

KT-NCS

OPERATOR'S MANUAL

Intercom Nurse Call System



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This guide describes all features and functions of Wireless Nurse Call system product of Kahroba Tarasheh Company (ISO 9001/13485 certified by the IQ-NET member certification body (C.B.) CISQ/IMQ which is accredited by International Accreditation Forum (IAF) member Accredia) under the brand “KT-NCS”.

Your Nurse Call System is highly customizable and may not have some of the features given in this manual.

Manual Purpose:

This manual provides the instructions necessary to operate Kahroba Tarasheh Wireless Nurse Call System in accordance with its intended use. It also describes all parameters and options that your system may have depending on the way it has been customized.

Study of this manual is a prerequisite for proper operation and ensures patient and operator safety. If you have any question about the Wireless Nurse Call System, please contact our customer service. This manual is an essential part of the system and should always be kept close to it to be used whenever necessary.

Intended Audience:

This manual is provided for facility staff members and the patients. The users of this manual are expected to have working knowledge of simple button-based devices and English language.

Product Lifetime:

Since electric parts have lifetime of 10 years and recommended maintenance interval of the device is 1 year and its mandatory maintenance interval is 2 years, the expected lifetime of the device is 10 years.

Version Information:

This manual has a version number. The version number changes whenever the manual is updated due to software or technical specification changes. The version information of this manual is as follows.

Release Date	June 2023
Version Number	Intercom-NCS-user-ver-02

Explanations of the used expressions in this Manual



A **WARNING** symbol advises against certain actions or situations that could result in personal injury or equipment damage.



A **NOTE** symbol provides useful information and recommendations about device function.

Explanation of Symbols used on modules

• This symbol means that consult user manual of the system and pay attention to the warnings and cautions.	• This symbol indicates that the equipment shall be disposed of in an environmentally friendly manner.	• Risk of Electric Shock	• Risk of Electric Shock	• Risk of Electric Shock	• Risk of Electric Shock	• AC POWER SUPPLY	• AC POWER SUPPLY	• Protection fast fuse	• Serial number

Patient Safety:

KT-NCS nurse call systems are designed to comply with the international safety standard requirements for medical electrical equipment with UMDNS code 15614.

KT-NCS Basic Nurse Call System is categorized as “ Low Risk” or “Type I “ (EU, Canada, USA) or “ Type A” (CHTF) device in IAF Medical Devices Risk Classification.

KT-NCS Basic Nurse Call System is in Compliance with IEC 60601-1 standard (Basic safety and essential performance requirements of medical electrical equipment).

According to IEC 60601-1 standard:

- KT-NCS Basic Nurse Call System is evaluated as “Type II” in Electric Shock criteria and Type “B” in safety of applied parts as there is no floating contact to the patient.
- Operation in Oxygen-rich and in the vicinity of flammable anesthetics for KT-NCS Basic Nurse Call System is considered as Not Applicable.
- The sterilization of KT-NCS Basic Nurse Call System modules can be done using Gamma Ray when applicable
- KT-NCS Basic Call System has “Fixed” installation and “ Permanent” mode of usage and “Continuous” Mode of operation .

KT-NCS BASIC Nurse Call System has obtained the product standard IEC 60601-1-2 Certificate (collateral standard applying to electromagnetic compatibility of medical electrical equipment and medical electrical systems specifying general requirements and tests for electromagnetic compatibility) certified by EPIL company (accredited calibration & testing Laboratory member of International Laboratory Accreditation Cooperation (ILAC))

KT-NCS BASIC Nurse Call System also has compliance to UL-1069 product standard (UL Standard for Safety of Hospital Signaling and Nurse Call) tested by “Behineh Sanjesh Sadra” company accredited by National Accreditation Center of IRAN (NACI) which is a member of International Accreditation Forum (IAF).

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**This guide describes all features and functions of Kahroba Tarasheh Company Wireless Nurse Call System under the brand “KT-NCS” .
Your Nurse Call System is highly customizable and may not have some of the features given in this manual.**


1 INTRODUCTION

1.1 GENERAL WARNINGS



Before use, carefully read this manual, directions for use of any accessories, all precautions, and all specifications.



There could be hazard of electrical shock by opening the system casing. Watch for the sign  to avoid risk of electric shock. All servicing and future upgrading to this equipment must be carried out by personnel trained and authorized by manufacturer.



The operator must check that system and accessories function safely and see that it is in proper working condition before being used.



Alarm must be set according to different situations of individual patient. Make sure that audio sounds can be activated when an alarm occurs.



Do not use cellular phone in the vicinity of this equipment. High level of electromagnetic radiation emitted from such devices may result in strong interference with the wireless modules of the wireless NCS performance.



