the station's selector LED. This display will clear after eight seconds, or when the "RESET" button is pressed.

## 6.0 SYSTEM MAINTENANCE INSTRUCTIONS

The following section provides information regarding NC205 System user serviceable parts and their replacement. Any equipment not listed in this section is not user serviceable and should not be replaced or repaired by other than qualified service personnel.

### 6.1 NC260B CENTRAL EQUIPMENT & NC262A CENTRAL EQUIPMENT EXPANDER

No user serviceable parts.

### 6.2 PK261A DOME LIGHT POWER SUPPLY

No user serviceable parts.

### 6.3 NC250/NC230 MASTER STATIONS & NC255 MASTER STATION EXPANDER

#### 6.3-1 Defective Handset/Cord Replacement

- A. To remove cord, grip end of modular plug on cord firmly and squeeze until cord is easily pulled away from handset or base.
- B. To replace cord, hold end of plug on the cord, squeeze and push straight into receptacle on handset or base. Release and plug will click into place.
- C. To test the handset, place a call to a room station and attempt communications using the handset (See Section 7.3).

#### 6.3-2 8PIN Modular Cord

- A. To remove cord, grip end of modular connector firmly and pull straight away from master station. Repeat for wall plate connection.
- B. To replace cord, hold by end of plug and push straight into cord jack on station. Plug will click into place. Repeat for wall plate connection.
- C. To test cord, place a call to the station. The "TALK" LED should illuminate when communications have been established. Push the reset button to cancel call (see Section 7.3).

### 6.4 IR SERIES STATIONS

#### 6.4-1 Defective Pillow Speaker Replacement

- A. To remove pillow speaker, grip end of modular plug firmly and squeeze until cord can easily be pulled straight away from station.

B. To replace pillow speaker, hold by end of plug, squeeze and push straight into the receptacle on station. Release and plug will click into place.

C. To test pillow speaker, initiate a call. Call-placed LED should illuminate. Push the reset button to cancel call (see Section 7.4).

#### 6.4-2 Defective Call Cord Replacement

A. To remove call cord, grip end of plug firmly and pull straight away from station.

B. To replace call cord, hold by end of plug and push straight into the receptacle on station.

C. To test call cord, initiate a call. Call-placed LED should illuminate. Push the reset button to cancel call (see Section 7.4).

### 6.5 SF SERIES STATIONS

No user serviceable parts (for SF100C, see Section 6.4-2).

### 6.6 LI SERIES DOME/ZONE LIGHTS

#### 6.6-1 Defective Lamp Replacement

A. To remove cover, grip firmly by sides and squeeze. Pull cover away from plate.

B. To remove lamps, hold by glass bulb, push in and rotate counter-clockwise, then pull straight out from metal socket.

C. Remove any bulb covers and replace on new bulbs.

D. To replace lamps, hold by glass bulb, push in and rotate clockwise into socket.

E. To test lamps, place calls at all stations necessary to test all lamp combinations (see Section 7.6).

F. Replace cover.

**NOTE: Replace lamps ONLY with TekTone® part number LI028 or approved equal.**

## 6.7 REPLACEMENT PARTS

<u>TekTone® Part No.</u>	<u>Description</u>	<u>Used For</u>
CA033	4 pin modular cord, coiled	NC250/NC230 Master Station Handset
CA037/7	8 pin modular cord, 7'	NC250/NC230 Master Station
CA037	8 pin modular cord, 1' 4" (1.3')	NC255 Master Station Expander
LI028	28 volt incandescent lamp	LI381/LI382/LI383/LI387/LI388A Dome/Zone Lights
PL467	8 pin modular wall plate	NC250/NC230 Master Stations
SF301	call cord with molded push button, 7'	IR251/IR252 Standard and IR255/IR256 Enhanced Patient Stations
SF301/10	same as SF301 with 10' cord	IR251/IR252 Standard and IR255/IR256 Enhanced Patient Stations
SF301G	geriatric push button call cord, 7'	IR251/IR252 Standard and IR255/IR256 Enhanced Patient Stations
SF302	dual call cord with molded push buttons, 7'	IR251/IR252 Standard and IR255/IR256 Enhanced Patient Stations
SF302/10	same as SF302 with 10' cord	IR251/IR252 Standard and IR255/IR256 Enhanced Patient Stations
SF302G	geriatric dual push button call cord, 7'	IR251/IR252 Standard and IR255/IR256 Enhanced Patient Stations
SF301P	pillow speaker with call button & TV controls	IR257/IR258 Enhanced Patient Stations
SF301PIR	pillow speaker with call button, TV & radio controls	IR257/IR258 Enhanced Patient Stations
SF311	call cord with molded push button, modular connection, 7'	IR257/IR258 Enhanced Patient Stations
SF311/10	same as SF311 with 10' cord	IR257/IR258 Enhanced Patient Stations
SF311G	geriatric/oxygen call cord	IR257/IR258 Enhanced Patient Stations
SF312	dual call cord with molded push buttons, modular connection, 7'	IR257/IR258 Enhanced Patient Stations
SF312G	geriatric/oxygen dual call cord	IR257/IR258 Enhanced Patient Stations
TA030	telephone handset	NC250/NC230 Master Stations

## 7.0 TEST INSTRUCTIONS

The following section provides test instructions for determining correct system operation. It is assumed that the system hardware and wiring has been inspected and approved, and that the system and its components have been set up according to Section 5-System Configuration/Programming.

These procedures have been written from the perspective of the user/operator. **ONLY QUALIFIED SERVICE PERSONNEL SHOULD PERFORM REPAIRS AND/OR MAINTENANCE TO THE SYSTEM.** Be sure that power is disconnected (DC, then AC) before attempting to service the system's main components (central equipment and expanders).

### 7.1 SYSTEM INSPECTION

#### 7.1-1 Basic Wiring Check

- A. Refer to Section 2.5 for wiring instructions.
- B. If faulty or misconnected wiring is suspected, contact a qualified service technician.

#### 7.1-2 Test Setup

Before proceeding with a system test, all system components should be set to normal operating conditions as follows:

- A. NC255/230/250 Master Station & Expanders:

All function buttons should indicate normal operation (no LED indication). All selector button LED's should be off. The power LED (green) should be on, the priority LED's (green, yellow, red) should be off, the function key LED's should be off, and there should be no fault indication(s).

- B. IR250-IR253 Standard Patient Stations and IR260A Duty Station:

Insert the appropriate call cord in each call cord receptacle (if applicable). Press the "RESET" (red) button to cancel any errant calls.

- C. IR254-IR259 Enhanced Patient Stations:

Insert the appropriate call cord in each call cord receptacle (if applicable). Press the "RESET" (red) button to cancel any errant calls. Station priority should be set to **Routine**, and staff functions should not be active.

- D. SF Series Peripheral Stations:

If a call has been activated, reset the station by returning the call lever/reset switch to the "UP" or "OFF" position. On SF100C/SF101C Visual Station, press the "CANCEL" button. On SF250 Presence Stations, the green LED should not be illuminated.

- E. LI Series Corridor Dome/Zone Lights:

Dome lights should not be illuminated and Zone lights should show no system activity.

#### 7.1-3 Viewing System Faults

Refer to Section 5.6-1 (Status Display Pages), and Section 5.6-2 (Faults).

### 7.2 CENTRAL EQUIPMENT AND EXPANDERS

**NOTE: If service is required after reviewing these steps, a qualified service technician should be alerted.**

#### 7.2-1 NC260B Central Equipment

- A. Verify that no faults are being displayed on the NC260B's motherboard (LED's D7-D9 as referenced in Section 5.6-2).
- B. Verify that the activity LED's on all PM261A's (selector cards) are flashing.
- C. Verify all wiring as per wiring diagrams.

#### 7.2-2 NC262A Central Equipment Expander

- A. Verify that the activity LED's on all PM261A's (selector cards) are flashing.
- B. Verify all wiring as per wiring diagrams.

#### 7.2-3 PK261A Dome Light Power Supply

- A. Verify that the power LED is lit.
- B. Verify all wiring as per wiring diagrams.

#### 7.2-4 **PM261A Selector Card**

- A. Verify that the activity LED's on all PM261A's (selector cards) are flashing.
- B. Verify volume setting (see Section 2.7).
- C. Verify all wiring as per wiring diagrams.

### 7.3 **MASTER STATIONS AND EXPANDERS**

Ensure that the "POWER ON" LED is illuminated on the master station before performing these tests.

#### 7.3-1 **Basic Communications**

- A. Initiate a call from each master station to a patient station as described in the Operational Procedures (Section 4.1-1). Check for the following at the master station:

- 1. Room station selector LED is illuminated.
- 2. "TALK" LED steadily illuminated.

- B. Press "TALK" (grey) button and check for the following at the master station:

- 1. "TALK" LED steadily illuminated.
- 2. Audible communications established.

Check for the following at the patient station:

- 1. Reset/In-use LED steadily illuminated.
- 2. Audible communications established.

- C. Press "RESET" (black) button and check for the following at master and patient station:

- 1. All signals cancelled.

- D. Repeat Steps A - C using the handset instead of the push-to-talk button.

- E. Initiate a call to another master station as described in the Operational Procedures (Section 4.1-1). Check for the following at both master stations:

- 1. Master station selector LED is illuminated.
- 2. "TALK" LED is steadily illuminated.

Check for the following at the called master station:

- 1. Audible communications can be established (push-to-talk only, no handset).

- F. Press "RESET" (black) button and check for the following at both master stations:

- 1. All signals cancelled.

#### 7.3-2 **Staff Functions**

NOTE: The "STAFF" functions are available only on IR254-IR259 Patient Stations.

- A. Request staff service by selecting a room for communications, then pressing the "STAFF" (green) button. Check for the following at the master station:

- 1. The room station's selector button LED is illuminated.
- 2. "STAFF" button LED slowly flashing.

Check for the following at the patient station:

- 1. Green dome light flashing.
- 2. Green LED on presence station flashing.

Check for following at the duty station in the same zone:

- 1. Green dome light flashing (all zone lights).
- 2. Slow repeating tone signal (1 every 8 seconds).

- B. Press "RESET" (black) button and check for the following at master station:

- 1. Room station selector LED and "STAFF" LED extinguished.

Check for the following at duty stations and zone lights in the same zone:

- 1. Green dome light flashing.

- C. Cancel the staff service request by selecting the same room for communications, then pressing "STAFF" (green) button, and then the "RESET" (black) button. Check for the following at master station, room stations, dome lights, zone lights, and presence stations:

- 1. All signals cancelled (lights and tones).

#### 7.3-3 **Paging Functions**

- A. Page a zone by pressing the "PAGE" (violet) button, then pressing a zone number (numerical key column) as described in the Operational Procedures (Section 4.1-3). Check for the following at the master station:



1. "PAGE" LED is illuminated.
  2. "ZONE" LED is illuminated.
  3. Zone number (numerical key column) is illuminated.
  4. "TALK" LED is illuminated.
- B. Press "TALK" (grey) button and check for the following at the master station:
1. Audible one-way communications established to all patient stations within the selected zone.

Check for the following at all zoned patient stations:

1. Reset/In-use LED steadily illuminated.
  2. Audible communication with the master has been established.
- C. Press "RESET" (black) button and check for the following at master and patient stations:
1. All signals cancelled.
- D. Page all preset zones by pressing "PAGE" (violet) button, and then pressing the "ZONE" (blue) button. Check for the following at the master station:
1. "PAGE" LED steadily illuminated.
  2. "TALK" LED steadily illuminated.
  3. "ZONE" LED steadily illuminated.

Check for the following at all zoned patient stations:

1. Reset/In-use LED steadily illuminated.
  2. Audible one-way communications with the master have been established.
- E. Press "RESET" (black) button and check for the following at master and patient stations:
1. All signals cancelled.

#### 7.3-4 **Follower Functions**

NOTE: This "STAFF FOLLOWER" function is available only on IR254-IR259 Enhanced Patient Stations with SF250 Staff Presence Station installed. There should be no calls waiting on the system.

- A. Initiate Staff Follower by pressing "FOLLOW" (orange) button, then press the "STAFF" (green) button. Check for the following at the master station:
1. "FOLLOW" LED steadily illuminated.

2. "STAFF" LED steadily illuminated.
- B. Register a staff presence at a presence station by pressing the "STAFF" button, then place a routine call from any other patient station in the same zone. Check for the following at the master station:

1. "FOLLOW" LED steadily illuminated.
2. "STAFF" LED steadily illuminated.
3. The room station's selector LED is slowly flashing.
4. Low priority LED (green) steadily illuminated.
5. Slow repeating tone (1 every 8 seconds).

Check for the following at the patient station to which the staff presence is registered:

1. Reset/In-use LED steadily illuminated.
2. Slow repeating tone (1 every 8 seconds).
3. Green dome light on steady.
4. Green LED on presence station steadily illuminated.

Check for the following at a duty station in the same zone:

1. Call-placed LED steadily illuminated.
2. Slow repeating tone (1 every 8 seconds).
3. White dome light on steady.

- C. Reset the call from the calling patient station and check for the following:

1. All signals cancelled except the "STAFF" (green) LED on the presence station and green dome light.

- D. Press the "RESET" (black) button at the master station and check for the following:

1. "FOLLOW" LED extinguished.
2. "STAFF" LED extinguished.
3. Low priority LED (green) extinguished.

- E. Cancel the staff presence at the presence station by pressing the "STAFF" button. Check for the following:

1. All signals cancelled.

- F. Initiate staff follow function to a specific room by pressing the "FOLLOW" (orange) button, then push a room station selector button of a known room/station. Check for the following at the master station (Note: this particular follower function is available for IR250-IR260A Series Stations):

1. "FOLLOW" LED steadily illuminated.
2. LED illumination of room station to be followed to.

G. Place a routine call from any other patient station in the same zone. Check for the following at the patient station to which calls are being sent:

1. Reset/In-use LED steadily illuminated.
2. Slow repeating tone (1 every 8 seconds).

Check for the following at the master stations:

1. Low priority LED (green) steadily illuminated.
2. Slow repeating tone (1 every 8 seconds).
3. The room station's selector button LED is slowly flashing.

Check for the following at the duty station in the same zone:

1. Call-placed LED steadily illuminated.
2. Slow repeating tone (1 every 8 seconds).
3. White dome light on steady.

H. Press "RESET" (black) button to toggle off. Check for the following:

1. All signals cancelled (except incoming call).

I. Press "TALK" (grey) button. Check for the following at the master:

1. Communication with calling station established.

J. Press "RESET" (black) button. Check for the following:

1. All signals cancelled.

### 7.3-5 Priority Upgrade

NOTE: The "PERSONAL ATTENTION" priority is available only on IR254-IR259 Enhanced Patient Stations. For IR250-IR253 and IR260A Standard and Duty Stations go to step C and place a call.

There should be no calls waiting on the system.

