



**ARCHITECTS' and ENGINEERS' SPECIFICATIONS**  
**SECTION E**  
**MICRO-CONTROLLED DIRECT SELECT NURSE CALL - NC205**

**1.0 General**

- 1) The contractor shall provide and install all equipment, accessories and materials necessary for a complete operating system in accordance with the following specifications.
- 2) The equipment furnished under this specification shall be the standard product of one manufacturer and shall be as manufactured by TekTone Sound & Signal, and as supplied by Alpha Communications®, 42 Central Drive, Farmingdale NY 11735-1202, Phone 631-777-5500, Fax 631-777-5599.
- 3) The contractor shall guarantee availability of local service and available stock of the manufactures standard parts.
- 4) The contractor shall be responsible for providing a complete functional system including all necessary components, whether included in this specification or not.

**2.0 System Operating Requirements**

**2.1 Basic Requirements**

2.1.1 The system shall consist of bed stations, emergency switches, dome lamps, master stations, duty station and power and central equipment, all as specified herein and shown on the plans. The nurse call system to be furnished shall include the following minimum design and operating characteristics:

1. Micro-controller-based nurses master station, central equipment, and patient stations.
2. Digitized data and audio transmission.
3. Bi-directional serial data-communication port.
4. Programmable functions.
5. Non-volatile software.
6. Electromechanical memories (such as disk drives) required for system operation will be unacceptable.
7. Simultaneously speech capabilities at all nurses master stations.
8. Nurses' master station keypad and control switches shall be of spill-proof membrane design.

**2.2 Call Classifications**

2.2.1 The nurse call system shall provide the following general call (low priority) signaling capabilities:

1. Routine call (bed, staff, duty)
2. Personal attention bed call\*
3. Staff presence\*
4. Staff service request

2.2.2 The nurse call system shall provide the following medium priority, high priority, and life threatening emergency call capabilities:

1. Priority bed call
2. Cord out. (Same medium priority as emergency)
3. Emergency call
4. Code call\*
5. Fire

NOTE: \* = Features available only on enhanced patient stations

2.2.3 System operation shall be monitored automatically by central equipment software and circuitry to provide continuous partial supervision of associated patient\*, staff\*, duty\*, code\*, multipurpose\*, and nurses master stations. The nurses' master station shall monitor central equipment operation by fault indicator. All circuits between the above equipment and faults detected by the system shall be reported to the nurse's master station and central equipment.

2.2.4 Each of the call classifications listed in 2.2.1 and the system status call indications in 2.2.2 shall provide its own unique signals. This will provide the nurse/attendant with an easily understood and fail-safe means of call identification.

### 2.3 Signaling and Operation

2.3.1 A routine call may be canceled at the nurse's master station or at the calling station. To answer the call, the appropriate selector button is depressed and the operator may talk via the speaker and talk button or by the handset, which shall be voice switched. Any system requiring the use of a button with the handset shall not be acceptable. A routine call may be originated at the bed station by pressing the call cord button. This shall cause the following:

1. The call placed light on the bed station shall illuminate.
2. The white dome light associated with the calling station shall light steady.
3. The white zone light associated with the calling station shall light steady (if installed).
4. The nurse's station LED and routine call LED shall light steady.
5. A tone signal shall sound at an eight-second interval.

2.3.2 Voice communication can be established in the same manner as for the "routine" call but it shall not be possible to reset an emergency call at the nurse's master. Systems allowing the reset of an emergency call other than at the point of origin shall not be acceptable. An emergency call may be originated at any emergency pull-cord switch by pulling the cord or pulling down on the red actuator. This shall cause the following:

1. The call placed light on the emergency station shall illuminate and flash.
2. The red dome light associated with the room shall illuminate and flash.
3. The red zone light associated with the room shall illuminate and flash.
4. The nurse's station LED and priority call LED shall illuminate and flash.
5. A tone signal shall sound at one-second intervals.

### 2.4 Programming

2.4.1 The nurse call system shall be designed to allow for easy operator programming. The following minimum programming features shall be provided:

1. Field programming at time of installation:

- a) Zone assignments for masters and stations.
- b) Group/zone call station assignments.
- c) Master assignments.
- d) System configuration.
- e) System data security is set by switch in Central Equipment.
- f) Station configuration.
- g) Room number programming for event printing display and radio paging messaging via laptop computer and Bi-directional serial port.

2. Daily staff programmability for daily requirement changes. Access to monitoring, privacy, priority, and zone capture shall be through dedicated buttons on the masters' keypad:

- a) Patient call priorities:
  - 1) Routine
  - 2) Personal attention
  - 3) Priority
- b) Patient station privacy.
- c) Patient station paging on or off.
- d) Staff request functions.
- e) Staff follower.
- f) Selective room monitoring of up to 20 rooms simultaneously.
- g) Call pre-assigned groups.
- h) Ward transfer.
- i) Swing room transfer.