There will be some risks of polluting the environment associated with the disposal of the device and cables at the end of their useful lives. The device and accessories shall be disposed in accordance with national laws after their useful lives. Contact your municipality to check where you can safely dispose of old batteries.



Do not expose the system near any local heating item such as the direct radiation.



To prevent EMC effect on the Nurse Call System, it should not be used adjacent to or stacked with other equipment and that if adjacent or stacked use is necessary, the equipment should be observed to verify normal operation in the configuration in which it will be used.



If any liquid is spilled on the system or accessories, immediately turn off the system and wipe up it by a soft cloth.



Make sure that cables and accessories are not under tension during operation.

1.2 GETTING STARTED

✓ CONNECT THE POWER CABLES

Connection procedure of the AC power line:

- Make sure the AC power supply complies with following specification: 100-240 VAC,50 /60Hz
- Plug the power cable to power supply socket of the terminal box module. Connect the other end of the power cable to a grounded power receptacle.



Make sure that the power indicator lights. If it does not light, check your local power supply and power cable connection. If the problem still exists, contact the local After Sale Service.

✓ POWER ON THE TERMINAL BOX

Press POWER key on the Terminal box to power on the system. Please check the red indicators light on the switch to verify if the power is On. After a few seconds the LCD of the staff console module will turn on indicating that the system is powered on.



Check all the functions of modules that may be used and make sure that the system is fully operational.



If any sign of damage is detected, or the system seems not have normal function, do not use it. Contact technical staff in the hospital or local After Sale Service immediately.

1.3 GENERAL INFORMATION

1.3.1 ENVIRONMENT

Temperature working	5~40° C
Temperature of Transport and Storage	-25 ~60° C
Humidity	20-90 %
Altitude	-200 to 3500m
Power Supply	100-240 VAC 60VA, 50/60 Hz

1.3.2 DEFINITION

Nurse Call system is an assembly of electronic devices, integrated within a facility infrastructure and/or wireless network, designed to provide an audio/visual signal to summon help when activated in response to a patient's need for (urgent) assistance. It typically consists of and/or interacts with user- or sensor-activated signal transmitters (e.g., patient-worn pendant, push-buttons, microphones, speakers, fall sensors, smoke alarm, door sensors), a network communicator, and alert communication devices (e.g., server computer, phone, dome lights, audible alarm). The device notifies medical professionals and caregivers and is intended for use in the healthcare facility.

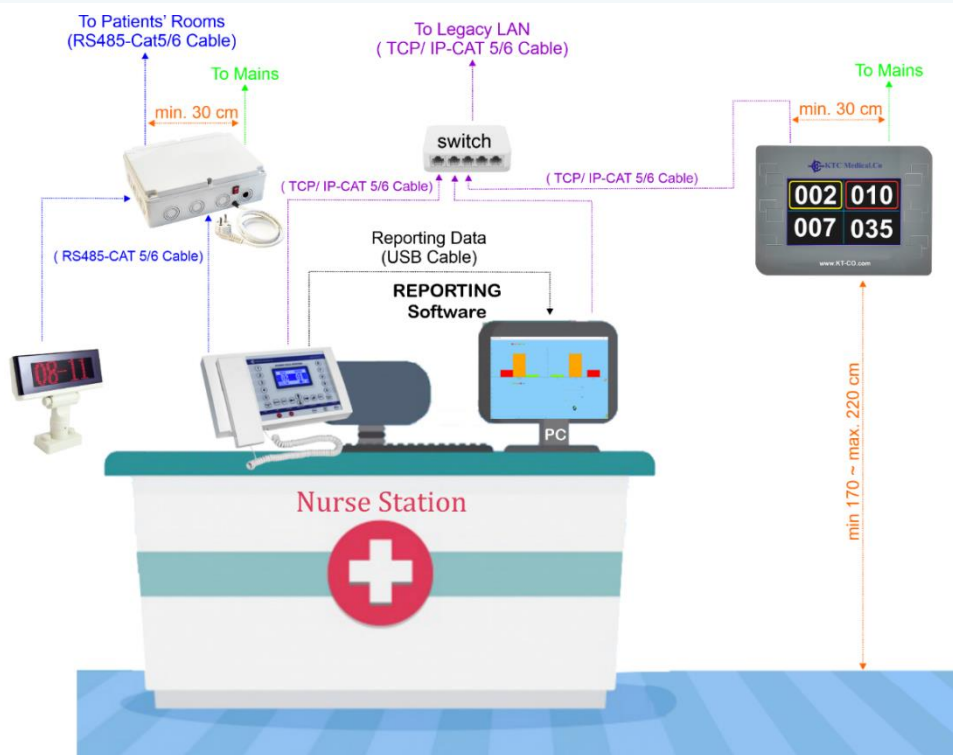
The patient uses the pear-push call switch from his bed or pull-cord switch from the washroom to initiate a call which will be presented on the staff console by vocal and visual annunciation. The staff will have to press the cancel switch at the calling point for deactivation of the initiated call.