A. Upgrade the call priority of a station to **Personal Attention** by first selecting a station (IR254-IR259), and then pressing the "PRIORITY" (yellow) button. Then press the "RESET" (black) button. Proceed to place a standard call from the station. Check for the following at the patient station:

1. Call-placed LED steadily illuminated.
2. White dome light on steady.

Check for the following at the master station:

1. Low priority LED (green) steadily illuminated.
2. The room station's selector button LED is slowly flashing.
3. Slow repeating tone (1 every 8 seconds).

B. Press the "TALK" (grey) button on the master station and verify that audible communications to the calling station is established. Then press the "RESET" (black) button. Check for the following at the master station:

1. Low priority LED (green) remains illuminated.
2. The room station's selector button LED remains flashing.
3. Slow repeating tone (1 every 8 seconds).

C. Select the calling room (flashing selector button LED) and then press the "PRIORITY" button and then press the "RESET" (black) button. Check for the following at the master station:

1. Medium priority LED (amber) is steadily illuminated.
2. The room station's selector button LED is flashing.
3. Repeating tone (1 every second).

Check for the following at the patient station:

1. Call-placed LED and white dome light steadily illuminated on IR250-IR253.
2. Call-placed LED steadily illuminated and white dome light flashing on IR254-IR259.

D. Repeat Step B. Check for the following at master station:

1. Medium priority LED (amber) is steadily illuminated.
2. The room station's selector button LED is flashing.
3. Repeating tone (1 every second).

E. Repeat Step C. Check for the following:

1. All signals cancelled.

### 7.3-6 Privacy Functions

See Section 5.2-1 for a description of the *Privacy Function*. There should be no calls waiting on the system.

- A. To place a patient/staff station in the Privacy Mode, first select a station, and then press the “PRIVACY” (red) button. Then press the “RESET” (black) button.

1. Reset/In-use LED steadily illuminated on station.

- B. Press the select key for the same station and then press the “TALK” (grey) button on the master and verify that audible communications to the calling station have been established. (There should be no audible communications *from* the patient station, only *to* the patient station.) Check for the following at the master station:

1. The room station’s selector button LED is steadily illuminated.

- C. To reset the “PRIVACY” mode, press the “PRIVACY” (red) button. Then press the “RESET” (black) button. Or if it is desirable to leave the “PRIVACY” mode active, then just press the “RESET” (black) button. Check for the following:

1. All signals cancelled.

## 7.4 REMOTE STATIONS

NOTE: Stations should be tested one at a time.

- A. Initiate a call on each patient or staff station as described in the Operational Procedures (Section 4.2). On dual stations, both circuits should be tested. Check for the following at the calling patient/staff station:

1. Call-placed LED steadily illuminated.  
2. White dome light on steady.

Check for the following at master station:

1. Low priority LED (green) steadily illuminated.  
2. The room station’s selector button LED slowly flashing.

Check for the following at duty stations in the same zone:

1. Slow-repeating tone (1 every 8 seconds).  
2. White dome light on steady.

- B. Test communications from master station by pressing “TALK” (grey) button as previously described. Check for the following at patient/staff stations:

1. Call-placed LED steadily illuminated.  
2. Reset/In-use LED steadily illuminated.  
3. White dome light on steady.  
4. Audible communications established.

- C. Press “RESET” (black) button. Check for the following at all stations:

1. All signals cancelled.

- D. Remove call cord or pillow speaker from receptacle on patient stations. Check for the following at the patient/staff stations:

1. Call-placed LED (on IR255-IR258) and white dome light slowly flashing.  
2. On the IR251 and IR252, the white dome light will be steadily illuminated.

Check for the following at the master station:

1. Medium priority LED (amber) steadily illuminated.  
2. Repeating tone (1 every second).  
3. The room station’s selector button LED is flashing.

Check for the following at duty stations in the same zone:

1. Emergency LED flashing.  
2. Repeating tone (1 every second).  
3. Red dome light flashing.

- E. Replace call cord. Check for the following at all stations:

1. All signals cancelled.

- F. Upgrade the call priority of a station to **Priority** (as explained in Section 7.3-5). Repeat above procedures A - C. Check for the following at patient stations:

1. Call-placed LED and white dome light slowly flashing on IR254-IR259.  
2. Call-placed LED and white dome light steadily illuminated on IR250-IR253.

Check for the following at master station:

1. Medium priority (amber) LED steadily illuminated.
2. Repeating tone (1 every second).
3. The room station's selector button LED is flashing.

Check for the following at a duty station in the same zone:

1. Emergency LED flashing.
2. Repeating tone (1 every second).
3. Red dome light slowly flashing.

G. Reset call at the patient station. Check for the following at all stations:

1. All signals cancelled.

H. Upgrade the call priority of the station back to Routine (as explained in Section 7.3-5).

NOTE: Calls may be placed from IR260A Duty Stations in the same manner as described above.

## 7.5 SF SERIES PERIPHERAL DEVICES

SF Series peripheral devices should be tested one at a time.

A. Initiate a call on each visual station (one at a time) as described in the Operational Procedures (Section 4.3). Check for the following at visual station:

1. Call-placed LED steadily illuminated.

Check for following at master station:

1. The room station's selector button LED is flashing.
2. Low priority LED (green) steadily illuminated.
3. Tone signal repeating (1 every 8 seconds).

Check for following at duty station in the same zone:

1. Call-placed LED steadily illuminated.
2. Tone signal repeating (1 every 8 seconds).
3. White dome light steadily illuminated.

B. Reset each visual station as described in the Operational Procedures (Section 4.3). Check for the following at emergency, patient, duty, and master stations:

1. All signals cancelled.

C. Initiate a call on each emergency station (one at a time) as described in the Operational Procedures (Section 4.3). Check for the following at emergency station:

1. Call-placed LED flashing.

Check for following at associated patient station:

1. Red dome light flashing.

Check for following at master station:

1. The room station's selector button LED is flashing.
2. Medium priority LED (amber) steadily illuminated.
3. Tone signal repeating (1 every second).

Check for following at duty station in the same zone:

1. Emergency LED flashing.
2. Tone signal repeating (1 every second).
3. Red dome light flashing.

D. Reset each emergency station as described in the Operational Procedures (Section 4.3). Check for the following at emergency, patient, duty, and master stations:

1. All signals cancelled.

E. Initiate a call on each code station (one at a time) as described in the Operational Procedures (Section 4.3). Check for the following at code call:

1. Call-placed LED rapidly flashing.

Check for the following at associated patient stations:

1. Call-placed LED rapidly flashing.
2. Blue dome light rapidly flashing.

Check for the following at master station:

1. Room station's selector button LED is illuminated.
2. High priority LED (red) illuminated
3. Tone signal repeating rapidly.

Check for the following at a duty station in the same zone:

1. Emergency LED rapidly flashing.
  2. Tone signal repeating rapidly.
  3. Blue dome light rapidly flashing.
- F. Reset each code call and check for the following at code, patient, duty and master stations:
1. All signals cancelled.
- G. If fire/smoke detector 2 contacts are used in place of code stations, they may be tested in the same manner as code stations. **NOTE: High priority LED (red) on master station will flash rapidly. All other indications remain the same except red dome flashing on duty station.**
- H. Register staff presence on each presence station as described in the Operational Procedures (Section 4.3). Check for the following at presence stations:
1. Staff LED (green) steadily illuminated.

Check for the following at associated patient stations:

1. Green dome light steadily illuminated.

Check for the following at a duty station in the same zone:

1. Green dome light steadily illuminated.
- I. Cancel staff registration as described in the Operational Procedures (Section 4.3). Check for the following at presence, patient, and duty station:
1. All signals cancelled.

## 7.6 LI SERIES PERIPHERAL DEVICES

A. To set LI Series Dome Lights, individually place calls at a patient station (Sections 4.2 and 4.3) that reflect the dome light's signals. For example:

1. To test the blue lamp, place a code call.
2. To test the red lamp, place an emergency call.
3. To test the white lamp, place a routine call.
4. To test the green lamp, register a staff presence.

# APPENDIX 1.0 NC260B COMMUNICATIONS MODE

## 1.1 GENERAL

The NC260B supports bidirectional communications between the Central Equipment and an external communications modem. The connection of the modem to the Central Equipment is accomplished through the use of a built-in RS232 port on the Central Equipment. This RS232 port is the same port that was normally used to support pager and printer operation with the NC260A with the PM263 attached serial port card.

Two additional system features are now accomplished through the use of this port. They are:

- A. The ability to program custom room labels, and
- B. The ability to accomplish limited system fault location.

The utilization of the new features can be accomplished both locally (at the site) or remotely (from a location other than the site).

**Note:** If no modem or laptop PC is connected to the serial port or if cable connection to the serial port is incorrect, the system will flash LED "D1" seven times at approximately one flash per half second. If this occurs, the port will be disabled for this type of usage until the system is reset again.

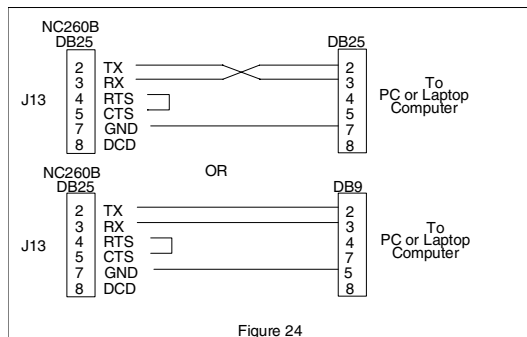
When removing devices connected to the serial port, the system must be powered down prior to removal.

## 1.2 LOCAL OPERATION

To use the NC260B communications mode locally, the following items are required:

- A. A PC or laptop computer, and
- B. A properly prepared null modem cable.  
(Refer to Figure 24)

Reference Section 1.4 COMMUNICATION SOFTWARE for terminal software operation and settings.



The following section provides detailed operation for the local mode.

- A. Connect the prepared null modem cable (Refer to Figure 24) between the appropriate serial port on the PC or laptop computer and connector J-13 on the NC260B motherboard, then turn on S1-5 and S1-7 (Refer to Figure 26).
- B. Turn on the NC205 system and the PC or laptop and execute the desired terminal emulator program.
- C. After the NC260B system has completed its initialization and has begun its normal scan cycle (activity LED's on the selector cards will be blinking and the fault LED's will not be on), then place switch S1-3 on the NC260B motherboard to ON and then OFF. The microprocessor on the NC260B should stop its normal operation and automatically transfer to the communications mode. Verification that the system has changed modes will be evident in that the LED's on the selector cards will not be blinking and a Help/Menu screen will be presented on the PC/laptop computer. The NC205 system will remain in this mode unless one of the following items occurs:
  - 1. A "Leave Communications" command is issued from the PC/laptop computer.
  - 2. An automatic "Time Out" occurs due to system inactivity. (Approximately 2-3 minutes.)
  - 3. A system reset to the NC260B is initiated.

## 1.3 REMOTE OPERATION

To use the NC260B communications mode from a remote location, the following items are required:

### A. SITE REQUIREMENTS

- 1. An operating NC205 system with the NC260B and software installed.
- 2. An external modem attached to connector J-13 on the NC260B motherboard.
- 3. A standard commercial phone line attached to the modem.

### B. REMOTE REQUIREMENTS

- 1. A PC or laptop computer equipped with a modem capable of operating at 9600 baud. Reference Section 1.4 Communication Software for terminal software operation and settings.
- 2. A standard commercial phone line attached to the modem.

3. A standard RS232 serial cable. (DO NOT USE A NULL MODEM CABLE FOR THIS APPLICATION.)  
Save the terminal mode settings as default.

The following section provides detailed operation for the remote mode.

#### A. SITE PREPARATION

1. Turn the NC205 system and modem off.
2. Connect one end of the RS232 serial cable to J-13 on the NC260B motherboard.
3. Connect the other end of the RS232 serial cable to the modem connector.
4. Connect the phone line to the modem.
5. Turn the NC205 system on.
6. Turn the modem on.
7. Turn on S1-5 and verify that S1-7 is OFF.  
(Refer to Figure 26.)
8. Place switch S1-3 ON.
9. Place switch S1-3 OFF.
10. The system is now ready for connection to a remote computer via of the phone line.

#### B. REMOTE LOCATION PREPARATION

1. Turn on the PC or laptop computer and the modem (if external).
2. Verify that a standard commercial phone line is attached to the modem.
3. Enter into the terminal emulation program and verify that the following protocol is set:
  - a. Data Bits – 8
  - b. Parity – None
  - c. Stop Bit – 1
4. Dial the telephone number that is connected to the NC260B at the site.
5. Upon receipt of the incoming call, the NC260B will answer on the first ring and acknowledge the answer by displaying a HELP screen on the PC or laptop computer. At this point, bidirectional communications are available between the NC260B Central Equipment and the host computer.
6. After the session is completed, the host computer operator will issue a “Leave Communications” command. This command will cause the site modem to disconnect from the NC260B.

## 1.4 COMMUNICATION SOFTWARE

There are many software programs that will provide the protocols necessary to accomplish communication with the NC260B. Since most computer operating systems are either Windows 95 or Windows 98, the following section provides the necessary guidance for using Windows supplied HyperTerminal.

1. From Windows start HyperTerminal.
2. When prompted, supply the connection name.
3. Configure the communications port as follows:
  - a. Data Bits – 8
  - b. Parity – None
  - c. Stop Bit – 1
  - d. Flow Control – None
4. Click OK.
5. Select File.
6. Select Properties.
7. Select Settings.
8. Set Emulation to ANSI.
9. Set Backscroll buffer to 0.
10. Select ASCII setup.

Make sure that only the two following boxes are selected:

- A. Append line feeds to incoming line ends.
- B. Wrap lines that exceed terminal width. Line delay=0. Character delay=0.

## APPENDIX 2.0 SYSTEM OPERATION

### 2.1 GENERAL

The communications feature available on the NC260B is intended to be utilized by technicians familiar with the operation of the NC205 system. All of the user commands are two characters in length and are text-based.

The general operation in this mode is for the user to enter the desired two-character command at the prompt, followed by a carriage return. If no subsequent parameters are required, the central equipment processor will execute the function. At the completion of the task, the processor will issue a new command prompt. If user supplied parameters, such as room labels, etc., are required, the central equipment processor will issue a parameter prompt (Par->) once the command has been entered. The user must then supply the correctly formatted parameter(s), followed by a carriage return.

In communications mode, the first screen that will be seen on a PC or laptop computer connected to the NC260B is the HELP screen. The HELP screen is designed to provide the user with a list of *user commands* that can be used to read and write data between the NC260B and the PC or laptop computer. Figure 25 depicts what the HELP screen looks like.

