NURSE CALL SYSTEM SPECIFICATION

The contractor shall provide a fully monitored, digital patient-to-nurse call system with an integrated digital sound distribution system.

Positions and types of equipment are indicated on the room data sheets and associated drawings which should be read in conjunction with this specification.

The nurse call system and sound distribution system shall comply with Health Technical Memorandum HTM2015 and NHS Model Engineering Specification C49.

GENERAL.

The system shall operate as a self-contained system for each ward, each with its own power supply unit and nurse station indicator unit, as indicated on the drawings.

The system shall be capable of transferring all calls from one ward to an adjacent ward (full transfer) where the nurse station indicator unit is unattended (during night shift etc.).

The system shall also be capable of transferring part of a ward; down to single bed level to another ward (flexible transfer), where nursing of beds in one ward area is being controlled by nurses in another ward e.g. during busy periods. The system shall be capable of transferring to up to 3 different areas simultaneously.

The transfer facilities described above shall be pre-programmed by the specialist supplier at the time of commissioning. Operation of the transfer facilities shall be by simple push button operation by the nursing staff. The system design shall also allow easy re-programming of the transfer criteria by hospital personnel as and when required.

The system shall have the facility for two-way speech between patient and staff, and staff to staff. The two-way speech facility shall be flexible in design to allow the interchangeability of handsets to provide patients with speech or non-speech handsets at the discretion of staff. The two-way speech facility shall be transferred with all other calls when the transfer option is exercised.

Two-way speech between staff shall be via dedicated staff speech units located in ward areas and staff areas as detailed on the drawings, and NSU to SSU.
The system shall have the facility to record call activity via software on existing PC to record the time, date and location of each call on the system and staff responses to each call.

Cover plate finishes shall be either satin stainless steel, or powder coated creamy white subject to approval.

**CALL TYPES.**

The system shall have six distinct levels of call: -

**Patient-to-Nurse Call** – sounder 1 second on, 9 seconds off, lamps continuous.

**Bathroom Call** – sounder 1 second on, 3 seconds off, lamps continuous.

**Emergency Call** – sounder two-tone, 1.0 second cycle, lamps flashing 0.5 seconds on, 0.5 seconds off.

**Cardiac Call** – sounder two-tone (higher pitch than Emergency), 0.5 second cycle, lamps flashing 0.5 seconds on, 0.5 seconds off.

**Intruder Alarm** – sounder continuous.

**Drug Cupboard Alarm** – sounder chime repeated every 20 seconds.

**Priority of calls shall be as follows:** -

1. Cardiac Call.
2. Emergency Call.
3. Bathroom Call.
4. Patient-to-Nurse

Bathroom calls can be configured to have their own priority, or to be standard patient-to-nurse calls.

When calls of the highest priority are on the system, other calls of a lower priority are stored in the system until they are reset. Calls of all priorities can be scrolled through on the nurse station display.
OPERATION OF THE SYSTEM.

The system of operation shall be as follows:

a) Operation of the Patient-to-Nurse call system from a bedhead unit or remote call unit.

The patient will make a call by depressing the orange call button on the handset, or on the call/reset unit. This will illuminate the following lights until reset.

i. A reassurance light on the handset. This informs the patient that the call has been registered.
ii. The reset lamp on the bedhead unit or call/reset unit associated with that call.
iii. The overdoor lamp outside the room from which the call has been made.
iv. The overdoor lamp outside the corridor from where the call was made.

The LCD display at the nurse station unit (NSU) and Staff Speech Unit/Staff Display Unit will show the location of the call, with audible annunciation from a sounder.

b) Operation of the Patient-to-Nurse call system from WC's and bathrooms.

The patient will make a call by, either pulling the ceiling pull cord, or pressing the nurse call button. This will illuminate the following lights until reset from either the bedhead unit or the call/reset unit.

i. A reassurance light on the ceiling pull or by wall point.
ii. The reset lamp on the bedhead unit or on the call/reset unit associated with that call.
iii. The overdoor lamp outside the bedroom or room from which the call has been made.
iv. The overdoor lamp outside the corridor from where the call was made.

The LCD display at the nurse station unit and Staff Speech Unit/Staff Display Unit will show the location of the call, with audible annunciation from a sounder.

If the system is set up to give a higher priority to bathroom calls, patient-to-nurse calls are automatically stored.
c) **Operation of the Emergency Call (staff-to-staff).**

Throughout ward area’s and other patient area’s there are emergency call switches. Mounted either on bedhead units or as stand-alone units, the switch is a red pull-push switch engraved EMERGENCY PULL.