1.3.3 MAIN FEATURES

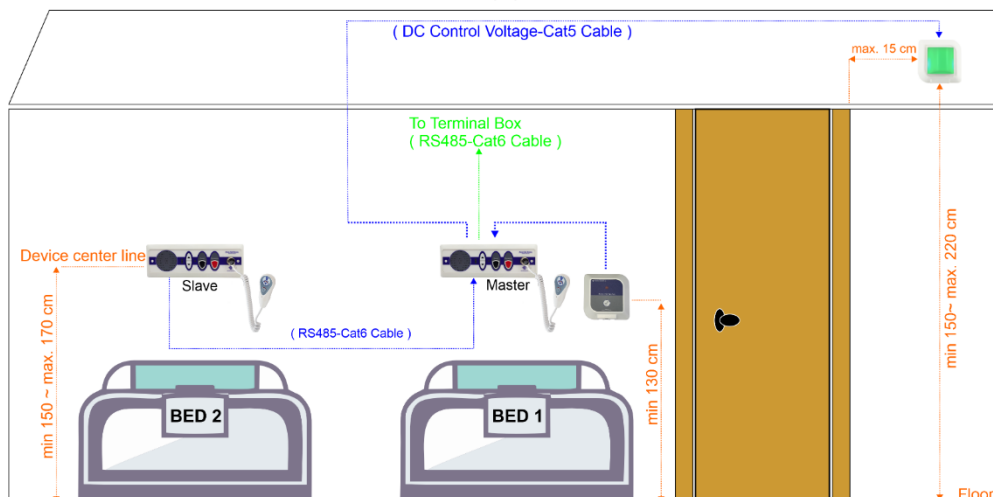
- Maximum 64 calling points support
- Full-Duplex 2-way voice communication
- Queue management on all 64 calls
- Timed Call Escalation
- Targeted/Collective paging announcement
- Four-level call prioritization

- Chronological priority for same priority level calls
- IP X5 for washroom switches and IP 54 for pear push switches
- Anti-disinfectant / Washable module compound
- LCD/Dot-Matrix marquee highest-priority call visual alert staff display
- Finder/Reassurance LED on Call switches
- Integration with Emergency Code call system to initiate 12 codes
- Non-volatile memory option for user settings
- Call Log Report feature
- Unlimited Local non-volatile storage of the call logs
- Non-Editable call statistics reporting log
- Outlier/Breaching staff tracking
- Not adversely affected by a shorted cord
- Power reversal/surge protection

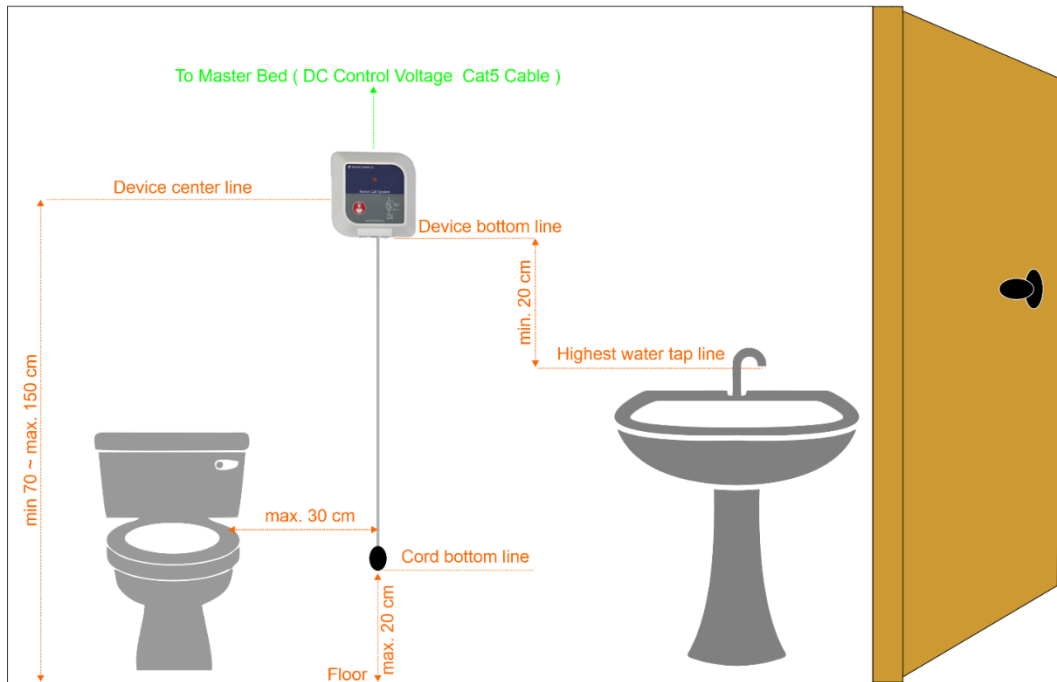
1.4 WIRING / PLACEMENT / CLEARANCE / LAYOUT