Figure 25

COMMANDS	PARAMETERS	DESCRIPTION
CS	NONE	CLEAR SIM CALLS
CV	###	POINT VOLTAGE
DH	NONE	DISPLAY HELP
DZ	NONE	READ ZONE C CODES
EC	NONE	TOGGLE ECHO
ID	NONE	DISPLAY ID
LC	NONE	LEAVE COMM
LI	NONE	LICENSE
LF	NONE	TOGGLE LF
MR	NONE	MONITOR
PD	1, 2, 3, ...	DIAGNOSTIC
RC	###, ###	READ STTN C CODE
RL	###, ###	READ LABEL
SC	###, P	SIMULATE CALL
SP	D, S, P	SET PROTOCOL
WC	###, CCCC	WRITE CODE
WL	###, CCCCCC	WRITE LABEL

The two-letter command code shown in the COMMANDS column can be used to perform the listed communications routines between the NC260B and the PC or laptop computer. As an example, if the following key sequence were entered: DH <Enter>, the HELP screen would be displayed on the attached PC or laptop computer. A brief description for each of the COMMANDS shown on the HELP page follows:

- A. CS – Clears a simulated system call. (See SC)
- B. CV – Displays the voltage on the selected call line.
- C. DH – Displays the HELP screen.  
(Refer to Figure 25)

- D. ID – Displays the copyright information for the Central Equipment code as well as the version identifier of the installed code.
- E. EC – Toggles the character echo function on and off.
- G. LI – This command allows the user to review the software license.
- H. LC – Used to terminate the communications mode and restore NC260B system to the normal scan mode.
- I. LF – Toggles the line feed issued by the NC260B ON and OFF.
- J. MR – Allows the NC260B processor to return to its normal scan cycle with the capability of being placed back into the communications mode with a single key press (space bar). If any event occurs while the system is operating in the monitor mode, the status of the event will be displayed at the host computer instead of on the normally attached printer.
- K. PD – This command will cause the NC260B to step through all specified zones and measure the select line voltages. These voltage measurements are made with the select line high and low. If any line fails to indicate the correct voltage, an error will be logged on the PC or laptop computer screen for the failed room. When PD is selected, the user is prompted with two questions. The explanation of these questions is as follows:

#### 1. MAP? (Y or N) –

- a. If the operator selects Y, the system will scan all of the zones that the system found during its initial scan.
- b. If the operator selects N, the system will only scan the zone specified by the user.

#### 2. STEP? (Y or N) –

- a. If the operator selects Y, the system will automatically step through each room on each zone that the system found during its initial scan.
- b. If the operator selects N, the operator will be able to press any key to step from one room to the next.

- L. RC – This command reads and displays the pager cap code assigned to a room. A typical entry for this routine would be:
  - a. RL<ENTER>
  - b. PAR->001,064<ENTER>  
(Where 001 is the starting room number and 064 is the ending room number.)



- M. **RL** – This command reads and displays the label assigned to a zone/room and displays the data on the host PC or laptop computer. A typical entry for this routine would be:
- RL** <Enter>
  - RRR**, **QQQ** or **101,005** <Enter> (RRR is the starting room number and QQQ is the quantity of rooms to read.)
- N. **SC** – This command allows a simulated call to be placed to the Master without actually placing a call from the field. The type of call is selectable. The proper entry for this command is:
- SC** <Enter>
  - PAR->###, X** <Enter>  
(###=Point Number)  
(X= Priority Code, Fire, Emergency or Routine)
- O. **SP**–This command is used to set the communications protocol that the NC260B uses to communicate with the PC or laptop computer. This protocol will be applied upon the next system reset, provided S1-5 and S1-6 are set to the “ON” position on the NC260B. If S1-5 is the only switch on the NC260B that is set then the protocol will default to 8,1,N. (i.e. at P> prompt, enter 71E which would result in 7 data bits, 1 stop bit and parity enabled).
- P. **WC**– This command is used to assign pager cap codes to either room ID’s or zones.
- Note:** The default mode is for all calls to be paged by call type, I.E. all routine calls will go to 401a, all emergency calls will go to 400c and all code calls will go to 400d. The default mode will be disabled if the WC command is used to set cap codes. Resets will be always sent to cap code 402a, regardless of the mode used. When WC is selected the operator is prompted as follows:

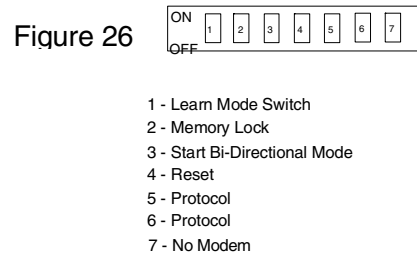
#### 1. Setup page by room? (Y or N)

- If the operator selects Y the system will display the parameter (PAR->) prompt. A typical entry here would be: **PAR-> 001,406a** <ENTER> This would set selector point number 1 to page to cap code 406a. After <ENTER> is pressed the next point will be displayed, continue programming or press <ENTER> to be returned to the command prompt.
- If the operator selects N, the message “Setup Page By Zone?” Will be displayed. A typical entry here would be: **PAR-> 002,402b** <ENTER> This would set zone number 2 to page to cap code 402b. Note: Any selectors which have

been programmed through the “Setup Page By Room” menu will page to the cap code they were assigned to, regardless of how the zones are assigned.

- Q. **WL**– This command allows the user to write labels to any room attached to the NC260B system. The labels are limited in length to eight (8) characters. The proper entry for this command is:
- WL** <Enter>
  - ###,CCCCCCCC** (Where ### is the room number and CCCCCCCC is the desired label for that room).

This function overwrites any previously assigned label, including default labels. When finished entering the desired labels and room numbers, the user exists this routine by depressing the ENTER key.



S5	S6	Protocol
Off	Off	8, 1, 0
On	Off	8, 1, N
On	On	Look in EEPROM*

\*If protocol has NOT been set on previous bi-directional session, the protocol defaults to 8, 1, N.

## 2.2 ERROR CODES AND MESSAGES

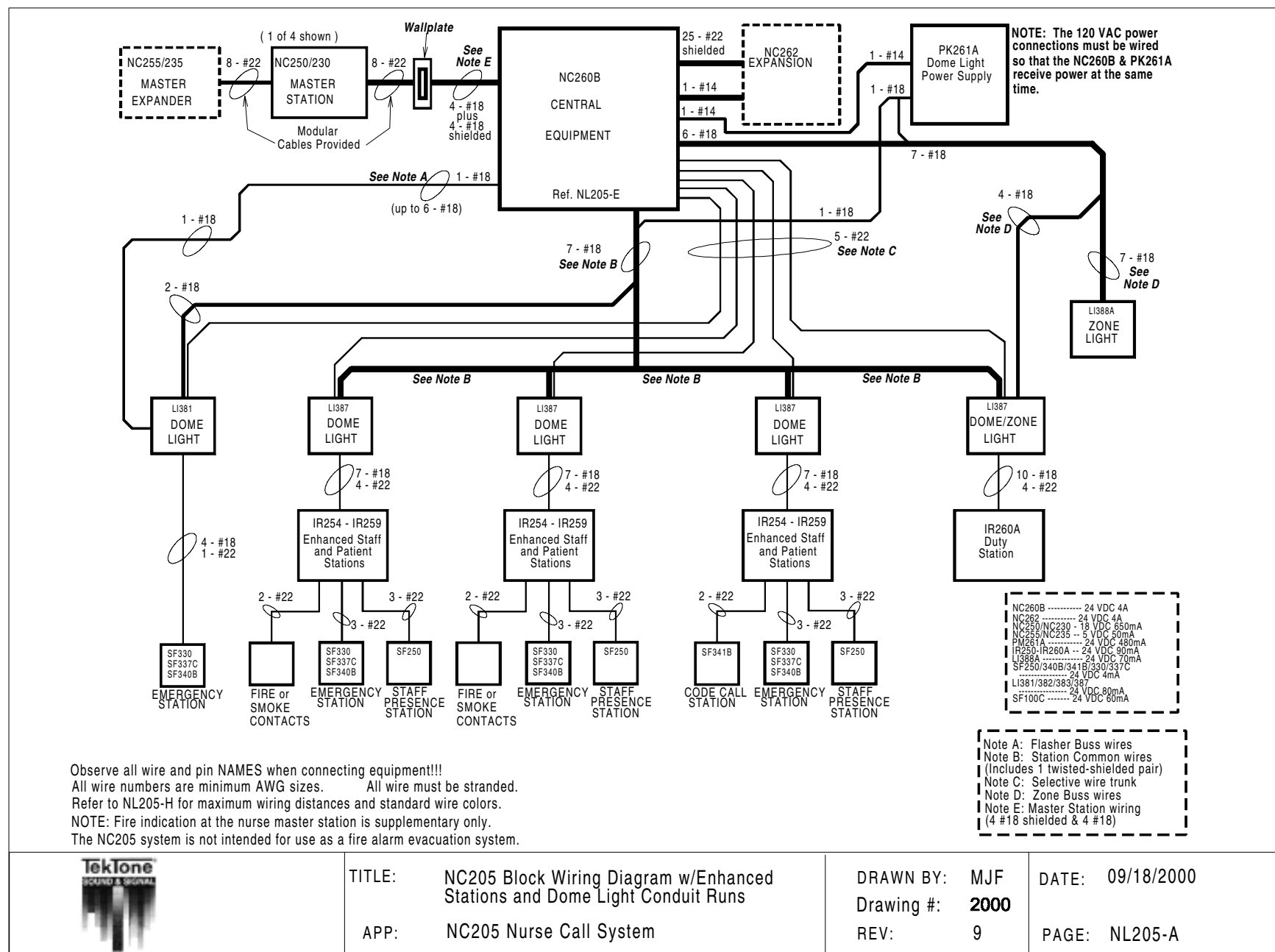
Typographical errors, entering the incorrect data, and system faults can cause certain error codes and messages to appear on the PC or laptop computer. The following error codes and explanations are typical:

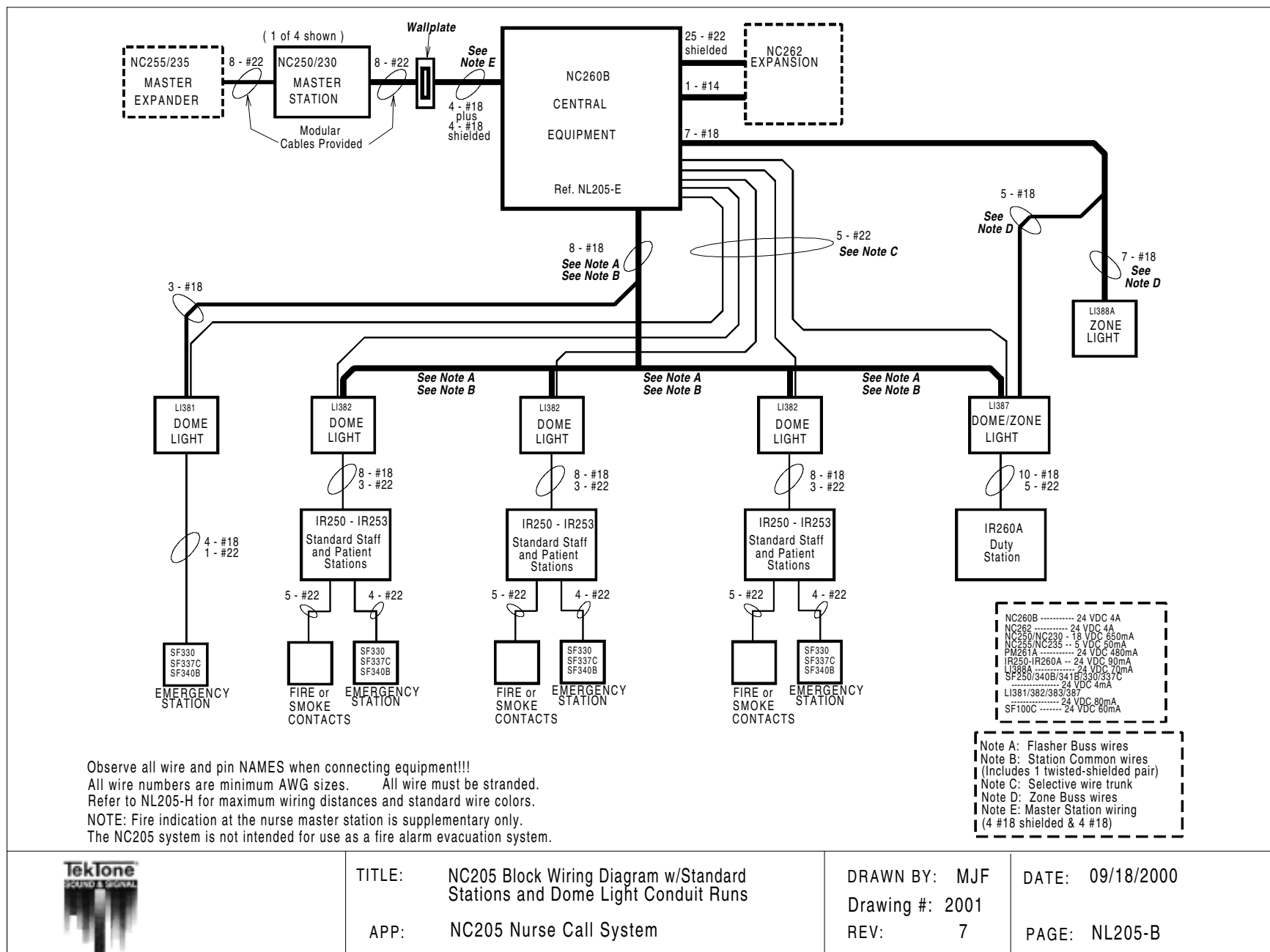
<u>ERROR CODE</u>	<u>EXPLANATION</u>
ER1	Command entered is not recognized
ER2	The parameters that were entered are not in the proper format or are otherwise invalid.
ER3	The processor has timed out of the communications mode. (NOTE: Prior to timing out, fault LEDs D1-D3 will begin to cycle. A key press at this point will avert the time out routine.)
ER4	During diagnostic testing, a select line was not at least mid-scale (~6v) when <b>not</b> selected.
ER5	During diagnostic testing, a select line could not be pulled down near ground potential.