To summon assistance, the nurse must pull the switch, which will illuminate the same lamps as for the patient-to-nurse calls. These lamps will flash to signal that they are a higher priority.

When this assistance switch is used it will be a priority call and consequently any other patient-to-nurse call, or bathroom call that has been made will be automatically stored. The stored calls will be reinstated when all assistance calls have been cancelled by pushing the switch to its “off” position.

d) **Operation of the Cardiac Call (staff-to-staff).**

Where required, black pull-push switches are fitted onto plates engraved CARDIAC CALL.

To alert staff, the switch must be pulled which will illuminate the appropriate room light and, if in a bedroom, the corridor overdoor lamp also. These lamps will flash to signal the higher priority of the call. When the switch is used it has the highest priority and consequently any other patient-to-nurse, bathroom call or nurse-to-nurse call will be automatically stored. Any stored call will be reinstated when all cardiac calls have been cancelled by pushing the switch to its “off” position.

e) **Operation of nurse presence (where applicable).**

Nurse presence switches are either stand-alone units, or an integral switch on a Staff Speech Unit (SSU)/Staff Display Unit (SDU).

The nurse will activate the illuminated switch upon entering a room where the switch is fitted. The clear push lamp will illuminate to indicate that presence is activated and the associated overdoor lamp will illuminate outside the room, again with a clear lens.

The LCD display at the nurse station unit and Staff Speech Unit/ Staff Display Unit will indicate where staff are present.
f) **Operation of two-way speech (where applicable).**

Two-way speech facilities shall be available between patient and staff, from the nurse station unit and the bedhead unit via the patient handset. Between staff and staff from the staff speech unit and the nurse station unit, or between staff speech units.

i **Patient-to-staff speech**

The patient will make a call from the handset to the nurse station unit. The nurse can either respond to the call by attendance, or by initiating a speech call with the patient by pressing the “open speech” key on the nurse station unit. Speech is also open one way from the NSU. A ring tone will then sound at the patient’s handset and upon pressing the orange call button on the handset, the speech channel will be open to the nurse station unit. With the speech channel fully open the nurse can then reset the patient call from the nurse station unit.

The patient call can be cancelled from the nurse station unit.

The nurse can initiate a call to a patient from the nurse station unit by directly dialling the patient’s bedhead unit. The nurse initiates the process via the “speech dial” key and follows the on-screen prompts.

The nurse can also communicate with the patient through 2-way speech via dedicated Staff Speech Units positioned in ward areas and other designated staff area’s. A patient call can be answered from any Staff Speech Unit in that area and dealt with in the same way as a speech call at the main Nurse Station Unit.

ii **Staff-to-staff speech**

The nurse can make a speech call from any bed position by following the above process for a patient call. Dedicated Staff Speech Units positioned in ward areas and other designated staff area’s can be used to communicate directly with its associated nurse station unit. The Nurse Station Unit can either be directly dialled from the Staff Speech Unit, or the Staff Speech Unit can respond to a “staff address” from the Nurse Station Unit or any other Staff Speech Unit in the area where staff are present. The Staff Speech Unit can originate staff addresses.
DIGITAL SOUND SYSTEM.

The electrical contractor shall supply, install, test and commission a digital master sound distribution system that is fully integrated with the digital nurse call system utilising a common 4 core data cabling system.

The sound system shall be of a modular concept capable of providing up to 16 channels of sound.

The design of the system should enable the nurse call system to operate totally independently of the sound system and not be reliant upon the master sound system to derive nurse call or speech facilities.

The system shall include: -

i. A master chassis incorporating the power supply unit, encoder and monitor modules.
ii. FM receiver modules to cover 87.5 to 108MHz frequency band.
iii. AM receiver modules to cover 525 to 1605KHz frequency band.
iv. MW/LW receiver modules to cover medium wave frequency band 525 to 1605KHz and long wave frequency band 148 to 284KHz.
v. TV receiver modules to cover UHF channels 21 to 68.

Optional modules should include: -

i. Auxiliary microphone input module for use with an external audio source (tape recorder, CD player), and a microphone input for use with a low impedance microphone.
ii. Auxiliary/Auxiliary module containing two auxiliary inputs for use with external audio sources.

Total number of channels shall be a minimum of 16. Exact combinations of the above shall be derived from the schematic drawings.

Power supply.

Mains input is achieved via a 3.5m mains cable complete with IEC connector to plug directly into the socket at the rear of the master chassis. The power supply module includes an on/off switch and supply indication. It provides isolation from the 230V mains supply and +5V, +18V and +30V regulated and protected dc supplies.
Aerial input.