2.4.2 System function shall not be interrupted during daily programming.

2.4.3 It shall not be possible for the operator to damage or alter the system operating software due to improper or accidental data entry.

2.4.4 It shall not be possible for the user to halt system operation due to incomplete or incorrect data entry.

2.4.5 System configurations utilizing two or more nurse master stations shall allow for independent operation of each interconnected nurses master station regardless of the mode of operation of other nurses master stations. Systems allowing for operation of only one nurse's master station at a time when multiple nurses' master stations share the same central equipment are not acceptable.

### 3.0 Equipment

#### 3.1 Central Equipment

The central equipment provides for all system power and control circuits required to operate the system. Electronics and power supply are mounted in a 15-1/2"W x 18 1/2"H hinged door cabinet. The central equipment supports two selector cards, PM261A's (32 points per card). The central equipment shall be TekTone #NC260B. It shall be possible to expand the system with the addition of a central expander unit, which will accommodate additional selector cards. The central expander shall be TekTone #NC262A. A bi-directional serial port shall be provided for direct connection to an event printer or UHF Radio Paging system. When connected to a correctly configured computer, the Serial port will allow field programming of the UHF Radio paging room numbers and labels as well as provide access to a field diagnostic program for assisting in trouble shooting system faults. Systems that require additional hardware or software to add radio paging or event printing shall not be acceptable.

### 3.2 Nurse Master Station

The nurse master station shall be configured in multiples of 30 or 50 individual selector buttons provided on a spill proof membrane pad with LED's corresponding to each calling location. Additionally, it shall contain a tone-signaling device, "nurse follower" "privacy", "page", "reset" and "talk" selector buttons, a 2 ½" 45 ohm speaker and a voice switched handset. The selector buttons shall have protected removable directory strips for room identification. Master station and expansion units are desk mounted and constructed of ABS plastic. Expansion master units can be added in multiples of 50. The nurse master station shall be TekTone #NC230 (30 Point) or #NC250 (50 Point). Station expander shall be TekTone #NC255 (50 Points).

### 3.3 Bed Stations

#### 3.3.1 Bed Stations - Call Cord / Standard

The bed station shall contain a "call-placed" indicator, ¼" jack, 2 ½" 45 ohm speaker, cancel button and a "non-private" indicator mounted on an 3 gang ABS fog white plastic panel. Color-coded plug in connectors shall be provided for wire terminations. The single bed station shall be TekTone #IR251. The dual bed station shall be TekTone #IR252. Mounting requirements shall be Steel City, H3BD/3GC, box/ring or exact equivalent.

#### 3.3.2 Bed Stations- Pull Cord / Standard

The bed station shall contain a "call-placed" indicator, a nylon pull cord with pendent, a 2 ½" 45 ohm speaker, a cancel button and a "non-private" indicator mounted on an ABS fog white plastic panel. Color-coded plug in connectors shall be provided for wire terminations. The bed station shall be TekTone #IR253. Mounting requirements shall be Steel City, H3BD/3GC, box/ring or exact equivalent.

#### 3.3.3 Bed Stations - Call Cord / Enhanced

The bed station shall contain a "call-placed" indicator, ¼" jack, 2 ½" 45 ohm speaker, cancel button and a "non-private" indicator mounted on an 3 gang ABS fog white plastic panel. Color-coded plug in connectors shall be provided for wire terminations. The single bed station shall be TekTone #IR255. The dual bed station shall be TekTone #IR256. Mounting requirements shall be Steel City, H3BD/3GC, box/ring or exact equivalent. The station will provide call level programming of Personal Attention and Priority at the master station as well as support Staff Follower, Staff Presence and Request functions and Code call switches.

#### 3.3.4 Bed Stations - Pillow Speaker / Enhanced

The bed station shall contain a "call-placed" indicator, 8-pin RJ45 modular jack, 2 ½" 45 ohm speaker, cancel button and a "non-private" indicator mounted on a 3 gang ABS fog white plastic panel. Color-coded plug in connectors shall be provided for wire terminations. The single bed station shall be TekTone #IR257. The dual bed station shall be TekTone #IR258. Mounting requirements shall be Steel City, H3BD/3GC, box/ring or exact equivalent. The station will provide for television channel and audio control when using pillow speakers. The station will provide call level programming of Personal Attention and Priority at the master station as well as support Staff Follower, Staff Presence and Request functions and Code call switches.