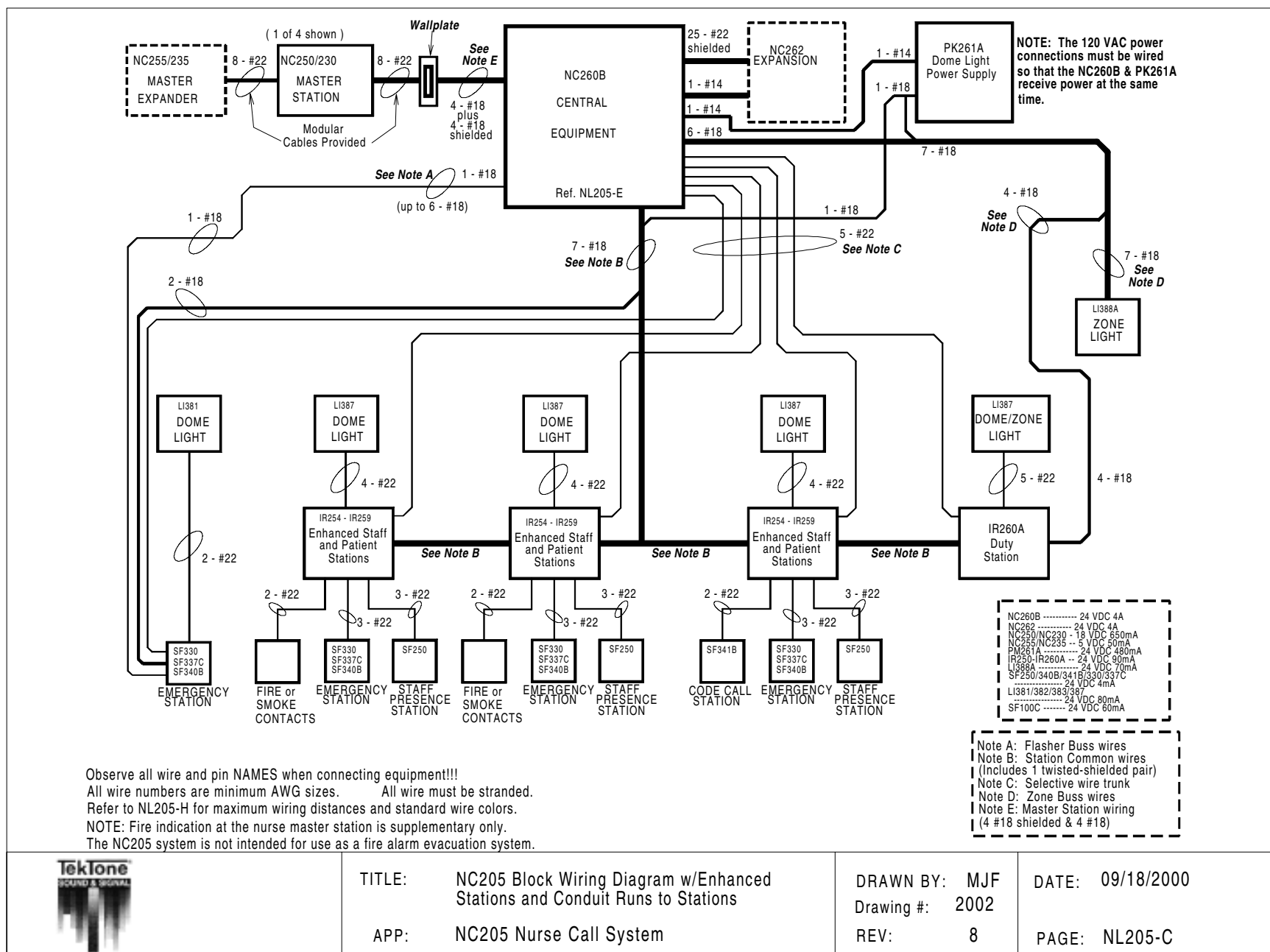
### NOTE:

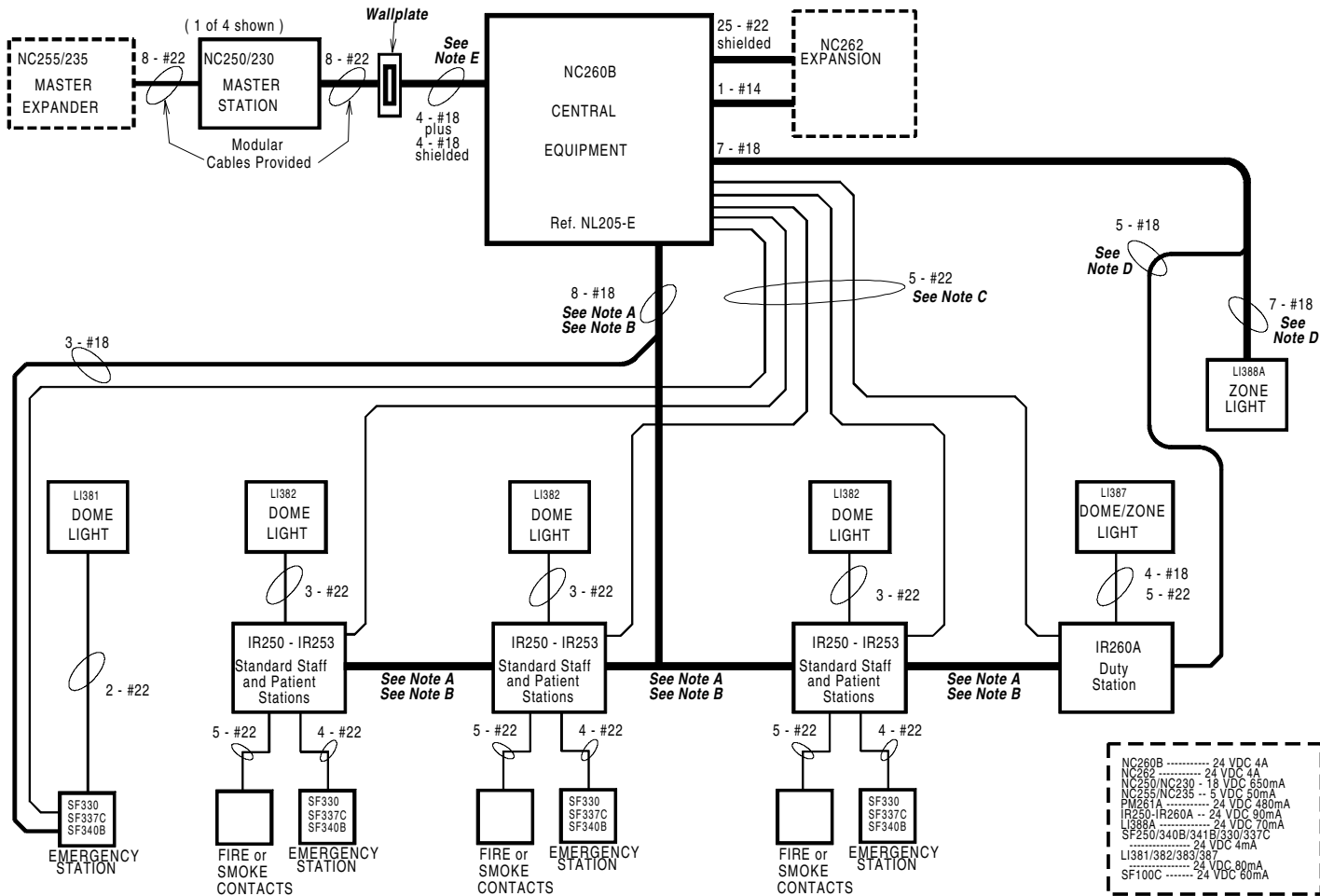
The following information will be sent to the cap code 402A, regardless of how the system is programmed. This is done so that if an event printer is connected to the serial port, this information will still be printed. Do not use cap code 402A for pagers, unless you desire resets, ETC to appear on pagers.

COMM FAULT - Communication Fault  
CODE FAULT - Code Fault  
STAF FLLW ON - Staff Follow ON  
ROOM FLLW ON - Room Follow ON  
PAGE BEGIN - Page Begin  
TALK INITIATE - Talk Initiate  
PROG MODE ON - Program Mode ON  
ROUTINE RESET - Routine Reset  
EMRGNCY RESET - Emergency Reset  
CODE RESET - Code Reset  
FIRE CLEARED - Fire Cleared  
PRS ATT RESET - Personal Attention Reset  
FAULT CLEARED - Fault Cleared  
STAF REQ RSET - Staff Request Reset  
STAFF OUT - Staff Out  
STAF FLOW OFF - Staff Follow OFF  
ROOM FLLW OFF - Room Follow OFF  
PAGE END - Page End  
TALK TRMINATE - Talk Terminate  
PROG MODE OFF - Program Mode OFF  
PAG STAF BEGN - Page Staff Begin









Observe all wire and pin NAMES when connecting equipment!!!  
 All wire numbers are minimum AWG sizes. All wire must be stranded.  
 Refer to NL205-H for maximum wiring distances and standard wire colors.  
 NOTE: Fire indication at the nurse master station is supplementary only.  
 The NC205 system is not intended for use as a fire alarm evacuation system.

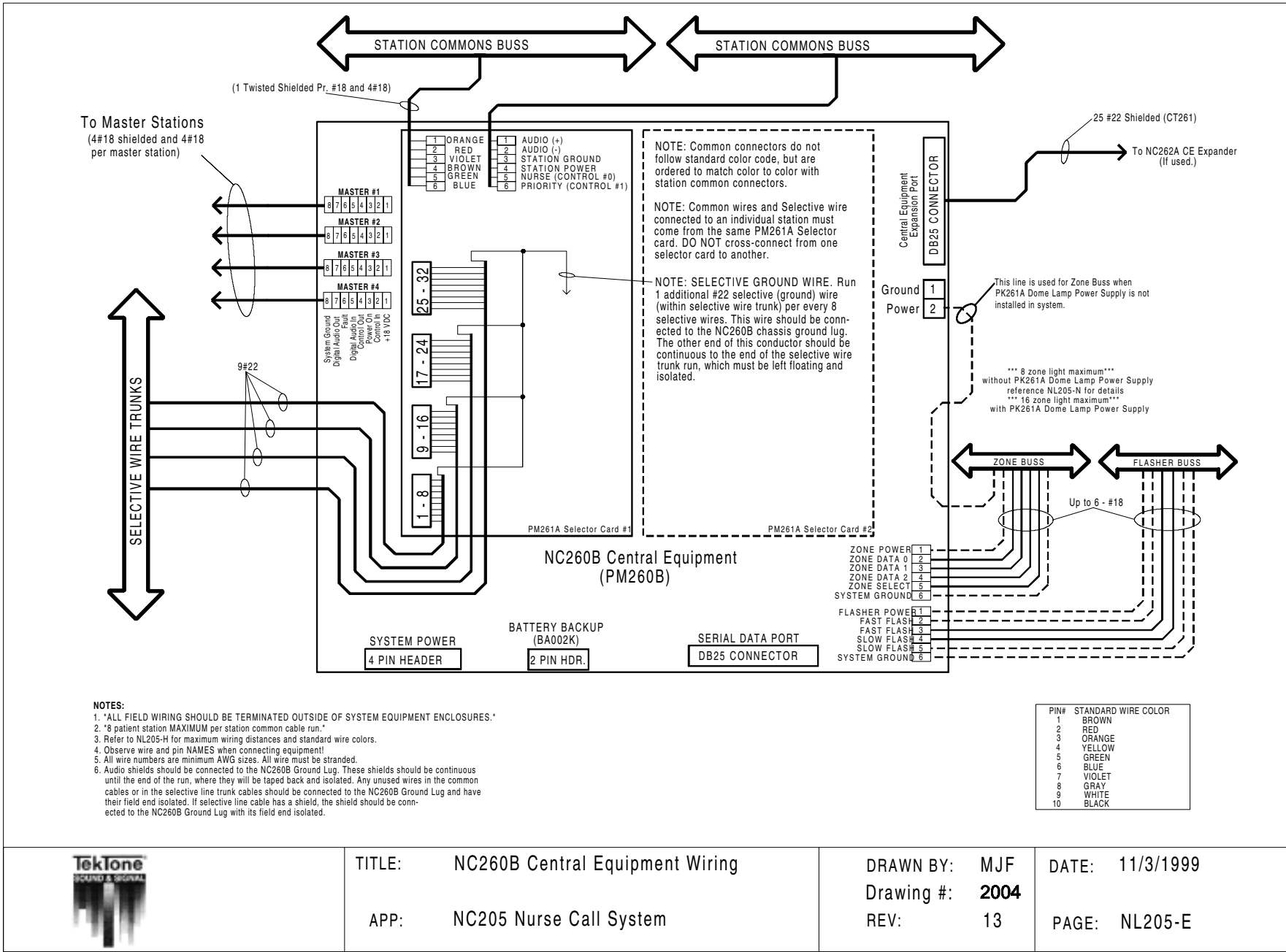
Note A: Flasher Buss wires  
 Note B: Station Common wires  
 (Includes 1 twisted-shielded pair)  
 Note C: Selective wire trunk  
 Note D: Zone Buss wires  
 Note E: Master Station wiring  
 (4 #18 shielded & 4 #18)



TITLE: NC205 Block Wiring Diagram w/Standard Stations and Conduit Runs to Stations  
 APP: NC205 Nurse Call System