Three BNC sockets are provided at the rear of the master chassis for inputs of TV, FM and AM. Signals are amplified and buffered from the receiver modules.

Output terminals.

Output terminals are PCB mounted in four sets in a box mounted at the rear of the master chassis. This enables up to four independent wiring runs to be made from the master chassis.

Repeater modules.

Where data wiring runs exceed 300m a repeater unit is required to regenerate the digital signal allowing for further 300m wiring runs. Total wiring run shall not exceed 1500m on any one output.

Loudspeakers and control units.

For use in dayrooms and communal areas where sound distribution is required. Control switches mounted on the control unit to provide programme selection, volume setting and on/off control.

SYSTEM WIRING

The system shall be wired in a four core screened data cable to British Telecom specification CW 1370 LSF such as BICC T6904, NEC36770. The cable has a conductor size of 0.4mm diameter and an overall diameter of 4.5mm. Auxilary units shall be wired in two-core or a four-core telephone cable to British Telecom specification CW 1308. The two-core cable has a conductor size of 0.5mm diameter and a sheath of an overall diameter of 3.3mm. The four-core cable has a conductor size of 0.5mm diameter and a sheath of an overall diameter of 3.6mm.

Specific cabling requirements shall be derived from the specialist supplier and in accordance with their schematic wiring diagrams.

All cabling shall be installed in conduit and trunking fully segregated from mains voltage.
NURSE CALL EQUIPMENT.

General Requirements.

i. All units unless stated otherwise shall be flush mounting with overlapping satin stainless steel, or powder coated creamy white finish (to be approved).

ii. All data connections shall be via IDC connectors fitted within the unit, either on the back of the cover plate or within the back box.

iii. All back boxes to be flush fitted steel galvanized or painted black.

iv. All front plates shall be engraved to indicate their function.

Bedhead Units.

At each bed position a bedhead unit shall be installed, having a split front plate overall size 324mm x 174mm to incorporate the following:

240-volt section (left hand panel):

1 No. Twin 13 amp switched socket outlet.

1 No. 20 amp two way and off switch for Dim/Off/Bright bedlight operation.

1 No. 2.2uF capacitor for dimming a 60watt tungsten filament bedhead light.

1 No. Relay to control the bedlight from the patient handset.

1 No. Fused connection unit for bedlight supply fitted with a 3-amp fuse.

Extra low voltage section (right hand panel):

1 No. Red emergency pull-push switch.

1 No. Illuminated reset push with amber lens.

1 No. Data socket for handset.

1 No. Stethophone driver unit, 220ohm impedance.

1 No. Handset parking bracket.

1 No. Headset parking hook.
1 No. Interface connecting PCB with connections for the following: -
   i. Remote emergency pull-push switch with reassurance.
   ii. Remote cardiac call switch with reassurance.
   iii. Local sounder mute switch when a sounder PCB is fitted.
   iv. Remote patient/bathroom call point with reassurance.
   v. Staff presence switch/lamp.
   vi. Room lamp.
   vii. All call lamp.
   viii. Programmable corridor lamp.
   ix. Sounder PCB with connections available for supplying the output to
       remote sounder units.

**Patient Handset (speech version).**

Multiplexed patient handset comprising a creamy white slim lightweight ABS
moulded case size 197mm x 44mm x 16.5mm.
Continuously monitored patient to nurse call.
The case shall have a wipe clean membrane switch panel and shall be
constructed to allow disassembly by hospital engineering staff for ease of
maintenance.
The patient handset shall incorporate the following: -

   i. A large oval orange pushbutton for nurse call with nurse symbol
      permanently backlit for location in the dark.
   ii. A red reassurance LED activated on patient call.
   iii. Green LED display of programme number selection for sound distribution
       system.
   iv. A grey standby on/off pushbutton.
   v. A grey 16 channel (maximum) up/down programme selection pushbutton.
   vi. A grey volume up/down pushbutton.
   vii. A grey bedlight control pushbutton.
   viii. A loudspeaker and microphone for two-way speech.
   ix. Two metres of PVC cable fitted with data plug and linen clip.

**Patient Handset (non-speech version).**

Multiplexed patient handset comprising a creamy white slim lightweight ABS
moulded case size 160mm x 44mm x 16.5mm.
Continuously monitored patient to nurse call.
The case shall have a wipe clean membrane switch panel and shall be
constructed to allow disassembly by hospital engineering staff for ease of
maintenance.
The patient handset shall incorporate the following: -

i. A large oval orange pushbutton for nurse call with nurse symbol permanently backlit for location in the dark.
ii. A red reassurance LED activated on patient call.
iii. Green LED display of programme number selection for sound distribution system.
iv. A grey standby on/off pushbutton.
v. A grey 16 channel (maximum) up/down programme selection pushbutton.
vi. A grey volume up/down pushbutton.
vii. A grey bedlight control pushbutton.
viii. Two metres of PVC cable fitted with data plug and linen clip.