### 3.4 Call Cords Pillow Speakers

Call cords shall be momentary push button encased in a molded, shockproof plastic shell with a 7' long polyvinyl covered cord and right angle molded plug. Call cords shall be TekTone #SF301/8 and dual cords shall be TekTone #SF302. Ten foot cords shall be available as SF301/10 (single) and SF302/10 (dual). Pillow Speakers shall provide for call, television channel and audio control operation with the IR257 and IR258 patient stations.

### 3.5 Emergency Pull Cord Switch

The emergency pull cord station shall contain a red "call-placed" indicator and a 6' nylon cord with pendent mounted on a single gang plastic faceplate labeled "EMERGENCY". The cord shall pull through an eyelet guide to ensure a 360-degree even pull. Color-coded plug in connectors shall be provided for wire terminations. The emergency pull cord station shall be TekTone #SF340B. For wet locations, the waterproof emergency switch shall be TekTone# SF337C.

### 3.6 Corridor Dome Lights

The LI382 dome light shall contain two bulbs with a translucent plastic cover mounted on a two-gang, plastic faceplate. The white cover shall be removable without the use of tools and the bulbs shall be bayonet mounted to allow ease of bulb replacement. Any dome light requiring the use of tools or disassembly for bulb replacement shall not be acceptable. The LI387 shall be a four sectional dome lamp and shall allow the display of the standard calls as well as Staff presence and Code Blue. The LI387 is used in conjunction with Enhanced patient stations.

### 3.7 Corridor Zone Light

The LI388A shall be sectional in design and include a Red, Green, Blue and White translucent flame retardant plastic lenses. The lenses shall be individually removable without the use of special tools. The four bulbs will provide indication of patient priority and staff presence for the programmable assigned zone. The LI388A shall be a stand-alone unit, shall provide the necessary micro-controller and associated circuits to connect directly to the central equipment and shall be zone programmable. Connections shall be plug-in type.

### 3.8 Duty Station

The duty station shall contain a "call-placed" indicator, reset button, 2-1/2" 45 ohm speaker and a "non-private" indicator mounted on an ABS fog white plastic panel. Incoming calls shall be annunciated by both light sequence and tone. Zone lights, #LI382/LI387 if installed can be supported by the duty station. Color-coded plug in connectors shall be provided for wire terminations. The duty station shall be TekTone #IR260A. Mounting requirements shall be Steel City, H3BD/3GC, box/ring or exact equivalent.

### 3.9 Staff Station

The staff station shall include solid state LSI/microprocessor technology, a yellow call-placed indicator/call button, a red in-use/reset button and a 2 1/2" X 2 1/2" speaker/microphone mounted on a flame-retardant Cicolac plastic faceplate. All wire connections shall be plug-in type. The staff station shall be TekTone #IR250 (standard) or IR254 (enhanced). The staff stations shall provide communication to the master from locations, which would not require use of a call cord.

### 3.10 Multipurpose Station (addressable module)

The IR259 multipurpose station shall include solid state LSI/microprocessor technology with all the inputs and outputs of a standard patient station mounted on a blank Cicolac plastic faceplate. It shall be used to address all stand-alone peripherals, door contacts, page input and shall supervise code call peripherals and associated wiring.

### 3.11 Staff Presence Station

The SF250 shall include a staff presence indicator and status button. When activated, the green dome on the corridor lamp such as the LI387 will illuminate steady to indicate staff presence. If a staff request is sent from the master station, the green lamp shall flash until the call is reset or the staff registers at the SF250. When used with the staff follower operation, it shall allow the automatic transfer of calls to staff registered locations and will continue that feature from room location to room location until follower operation is cancelled at master station.

### 3.12 Radio Pocket Paging

The UHF transmitter shall be specifically configured to automatically receive calls from one or two NC205 CPE's with serial data being transmitted at 9600 baud. Individual pages shall be sent by order of priority. Pocket pagers shall display at minimum the call type, room location, priority level and time. Via a correctly configured local computer and the provided Bi-directional serial port, the system room numbering and zone/room assignments may be programmed and saved. The transmitter shall be provided with 10 additional dry contacts that may be programmed and used by the facility for operations not connected directly to the Nurse Call system. The transmitter shall be TekTone #NC365A with #NC398 series pocket pagers. A telephone interface shall be available on the NC365AT version to allow connection to the facilities telephone system and transmission of one of 50 pre-programmed custom messages to a group of pagers.

### 4.0 Wiring

Wiring shall be in strict accord with the NC205 installation and instruction manual (IL600).

### 5.0 Warranty

Each piece of equipment shall be warranted by the equipment manufacturer to be free of defects in material and workmanship for a period of 12 months from the date of shipment.

### 6.0 Shop Drawings

The contractor shall submit shop drawings to the engineer for approval. The contractor must have approved shop drawings in his possession prior to installation.

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