DRAWN BY: MJF  
 Drawing #: 2003  
 REV: 7

DATE: 09/18/2000  
 PAGE: NL205-D



TITLE: NC260B Central Equipment Wiring

APP: NC205 Nurse Call System

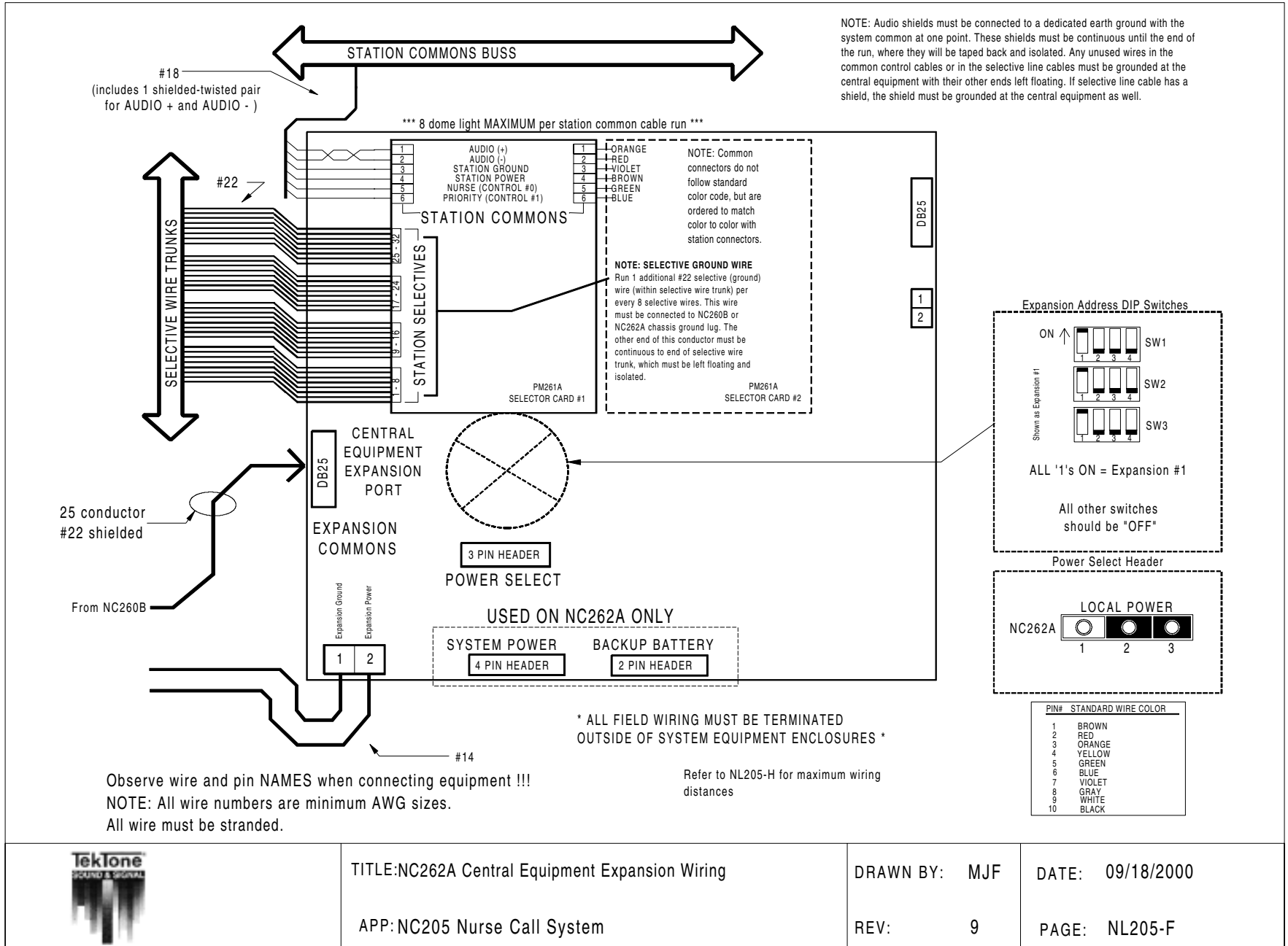
DRAWN BY: MJF

Drawing #: 2004

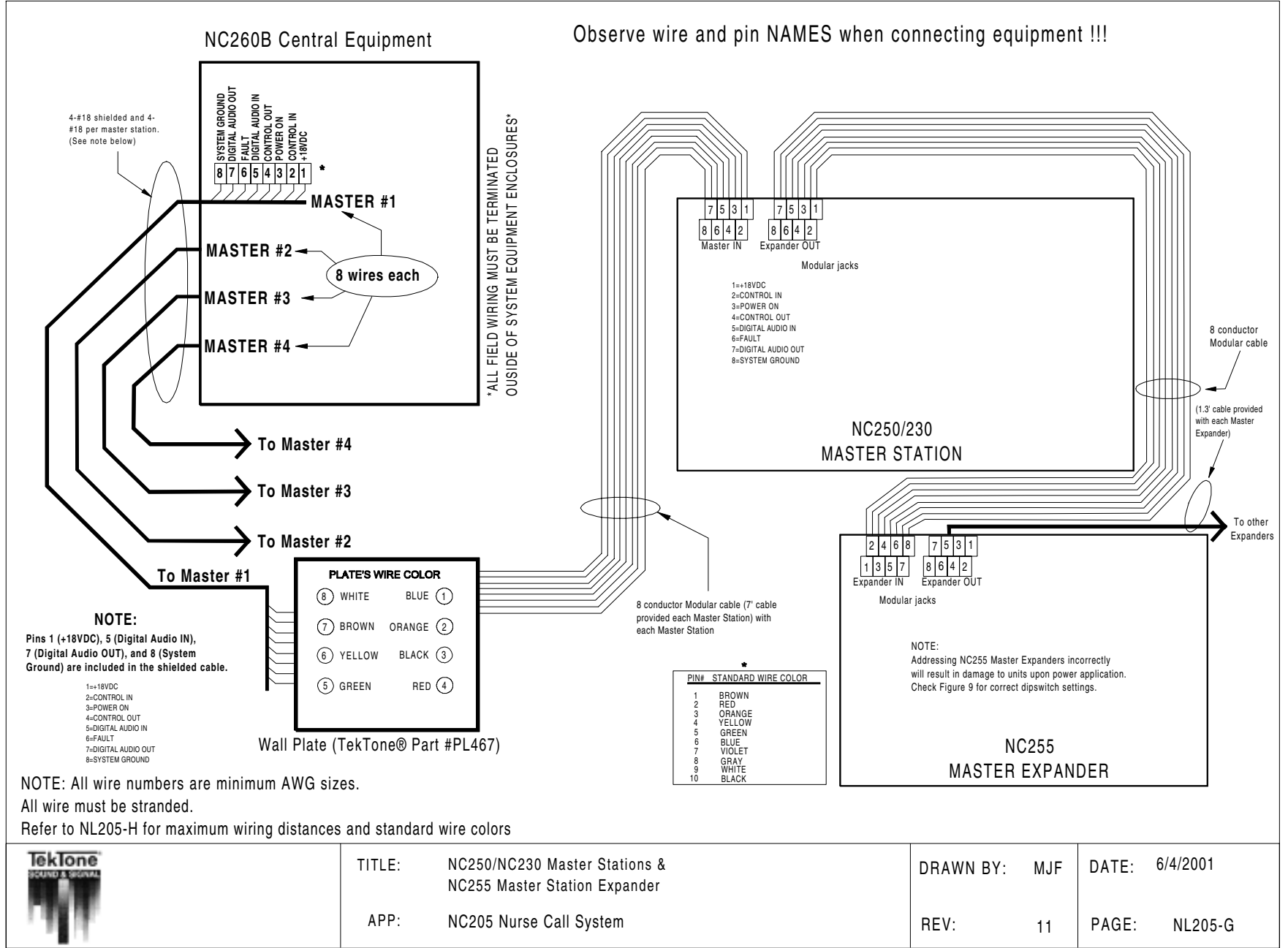
REV: 13

DATE: 11/3/1999

PAGE: NL205-E







<ul style="list-style-type: none"> <li>- Central Equipment</li> <li>- CE Expanders</li> <li>- Master Stations</li> <li>- Master Expanders</li> </ul>	<b>NC260B</b>	<b>NC262A</b>	<b>NC250/230</b>	<b>NC255</b>
<b>NC260B</b>	X	18' TOTAL DISTANCE	250' PER MASTER	X
<b>NC262A</b>	18' TOTAL DISTANCE	X	X	X
<b>NC250/230</b>	250' PER MASTER	X	X	10' TOTAL DISTANCE
<b>NC255</b>	X	X	10' TOTAL DISTANCE	2' (per expander)

<ul style="list-style-type: none"> <li>- Central Equipment &amp; Expanders</li> <li>- IR &amp; SF Series Stations</li> <li>- LI Series Lights</li> </ul>	<b>NC260B/262A</b>	<b>IR Series Stations</b>	<b>SF Series Stations</b>	<b>LI388A Zone Light</b>
<b>NC260B/262A</b>	X	1000' TOTAL (4 runs at 250' per cable run of 8 stations)	500' TOTAL (stand alone)	1000' TOTAL (2 runs at 500' per cable run of 8 zone lights)
<b>IR Series Stations</b>	1000' TOTAL (4 runs at 250' per cable run of 8 stations)	X	100'	X
<b>SF Series Stations</b>	500' TOTAL (stand alone)	100'	X	X

<b>PIN #</b>	<b>STANDARD WIRE COLOR</b>
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet (Purple)
8	Gray
9	White
10	Black
11	Brown/White
12	Red/White
13	Orange/White
14	Yellow/White
15	Green/White



TITLE: Maximum Wiring Distances  
and Standard Wire Colors  
APP: NC205 Nurse Call System

DRAWN BY: MJF  
REV: 8

DATE: 09/18/2000  
PAGE: NL205-H

The diagram illustrates a ZONE BUSS system. A central horizontal line represents the zone bus. On the left, a box labeled 'NC260A' is connected to the bus. On the right, a box labeled 'UP TO 16 LI388A STATIONS' is connected. Below the bus, a dimension line indicates a maximum run length of 'UP TO 500\''. Text below this dimension line specifies '1000\' maximum per zone connection' and 'Eight dome lamps per run - maximum.'.

**ZONE BUSS**

NC260A

18 awg stranded, up to 7 conductors  
34pF/Ft., 5.9 ohms/1000' @ 25C maximum.

**UP TO 16 LI388A STATIONS**  
with PK261A Dome Lamp Power Supply

NOTE: System limited to 8 duty devices, LI388A or IR260A with dome lamps, in combination without PK261A.

**UP TO 500'**

1000' maximum per zone connection.  
Eight dome lamps per run - maximum.

22 awg stranded selective line  
55pF/Ft., 14.7 ohms/1000' @ 25C maximum.

NC260A

FAST FLASH

SLOW FLASH

FLASHER BUS  
18 awg stranded up to 6 conductor  
34pF/Ft., 5.9 ohms/1000' @ 25C maximum.

SF SERIES STATIONS

LI SERIES LIGHTS

SF STATIONS AND LI LIGHTS  
MAY BE USED IN COMBINATION WITH  
IR SERIES STATIONS FOR A TOTAL OF 250  
IF STANDARD IR STATIONS ARE USED AND 128  
IF ENHANCED IR ARE USED

UP TO 500'

Diagram illustrating a cable run layout for a 250' system, showing various components and cable specifications.

**Components and Connections:**

- NC260A** (Chassis Ground Lug)
- PM261** (Two units shown)
- COMMONS CABLE RUN** (Central horizontal line)
- UP TO 8 IR SERIES STNS** (Eight vertical lines branching from the commons run)
- LI SERIES LIGHTS**
- SF SERIES STATIONS**
- EMERGENCY CONTACTS**

**Cable Specifications:**

- 18 awg stranded 5 conductor unshielded,  $64\text{pF}/\text{Ft.}$ ,  $<5.9\text{ ohms}/1000'$  @ 25C - maximum.
- with 18 awg shielded audio pair  $68\text{pF}/\text{Ft.}$ ,  $<5.9\text{ ohms}/1000'$  @ 25C - maximum.
- 22 awg stranded  $<55\text{pF}/\text{Ft.}$ ,  $<14.7\text{ ohms}/1000'$  @ 25C.
- Ref. NL205-E

**Grounding and Notes:**

- Selective cable trunk(s) with selective ground line grounded on one end.
- NC260A chassis ground lug.
- 18 awg or 22 awg various cable configurations.
- Selective ground lines are left floating at end of run. The other end is connected to the NC260A Chassis Ground Lug.

**Dimensions:**

- UP TO 250'
- UP TO 100'

DATE: 2/2/9799  
PAGE: NL205-H-1

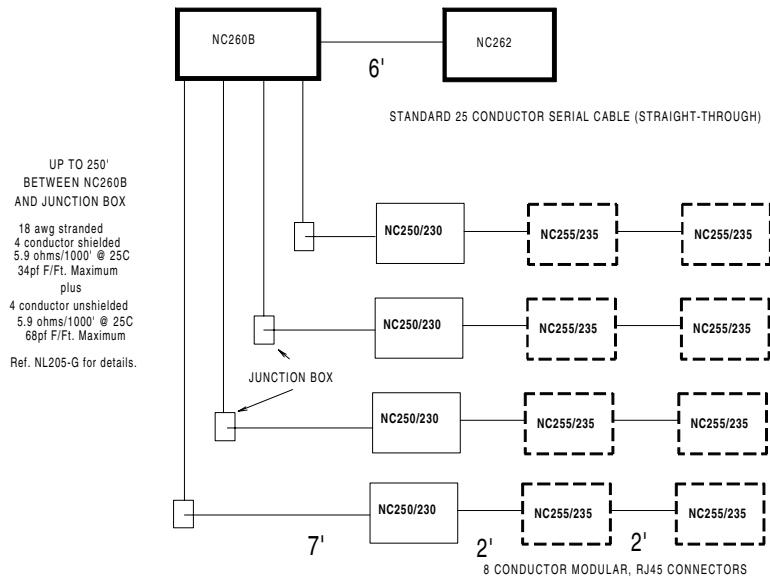
DRAWN BY: BMS  
REV: 3

TITLE: NC205 Maximum Wiring Distances  
and cable configuration

APP: NC205 Nurse Call System

APP:

## CENTRAL EQUIPMENT CONNECTION



## NC205 CENTRAL EQUIPMENT CONFIGURATION

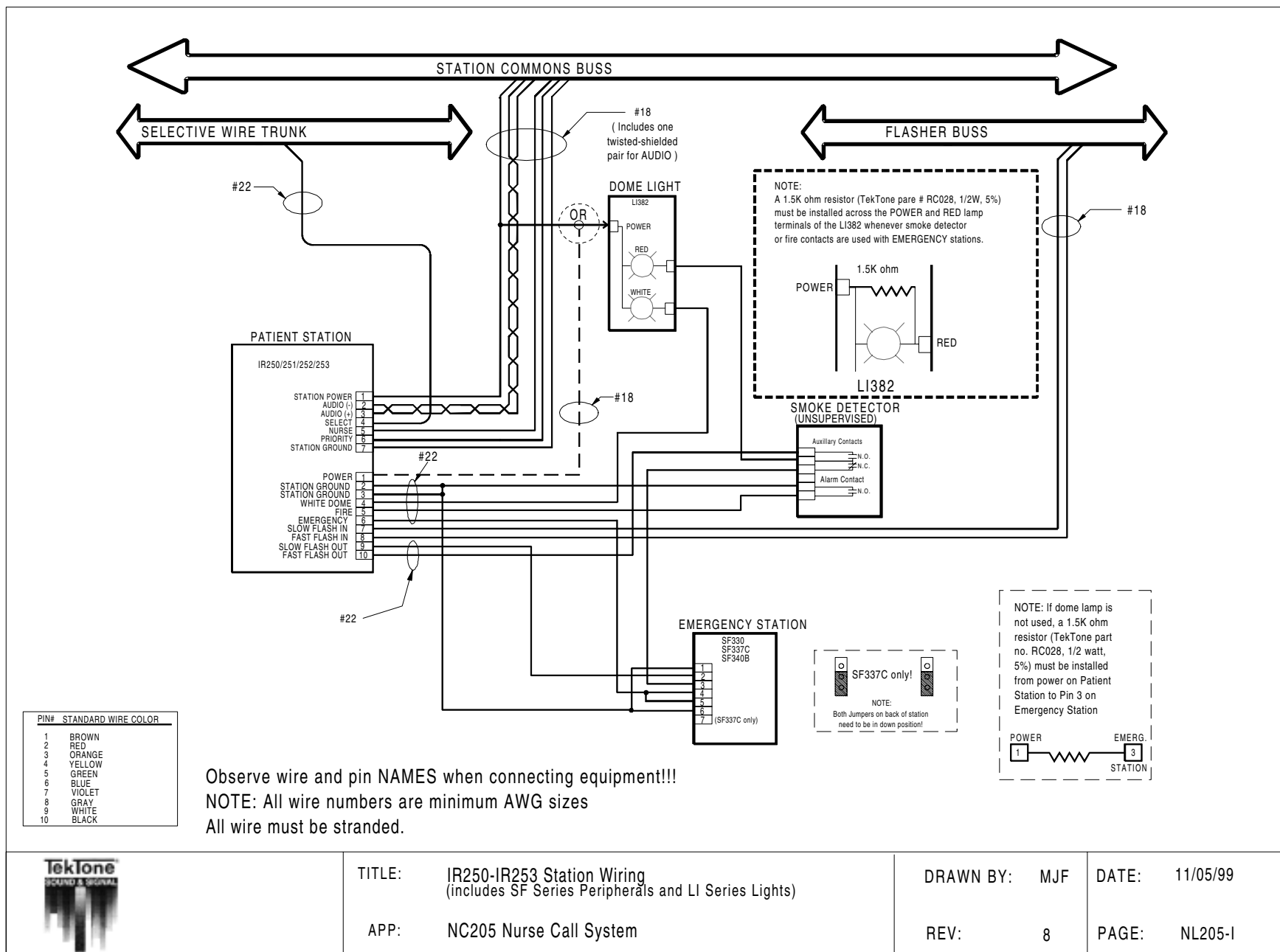
	NC260B	NC262A	NC261A	PK261A
UP TO 4 MASTER CONSOLES UP TO 64 STANDARD IR OR SF STATIONS WITH OR WITHOUT LI SERIES LIGHTS	USE	X	X	X
PRINTER/PAGER INTERFACE CARD	USE	X	X	X
64 TO 128 STANDARD IR OR SF STATIONS WITH OR WITHOUT LI SERIES LIGHTS	USE	USE	X	X
UP TO 4 MASTER CONSOLES UP TO 64 ENHANCED IR STATIONS WITHOUT LI SERIES LIGHTS	USE	X	X	X
UP TO 4 MASTER CONSOLES UP TO 64 ENHANCED IR STATIONS WITH LI SERIES LIGHTS	USE	X	X	USE
64 TO 128 ENHANCED IR STATIONS WITHOUT LI SERIES LIGHTS	USE	USE	X	X
64 TO 128 ENHANCED IR STATIONS WITH LI SERIES LIGHTS	USE	USE	X	USE
LI388A OR IR260A	N/A	N/A	N/A	USE