**Patient Call Unit with Bedlight Control.**

Multiplexed patient handset comprising a creamy white slim lightweight ABS moulded case size 160mm x 44mm x 16.5mm. Continuously monitored patient to nurse call. The case shall have a wipe clean membrane switch panel and shall be constructed to allow disassembly by hospital engineering staff for ease of maintenance.

The patient handset shall incorporate the following: -

i. A large oval orange pushbutton for nurse call with nurse symbol permanently backlit for location in the dark.
ii. A red reassurance LED activated on patient call.
iii. Grey pushbutton for bedlight control.
iv. Two metres of PVC cable fitted with data plug and linen clip.

**Dummy plugs.**

The withdrawal of the patient handset from the bedhead unit shall operate the fail-safe monitoring device as previously described. Provision should therefore be made for the supply of dummy plugs to fit the data socket on the bedhead unit in the event of a handset being removed for maintenance.

**Stethophone Headset.**

Shall be of the flexible plastic washable fork type with foam ear tips; replaceable after use, and complete with 1500mm of flexible acoustic tubing to fit the stethophone driver socket on the bedhead unit.
Nurse Station Unit – Speech version (Speech NSU).

A Nurse Station Indicator Unit (NSU) shall be installed in each ward area to give full details of all calls on the system in its associated area. Front plate dimensions not exceeding 360mm x 250mm.

The NSU shall incorporate the following:

i. A wipe clean membrane keyboard with integral function keys.
ii. A two-line forty character back-lit LCD display. The top line gives call type, call location and total number of calls. The bottom line is used for staff presence details, transfer, speech and system prompts.
iii. NSU handset for communication with the patient via the patient handset ensuring total privacy at all times.
iv. Transferred call indication – illuminates when a call is received from another ward area NSU that has transferred its calls to this NSU.
v. Intruder indicator – illuminates when an intruder switch is actuated in this ward area. Should also be capable of giving indication of an intruder switch activation from an adjacent ward.
vi. Drug cupboard indicator – illuminates if a drug cupboard door is opened.
vii. All call indicator – illuminates if any call/alarm is active at the NSU. This indicator should flash if a cardiac or an emergency call is registered.
viii. Scroll keys – used to scroll up or down through the calls on the system. The display should revert back to the highest priority call after 5 seconds.
ix. Pager key and indicator – press to turn pagers on (if pagers are used on the system).
x. Mute sounders key and indicator – press key to mute sounders on the ward area.
xii. Transfer key and indicator – press key to initiate the transfer procedure and follow the on-screen prompts. This procedure will take the operator through full transfer and flexible transfer routines (if enabled).
xiii. Sounder – mounted beneath the keyboard and provides annunciation of all calls at the NSU. The sounder is turned off when the speech channel is open to a patient call; it can be muted.
xiv. Patient call reset key – used to reset a patient call – only when the speech channel is fully open and the call is registered.
xv. Speech open key – used to open speech to a patient or a Staff Speech Unit when a call has been made to the NSU.
xvi. Speech dial key – used to initiate the speech dial routine, enabling the nurse to directly dial a patient bedhead following the on-screen prompts.
xvii. Speech close key – used to close the speech channel after talking to a patient or another member of staff, or after dialling and no answer is received.
xviii. 0-9 keys – used for room and bed number entry during speech dial routine.
xviii. Staff address – used to communicate with Staff Speech Units in the area whose staff presence indicators are on.
xix. Option for hands free speech facility - special speech timer.

*Nurse Station Unit – Non Speech version (Non Speech NSU).*

A Nurse Station Indicator Unit (NSU) shall be installed in each ward area to give full details of all calls on the system in its associated area. Front plate dimensions not exceeding 360mm x 250mm.
The NSU shall incorporate the following: -

i. A wipe clean membrane keyboard with integral function keys.
ii. A two-line forty character back-lit LCD display. The top line gives call type; call location and total number of calls. The bottom line is used for staff presence details, transfer and system prompts.
iii. Transferred call indication – illuminates when a call is received from another ward area NSU that has transferred its calls to this NSU.
iv. Intruder indicator – illuminates when an intruder switch is actuated in this ward area. Should also be capable of giving indication of an intruder switch activation from an adjacent ward.
v. Drug cupboard indicator – illuminates if a drug cupboard door is opened.
vi. All call indicator – illuminates if any call/alarm is active at the NSU. This indicator should flash if a cardiac or an emergency call is registered.
vii. Scroll keys – used to scroll up or down through the calls on the system. The display should revert back to the highest priority call after 5 seconds.
viii. Pager key and indicator – press to turn pagers on (if pagers are used on the system).
ix. Mute sounders key and indicator – press key to mute sounders on the ward area.
x. Transfer key and indicator – press key to initiate the transfer procedure and follow the on-screen prompts. This procedure will take the operator through full transfer and flexible transfer routines.
x. Sounder – mounted beneath the keyboard and provides annunciation of all calls at the NSU. The sounder is turned off when the speech channel is open to a patient call, it cannot be muted.
xii. RS232 connection for link to data logger printer.

The NSU shall also provide fault messages on the LCD display in the event of the following: -

a) Handset fault.
b) Bedhead failed.
c) Call point or unit failed.
d) Major malfunction.
e) Power loss.
Staff Speech Unit (SSU).

A Staff Speech Unit (SSU) shall be installed in all staff areas as detailed on the drawings. The SSU shall replicate all calls and call types that would normally appear on its associated NSU.

The SSU shall provide staff with a two-way speech facility between:
- SSU and patient.
- SSU and SSU.
- SSU and NSU.

The SSU contains a sounder to annunciate all calls associated with the area it is installed within. The sounder will only sound on an SSU where the staff presence switch has been activated, thus ensuring non-disturbance of patients unnecessarily if presence used.

The SSU shall contain a speech channel timer to ensure that any two-way speech channel left open inadvertently will automatically close after 10 minutes.

The SSU shall be a semi-recessed ABS plastic unit 246mm x 122mm x 30mm, complete with wipe clean membrane switch panel incorporating the following:

i. A four lines of twenty character back-lit LCD display with scroll up/down key.
ii. Loudspeaker and microphone providing hands-free speech.
iii. Staff presence key and LED.
iv. Mute key – used to mute the microphone during two-way speech communication. A screen message “speech muted” is displayed.
v. Call reset key – used to reset a patient call only after two-way speech communication has been established.
vi. Staff address key – used to address other SSU’s in the area whose staff presence switch is activated.
vii. Dial NSU key – used to dial up its associated NSU to establish two-way speech communication between SSU and NSU.
viii. Open/close key – used to open or close two-way speech channel after communication has finished.
Staff Display Unit (SDU).

A Staff Display Unit (SDU) shall be installed in all staff areas as detailed on the drawings. The STAFF DISPLAY UNIT shall replicate all calls and call types that would normally appear on its associated NSU.

The STAFF DISPLAY UNIT contains a sounder to annunciate all calls associated with the area it is installed within. The sounder will only sound on an STAFF DISPLAY UNIT where the staff presence switch has been activated, thus ensuring non-disturbance of patients unnecessarily.

The STAFF DISPLAY UNIT shall be a semi-recessed ABS plastic unit 246mm x 122mm x 30mm, complete with wipe clean membrane switch panel incorporating the following:

i. A four lines of twenty character back-lit LCD display with scroll up/down key.
ii. Loudspeaker and microphone providing hands-free speech.
iii. Staff presence key and LED.

Data Logger Printer.

A serial impact dot matrix printer not exceeding 234mm x 158mm x 193mm. Providing 40 characters per line @ approximately 2.5 lines per second. Power supply 230Volt, 50Hz.

Overdoor Lamp Unit.

Comprising a front plate not exceeding 86mm x 86mm containing - one 24 volt 2.8 watt MES lamp assembly together with the necessary printed circuit board having IDC connections. Lamp lens generally Amber, refer to drawings and associated room data sheets.

Twin Overdoor Lamp Unit.

Comprising a front plate not exceeding 146mm x 86mm containing - two 24 volt 2.8 watt MES lamp assemblies together with the necessary printed circuit board having IDC connections. Lamp lens generally Amber, refer to drawings and associated room data sheets.
Ceiling Pull Cord.

Comprising a white surface mounted box, fitted with integral amber reassurance light, 1.5m of orange cord and orange acorn.

Reset Unit.

Comprising a front plate not exceeding 124mm x 174mm containing – one illuminated reset push. Front plate engraved RESET

Call/Reset Unit.

Comprising a front plate not exceeding 124mm x 174mm containing – one illuminated reset push and one square orange call push with nurse symbol. Front plate engraved RESET, CALL

Call/Reset/Emergency Unit.

Comprising a front plate not exceeding 174mm x 174mm containing – one square orange call push with nurse symbol, one illuminated reset push and one pull/push switch. Front plate engraved CALL, RESET, EMERGENCY PULL

Data Socket/Reset/Emergency Unit.