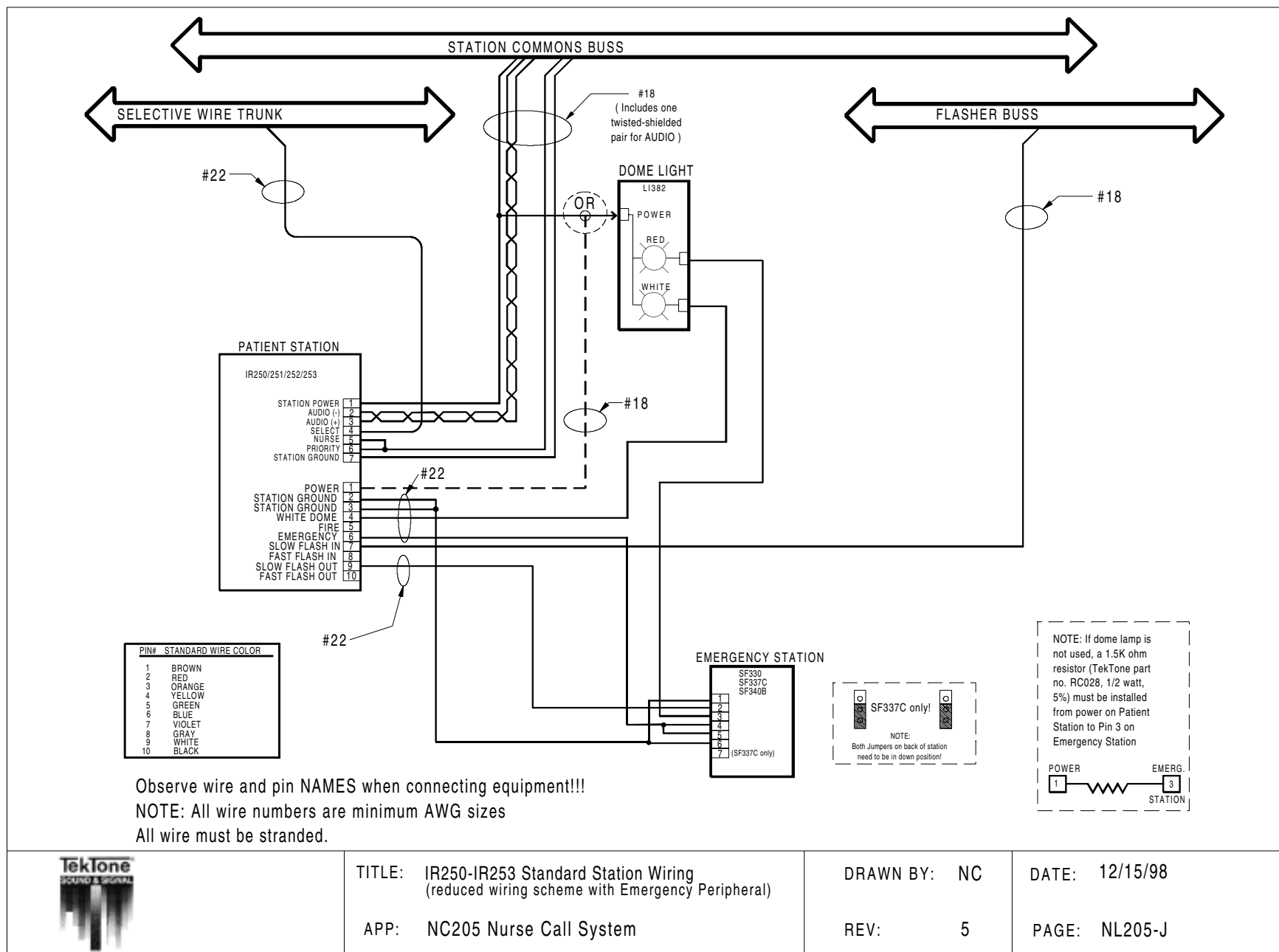
DATE: 09/18/2000  
PAGE: NL205-H-2

DRAWN BY: REP/MJF  
Drawing #: 2008  
REV: 4

TITLE: NC205 Central Equipment  
Configurations and  
Maximum Wiring Distances  
APP: NC205 NURSE CALL SYSTEM







TITLE: IR250-IR253 Standard Station Wiring  
(reduced wiring scheme with Emergency Peripheral)

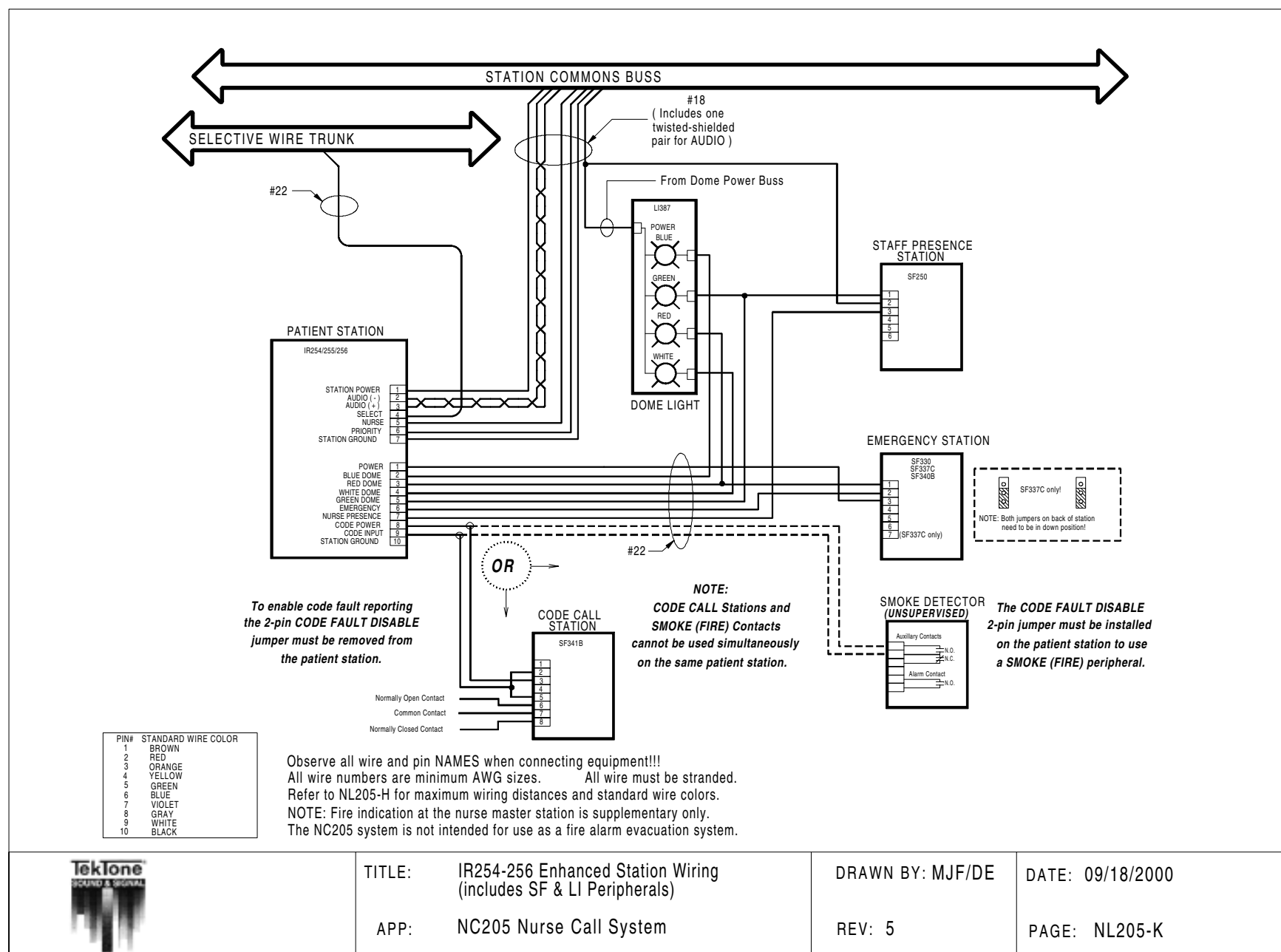
APP: NC205 Nurse Call System

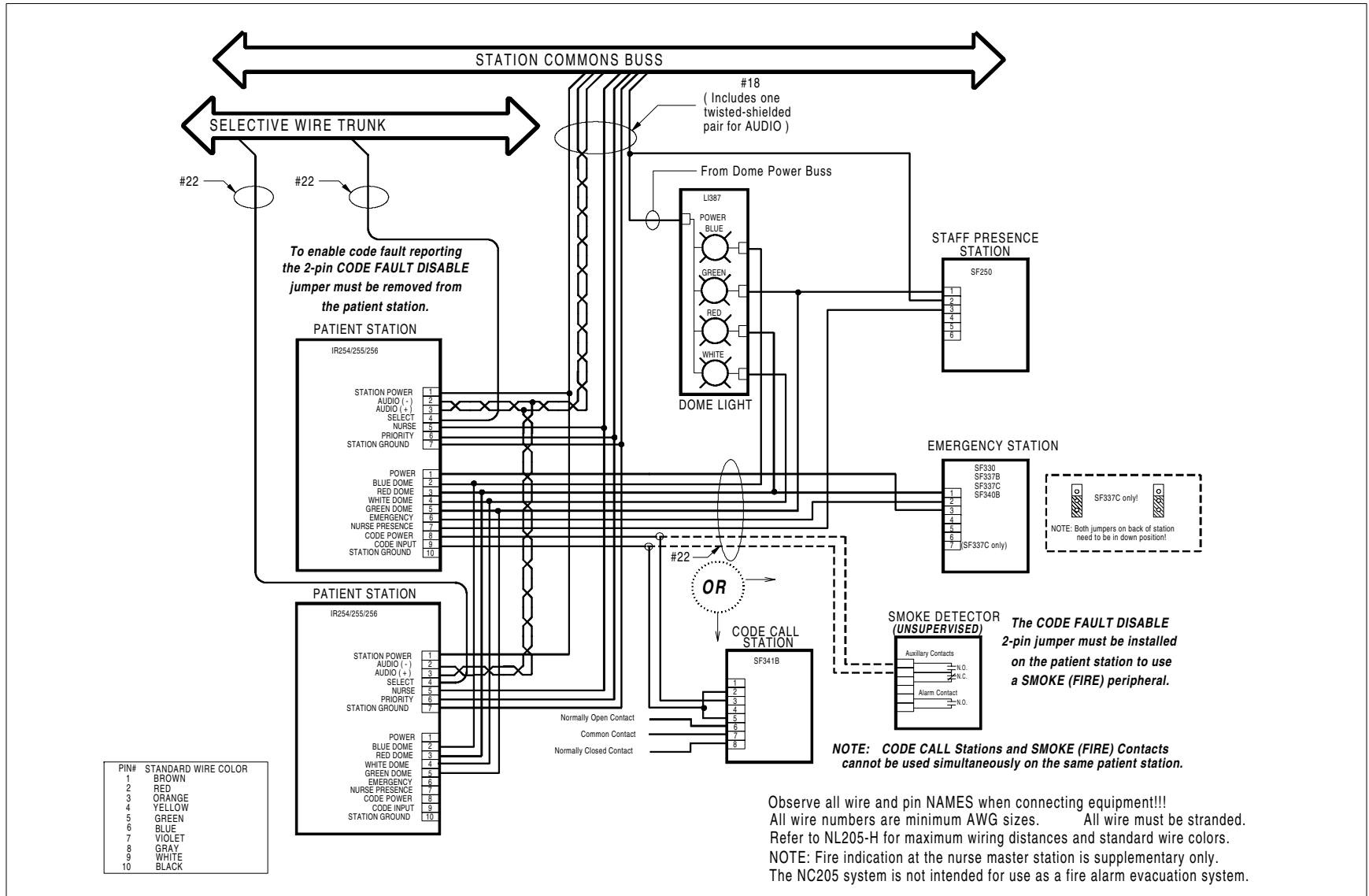
DRAWN BY: NC

REV: 5

DATE: 12/15/98

PAGE: NL205-J





TITLE: IR254-256 Enhanced Station Wiring in Multiples (includes SF & LI Peripherals)

APP: NC205 Nurse Call System

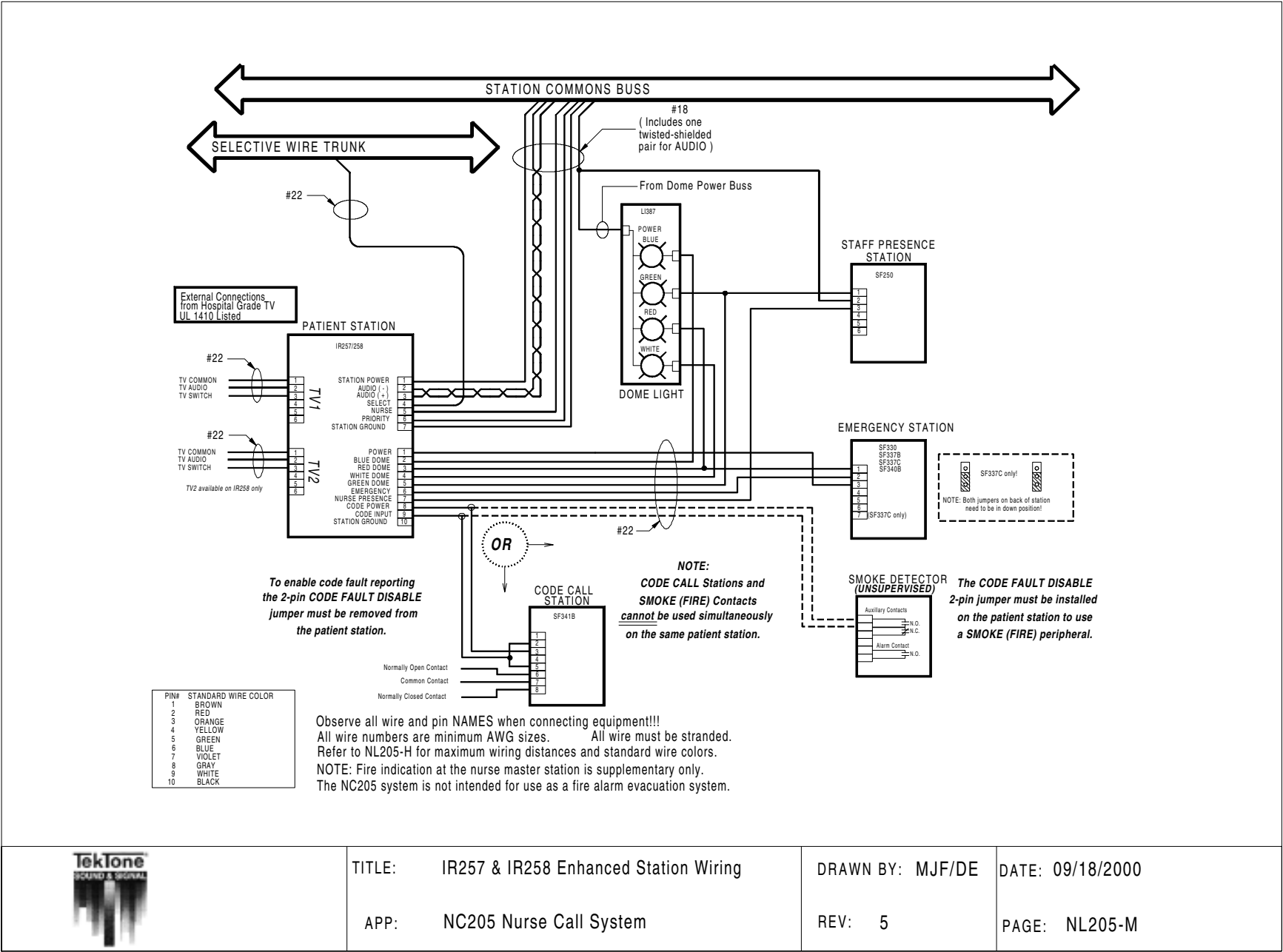
DRAWN BY: MJF/DE

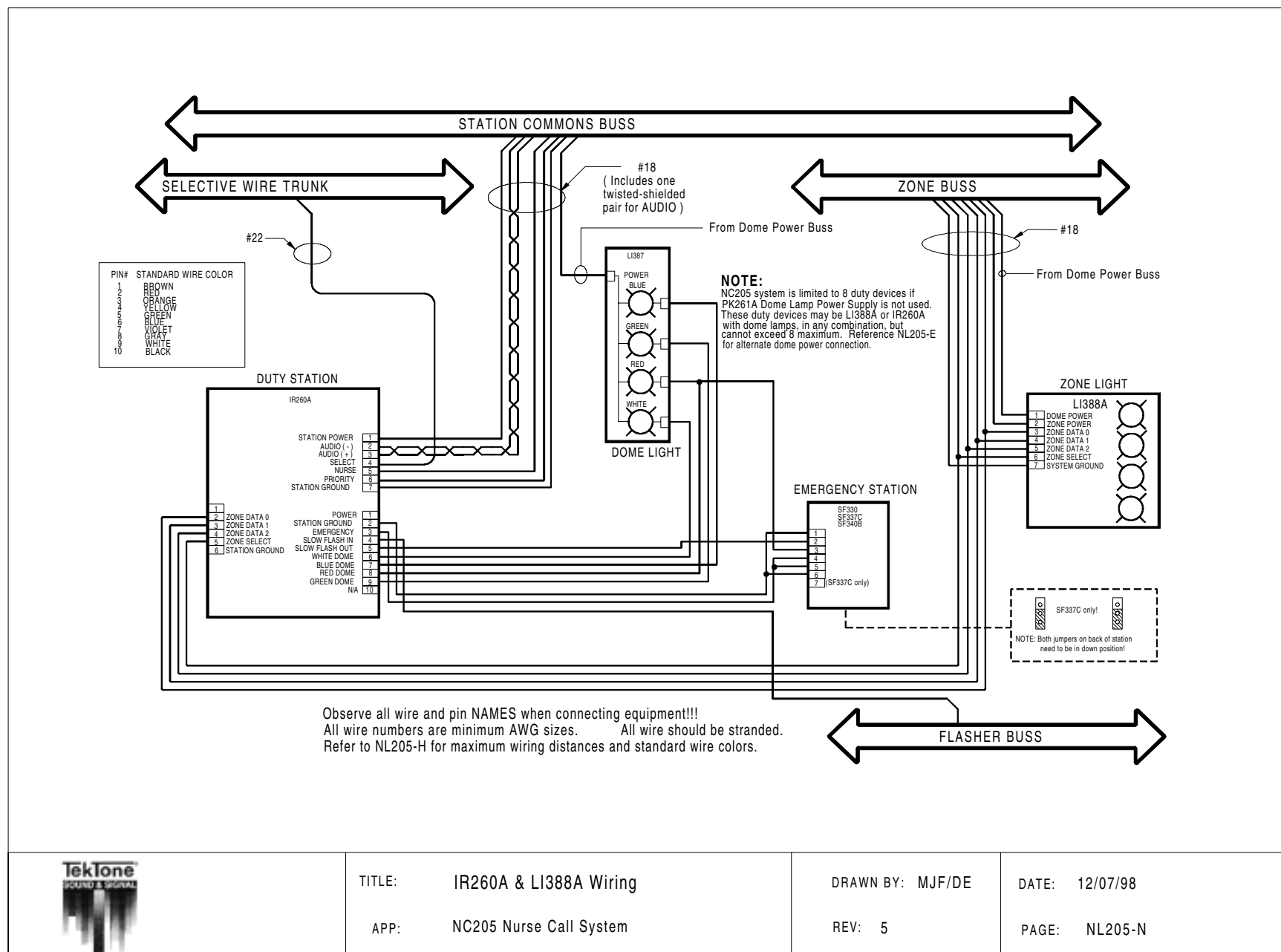
REV: 5

DATE: 09/18/2000

PAGE: NL205-L







TITLE: IR260A &amp; LI388A Wiring

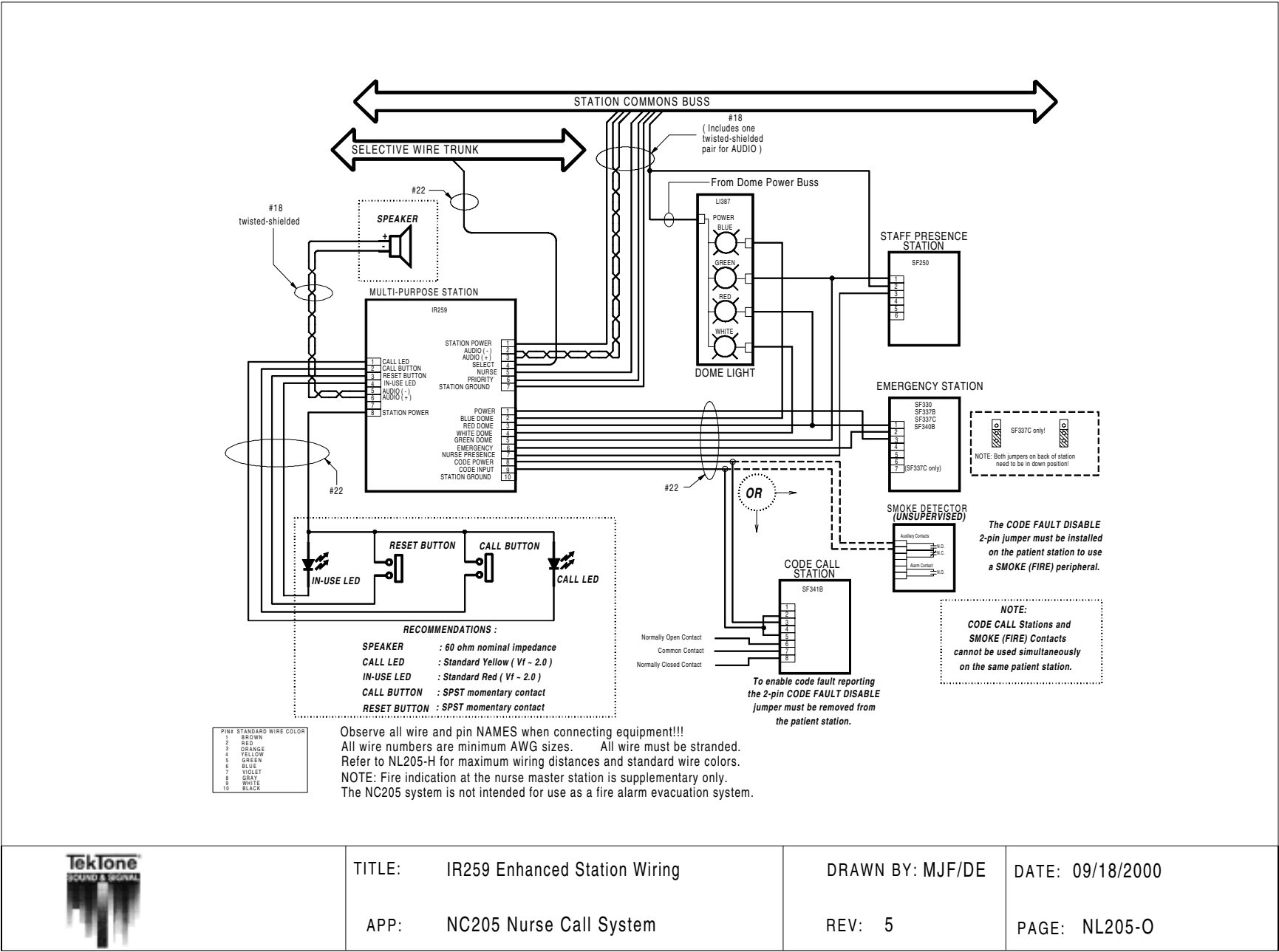
APP: NC205 Nurse Call System

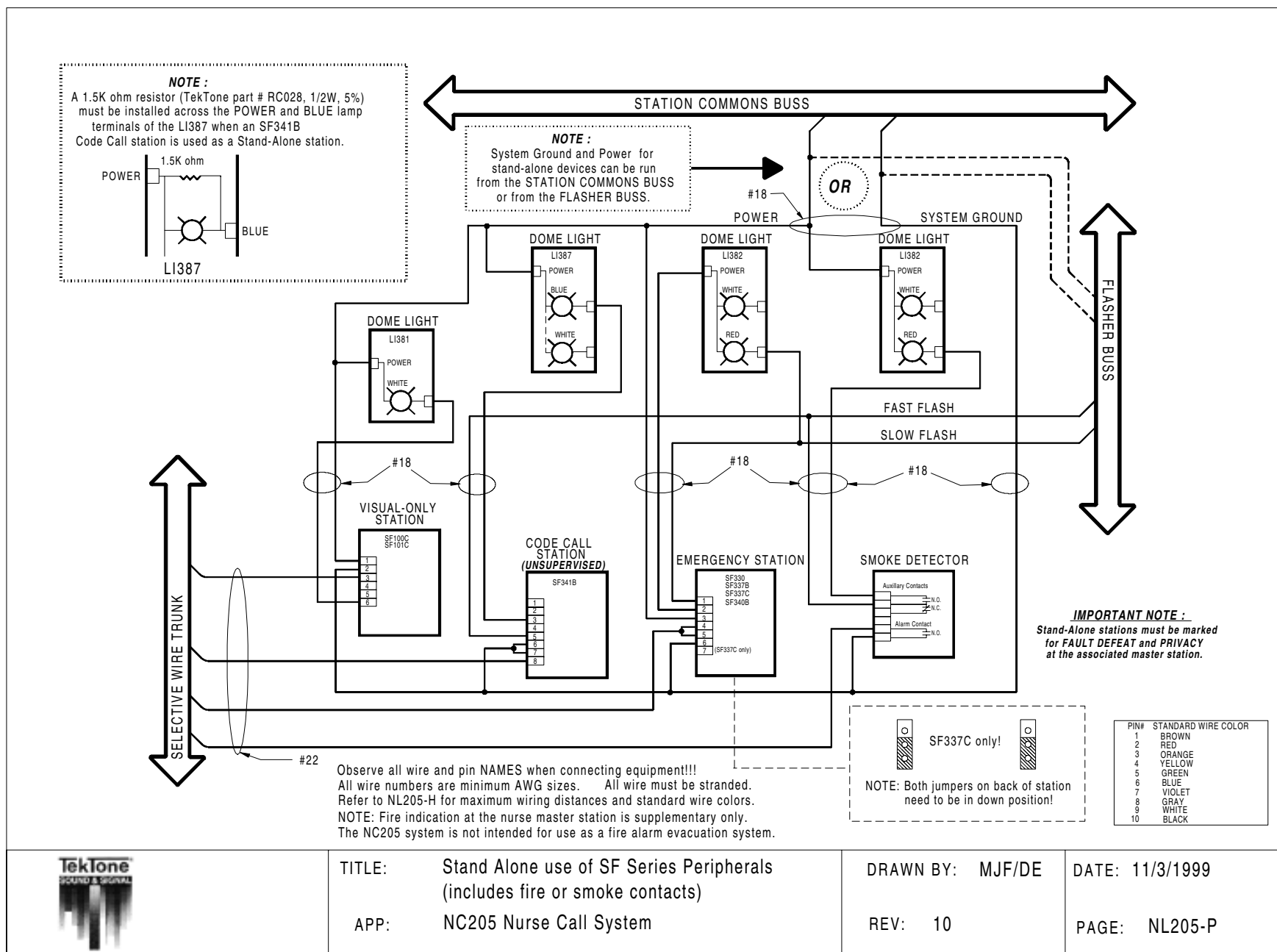
DRAWN BY: MJF/DE

REV: 5

DATE: 12/07/98

PAGE: NL205-N





TITLE: Stand Alone use of SF Series Peripherals  
(includes fire or smoke contacts)