Comprising a front plate not exceeding 174mm x 174mm containing – one data socket to accept patient handset, one illuminated reset push and one pull/push switch. Front plate engraved CALL, RESET, EMERGENCY PULL

Reset/Emergency Unit.

Comprising a front plate not exceeding 124mm x 174mm containing - one illuminated reset push with amber lens, one red pull/push switch. Front plate engraved RESET, EMERGENCY PULL
Emergency/Reassurance Unit (data).

Comprising a front plate not exceeding 124mm x 174mm containing one - red emergency pull-push switch with amber reassurance lamp. Front plate engraved EMERGENCY PULL

Note:
This is a data cable ring unit, the interface PCB has connections for the following:
- Up to 3 bathroom call points with individual reassurance.
- Staff presence switch/lamp.
- Room lamp.
- All call lamp.
- Programmable (corridor) lamp.
- Drug cupboard door open input.
- Remote emergency pull switch.
- Remote cardiac call switch with reassurance.

Emergency Switch/Reassurance (non-data).

Comprising a front plate not exceeding 86mm x 146mm containing – one red emergency pull/push switch and one amber reassurance lamp. Front plate engraved EMERGENCY PULL

Call Switch/Reassurance Unit.

Comprising a front plate not exceeding 86mm x 86mm containing – one square orange call push with nurse symbol and red reassurance LED. Front plate engraved CALL

Cardiac Switch/Reassurance Unit.

Comprising front plate not exceeding 86mm x 146mm containing - one black cardiac pull/push switch with amber lens. Front plate engraved CARDIAC PULL

Staff Presence Switch Unit.

Comprising front plate not exceeding 86mm x 86mm containing - one push switch with integral reassurance lamp and clear lens. Front plate engraved PRESENCE
Overdoor Lamp/Sounder Unit.

Comprising front plate not exceeding 86mm x 146mm containing - one 2.8watt MES lamp and one 64ohm loudspeaker with an output of 70dB at 1 metre.

Remote Sounder Unit.

Comprising front plate not exceeding 86mm x 86mm containing - one 64ohm loudspeaker with an output of 70dB at 1 metre.

Power Unit.

Comprising transformer, rectifier, battery and charger providing 8 amp output 24 volts DC, in sheet steel case not exceeding 440mm long x 204mm wide x 170mm high. The battery provides full system operation for four minutes during mains failure.

TEST AND COMMISSION

The complete nurse call system as described shall be supplied, fixed, wired and connected by the contractor.

The complete system shall be tested and fully commissioned by the specialist manufacturer. Commissioning shall be deemed to include demonstration to the engineer and/or clerk of works (electrical).

The contractor shall be responsible for the correction of any wiring faults discovered prior to connecting.
BED HEAD TRUNKING.

GENERAL.

The contractor shall supply and install a horizontal bed head trunking system as manufactured by the nominated nurse call system manufacturer. The trunking system shall be fitted at the rear of beds as indicated on the relevant drawings.

BED HEAD TRUNKING.

The extruded aluminium trunking sections shall be finished in a creamy white semi-gloss Syntha Pulvin polyester powder coated paint finish. And shall be a maximum 230mm high x 90mm deep.

The bed head trunking system shall comprise of two main sections – a slim section (40mm deep) that shall be run along the horizontal and also vertical risers. This section shall carry all of the electrical and mechanical services (up to 4 medical gas pipes). The deeper section (90mm deep) shall be fitted in the area’s shown on the drawings and is designed to carry the services outlets at the rear of the bed head.

Segregation of systems within the trunking is achieved by the use of barriers made from aluminium and PVC. The PVC segregation strips are adjustable in position and length to suit the situation.

Lengths of trunking are joined by pins in aligning holes. Internal and external corners are joined in the same way.

Aluminium and moulded plastic end caps shall be provided to finish off visible ends of run.

The bed head trunking system is designed to fit surface to the walls and to carry all wiring associated with the bed head, including mains voltage wiring, ELV nurse call wiring, data and telecommunications wiring, TV coaxial cabling if required.

The bed head trunking will also carry the mechanical services for the medical gas installation, with capacity for up to 6 medical gas pipes.

The electrical contractor shall provide medical gas outlet plates (back plates and cover plates).

Medical gas outlets shall be supplied and fitted by the nominated mechanical services contractor for the type of gas outlet see the mechanical services specification.
All medical gas terminations shall be completed prior to commencement of cabling.

**Bed Head Trunking Accessories.**

**Nurse Call.**

**Bed Head Unit.**

Comprising of a creamy white plate 280mm in length fitted with the following components:

1 No. Red emergency pull-push switch.

1 No. Illuminated reset push with amber lens.

1 No. Data socket for handset.

1 No. Stethophone driver unit, 220ohm impedance.

1 No. Handset parking bracket.

1 No. Headset parking hook.

1 No. Interface connecting PCB with connections for the following:

- Remote emergency pull-push switch with reassurance.
- Remote cardiac call switch with reassurance.
- Local sounder mute switch when a sounder PCB is fitted.
- Remote patient/bathroom call point with reassurance.
- Staff presence switch/lamp.
- Room lamp.

**Emergency Reset Unit.**

Comprising a creamy white front plate not exceeding 280mm in length, containing – one red emergency pull/push switch and one amber reassurance lamp. Front plate engraved **EMERGENCY PULL**

**Cardiac Switch/Reassurance.**

Comprising a creamy white front plate not exceeding 95mm in length, containing - one black cardiac pull/push switch with amber lens. Front plate engraved **CARDIAC PULL**
Staff Presence Switch.

Comprising a creamy white front plate not exceeding 95mm in length, containing – one push lamp with clear lens. Front plate engraved PRESENCE.

Emergency Switch/Reassurance (non-data).

Comprising a creamy white front plate not exceeding 95mm in length, containing – one red emergency pull/push switch and one amber reassurance lamp. Front plate engraved EMERGENCY PULL

MAINS VOLTAGE.

Light Switch.

Comprising a creamy white front plate not exceeding 95mm in length, containing - one 20amp rated rocker switch.

Bedlight Switch/Fused Connection Unit/Relay.

Comprising a creamy white front plate not exceeding 175mm in length, containing: -

1 No. 20 amp two way and off switch for Dim/Off/Bright bedlight operation.

1 No. 2.2uF capacitor for dimming a 60watt tungsten filament bed head light.

1 No. Relay to control the bedlight from the patient handset.

1 No. Fused connection unit for bedlight supply fitted with a 3-amp fuse.

Front plate engraved BEDLIGHT.
**Bedlight Switch/Fused Connection Unit.**

Comprising a creamy white front plate not exceeding 175mm in length, containing:

1 No. 20 amp two way and off switch for Dim/Off/Bright bedlight operation.
1 No. 2.2uF capacitor for dimming a 60watt tungsten filament bed head light.
1 No. Fused connection unit for bedlight supply fitted with a 3-amp fuse.

Front plate engraved **BEDLIGHT**.

**Bedlight Bracket.**

Comprising a creamy white front plate not exceeding 95mm in length, containing – one bedlight bracket to suit a Luxo LS400 type bedlight fitting.

**Twin 13amp Switched Socket Outlet.**

Comprising a creamy white front plate not exceeding 175mm in length, containing - one 13amp 240Volt twin switched socket outlet to BS1363.

**Single 13amp Switched Socket Outlet.**

Comprising a creamy white front plate not exceeding 95mm in length, containing - one 13amp 240Volt single switched socket outlet to BS1363.

**MEDICAL GAS OUTLET PLATES.**

**Single medical gas outlet plates.**

Comprising a creamy white front plate not exceeding 130mm in length with a single hole to accept a medical gas outlet. The plate shall be supplied complete with a back plate for mounting the medical gas outlet into the back of the bed head trunking. The back plate shall be supplied complete with fixing holes ready to accept the medical gas outlet type as specified within the mechanical services specification.
**Twin medical gas outlet plates.**

Comprising a creamy white front plate not exceeding 280mm in length with two holes to accept medical gas outlets. The plate shall be supplied complete with a back plate for mounting the medical gas outlet into the back of the bed head trunking. The back plate shall be supplied complete with fixing holes ready to accept the medical gas outlet type as specified within the mechanical services specification.

**Triple medical gas outlet plates.**

Comprising a creamy white front plate not exceeding 400mm in length with three holes to accept medical gas outlets. The plate shall be supplied complete with a back plate for mounting the medical gas outlet into the back of the bed head trunking. The back plate shall be supplied complete with fixing holes ready to accept the medical gas outlet type as specified within the mechanical services specification.

**BED HEAD TRUNKING WITH INTEGRAL LIGHTING.**

Where indicated on the drawings, the electrical contractor shall provide a bed head trunking system to match the bed head trunking system fitted in the general areas, complete with integral uplighting and downlighting sections.


**Uplighter Section.**

Used to provide ambient lighting in the bedded areas of a ward.

Shall comprise of the following:

Extruded aluminium trunking sections that shall be finished in a creamy white semi-gloss *Syntha Pulvin* polyester powder coated paint finish.