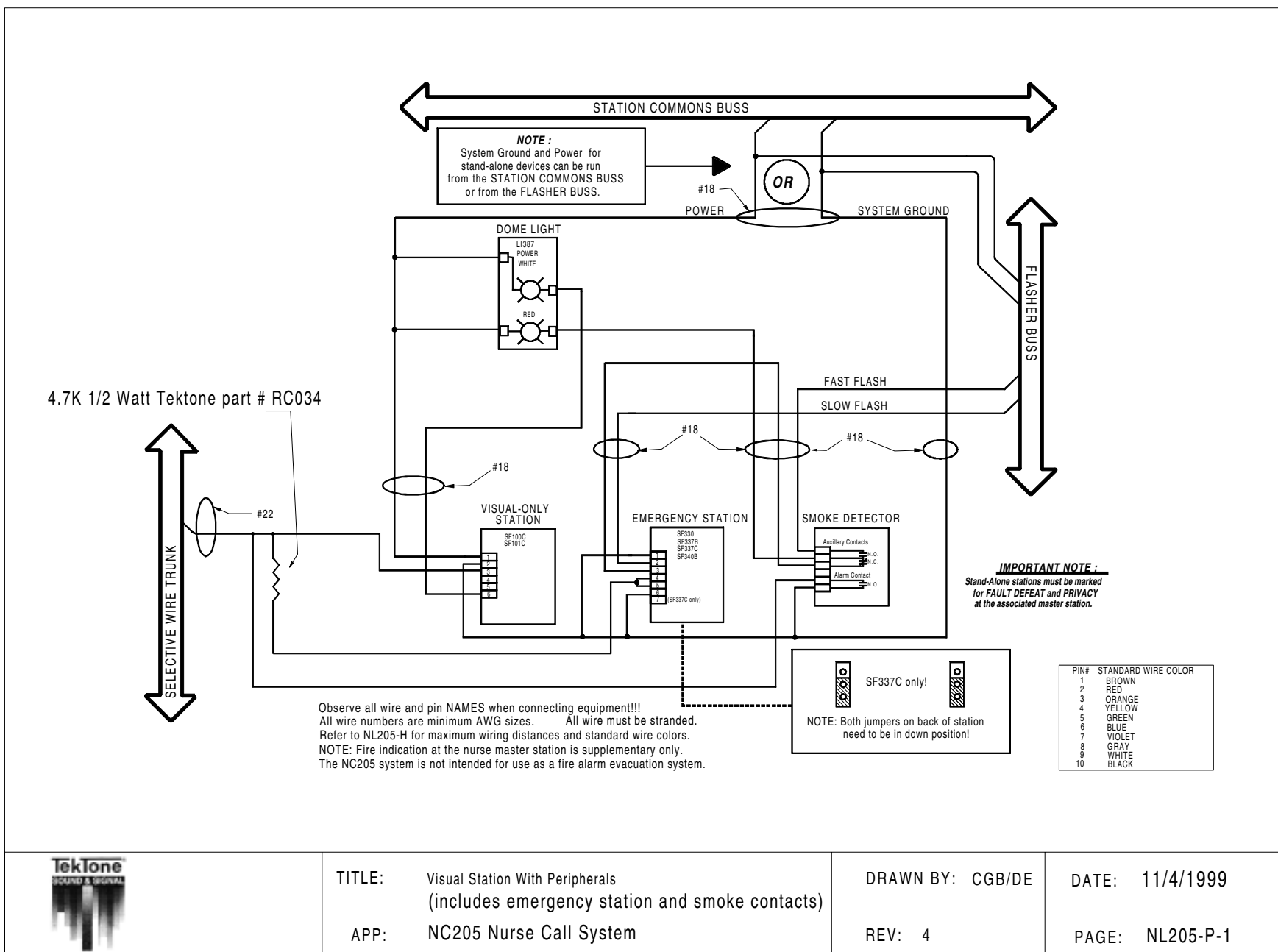
APP: NC205 Nurse Call System

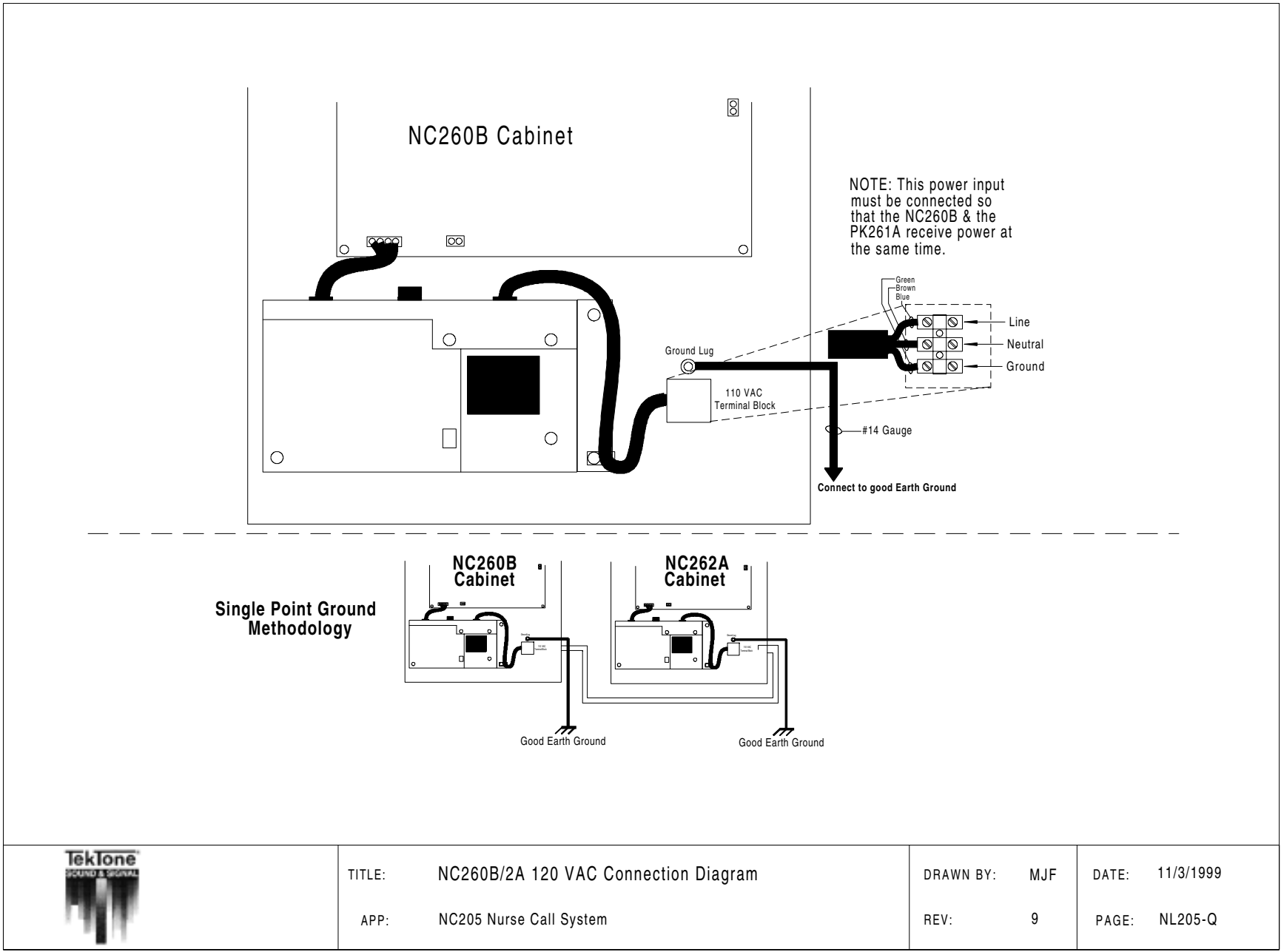
DRAWN BY: MJF/DE

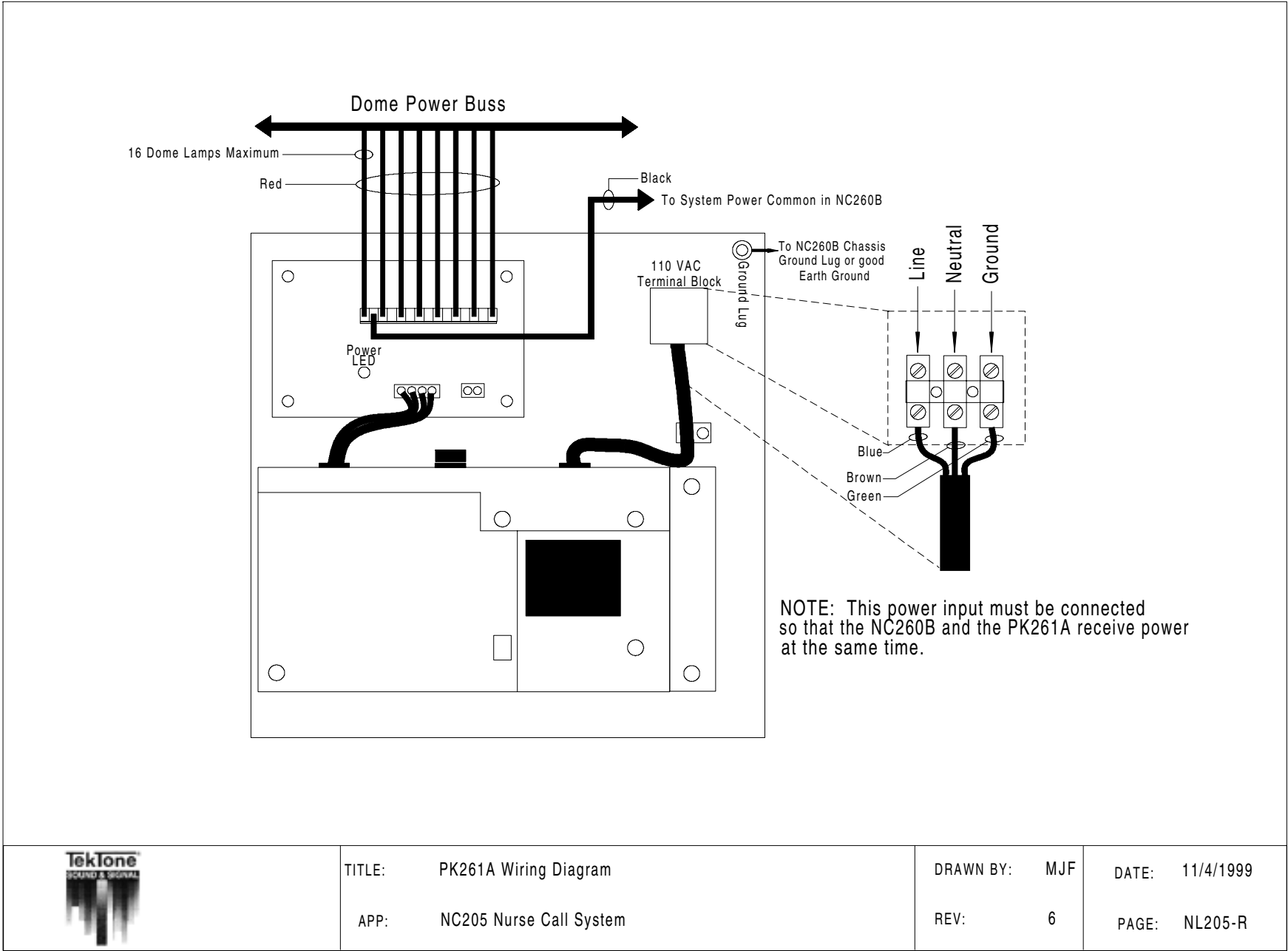
DATE: 11/3/1999

REV: 10

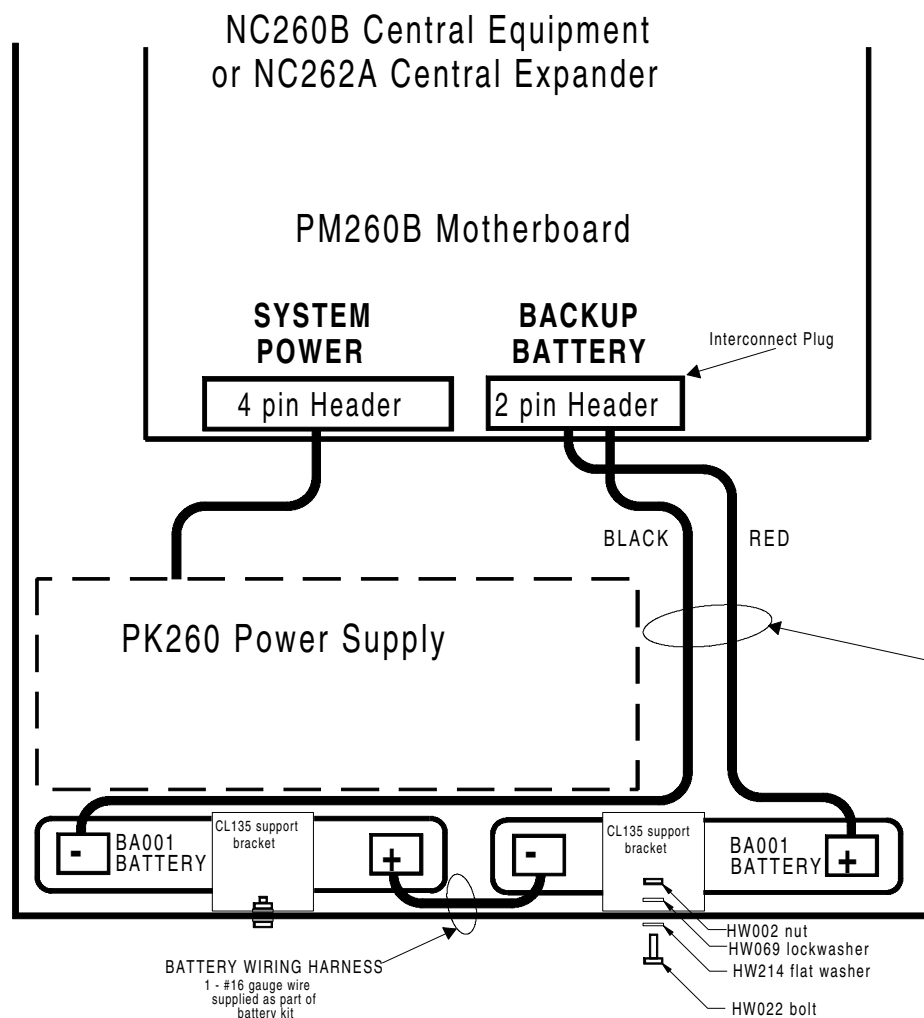
PAGE: NL205-P







NOTE: All wire numbers are minimum AWG sizes.

**Installation of the BA002K:**

1. Place batteries (Tektone part number BA001) into bottom of IH260 chassis as indicated in diagram.
2. Mount included support brackets (Tektone part number CL135) to IH260 using included hardware.
3. Connect battery wiring harness as indicated in diagram.
4. Plug battery wiring harness interconnect plug into receptacle provided on motherboard (Tektone part number PM260B) with system power on.

**Replacement of the BA002K:**

1. Remove battery interconnect plug from motherboard receptacle.
2. Remove battery wiring harness.
3. Remove battery support brackets.
4. Remove old batteries from system housing and replace with new batteries (12 VDC 1.9AH - 2.0AH).
5. Reinstall battery support brackets.
6. Connect battery wiring harness as indicated in diagram.
7. Plug battery wiring harness interconnect plug into receptacle provided on motherboard with system power on.



TITLE: Battery Kit Installation

APP: NC205 Nurse Call System

DRAWN BY: MJF

REV: 3

DATE: 11/3/1999

PAGE: NL205-S