The trunking sections shall be a maximum 320mm high x 90mm deep by a variable length to suit room conditions.

High output, energy saving T5 fluorescent tubes with electronic control gear to give flicker free start and operation with optimum performance.
An electronic dimmable ballast as an option to provide flicker free dimming down to approximately 1% of light output.

Uplighters can be a continuous run of tubes, or separated – see drawings for full details.

The sloping top lens shall be clip-in and able to be removed for ease of tube replacement.

**Performance.**

The uplighter section can be fitted with one or two 54W tubes depending on the room details and illuminance required (refer to drawings).

The lighting levels shall not fall below the following criteria:

**With one 54W tube, an average illuminance of 200 – 230 lux should be achieved in a 4 to 6 bed ward with one luminaire per bed position.**

The luminaire shall be mounted at a height of 1.8m from finished floor level (the centre line of the trunking services front cover is 1.6m from finished floor level).

**With two 54W tubes, the average illuminance increases to 290 – 345 lux.**

The optical design shall control the distribution of light and therefore should restrict glare to other patients and staff.

**Downlighter Section.**

Used to provide a reading light and a watch light for night observation. This luminaire shall be a separate unit that is fitted to the front of the trunking at the rear of the bed head position (or as shown on the drawing).

The overall dimensions of the downlighter shall not exceed 100mm high x 105mm deep x 650mm wide.

The lens shall be clip-in for easy removal for tube/lamp replacement.
Reading Light.

Energy saving 14W T5 lamp with electronic control gear to give flicker free start and operation with optimum performance.

Mounting height shall be approximately 1.7m from finished floor level. This should provide an illuminance level of 250 – 300 lux at the pillow.

The optical design shall control the light distribution to avoid glare and prevent disturbance onto neighbouring patients in a multi-bed ward.

Watch Light.

One 5W compact fluorescent lamp with electronic control gear shall provide 5 to 10 lux at the bed head.

MEDICAL SERVICES COLUMN.

GENERAL.

The contractor shall supply and install vertical medical services columns as manufactured by the nominated nurse call system manufacturer.

The medical service columns shall be fitted to the side of the bed as indicated on the relevant drawings.

The installer shall ensure that walls are flat to ensure that the medical service column does not distort. Where walls are not flat, the installer shall ensure that adequate packing is fitted so that the medical service column is fitted flat.

MEDICAL SERVICES COLUMN.

The front panels of the medical service columns shall be finished in a creamy white semi-gloss polyester powder coated paint finish.

Overall dimensions of the medical service column shall be a minimum height of 1800mm by a width not exceeding 400mm and a depth not exceeding 70mm.

The front panels shall be supplied in 5 sections – top cover extension for mounting above the false ceiling, a top blank cover, a medical gas cover complete with bedlight bracket, a mains voltage cover and an ELV cover for nurse call and data/telecommunications.
The back body sections shall be mild steel galvanised finish for corrosion protection and shall have provision for segregated compartments for mains voltage, ELV nurse call, telecommunications and data wiring and medical gas pipework.

Medical gas outlets shall be supplied and fitted by the nominated mechanical services contractor for the type of gas outlet see the mechanical services specification.

All medical gas terminations shall be completed prior to commencement of cabling.

**Medical Service Column Accessories.**

**Nurse Call Section.**

Comprising of a creamy white front panel not exceeding 500mm high x 200mm wide fitted with the following components:

1 No. Red emergency pull-push switch.
1 No. Illuminated reset push with amber lens.
1 No. Data socket for handset.
1 No. Stethophone driver unit, 220ohm impedance.
1 No. Handset parking bracket.
1 No. Headset parking hook.
1 No. Interface connecting PCB with connections for the following:

   i. Remote emergency pull-push switch with reassurance.
   ii. Remote cardiac call switch with reassurance.
   iii. Local sounder mute switch when a sounder PCB is fitted.
   iv. Remote patient/bathroom call point with reassurance.
   v. Staff presence switch/lamp.
   vi. Room lamp.
**Mains Voltage Section.**

Comprising of a creamy white front panel not exceeding 500mm high x 200mm wide fitted with the following components:

A minimum of one 13amp 240volt twin switched socket outlet, up to a maximum of four 13amp 240volt twin switched socket outlets, or up to four 13amp 240volt unswitched socket outlets.

A bedlight switch/fused connection unit/relay with an optional extra lighting switch (see drawings for full details).

**Medical Gas Section.**

Comprising of a creamy white front panel not exceeding 450mm high x 200mm wide fitted with the following components:

A minimum of one medical gas outlet, up to a maximum of six medical gas outlets as detailed on the drawings.