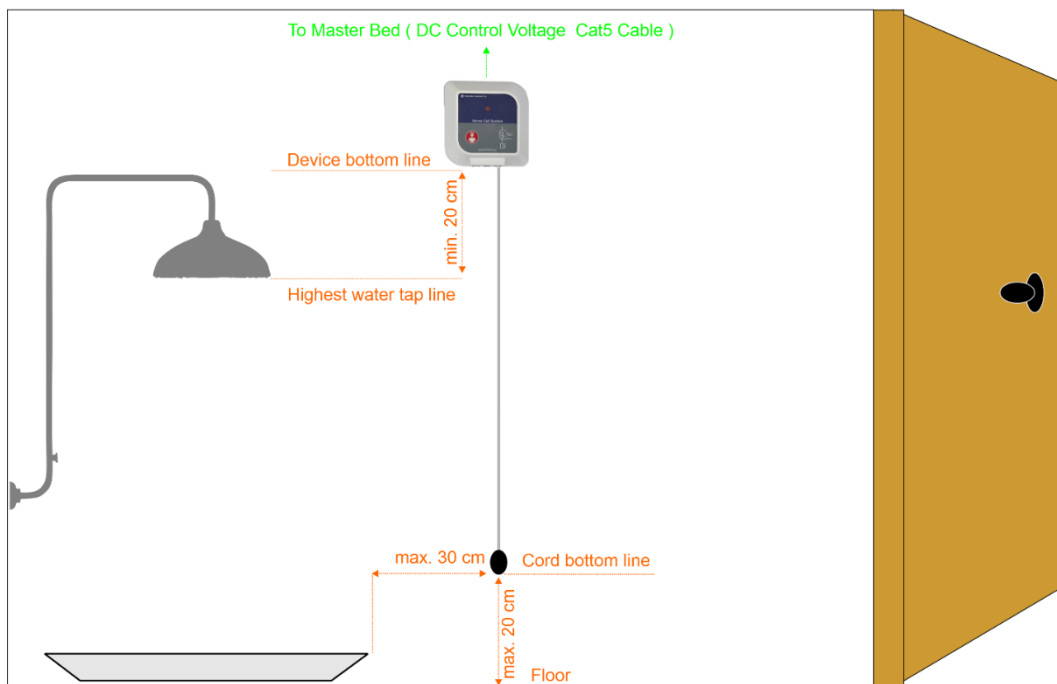
Room



Internal WC






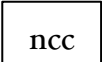





Internal Bathroom



- Minimum clearance of data cables to the 220 V power cables is 30 cm.
- Minimum vertical clearance of the Pull cord switches from the highest water tap is 20 cm.
- Maximum horizontal clearance of the pulling cord from the toilet seat/shower is 30 cm.
- Maximum clearance of the end of the pulling cord from the bathroom floor is 20 cm.
- Patient call switches clearance from floor is between 150 ~ 170 cm.
- Maximum horizontal clearance for corridor light from the corresponding door is 15 cm.
- Corridor light clearance from the floor is 150 ~ 220 cm.
- Corridor display clearance from the floor is 170 ~ 220 cm.

- The power mains should have emergency power backup (UPS/Redundant Generator).
- Reporting is done via the legacy LAN of the hospital (TCP/IP protocol)
- Nurse calling is done via CAT5/6 cables network under RS485 protocol provided by KT-NCS technicians.
- The table below shows the features to be used when making the layout in ACAD

Nurse Call Related Feature in AutoCAD	
Discipline	Electrical
Designator	EY
Description	Electrical Interior Auxiliary System
Major Group Layer Name	NURS
Minor Group Layer Name	CIRC : Nurse call system circuits
Minor Group Layer Name	CLNG: Nurse call system ceiling
Minor Group Layer Name	CNMB: Nurse call system numbers
Minor Group Layer Name	EQPM: Nurse call system equipment
Minor Group Layer Name	WALL: Nurse call system wall
Pen/Color/Line	3 / Green / Dashed
Patient Nurse Call Panel Symbol	
Emergency Pull Cord Station Symbol	
Nurse Call Annunciator Symbol	
Duty Station Symbol	
Staff Station Symbol	
NCS Central Cabinet Symbol	
Dome Light with Tone Symbol	
Floor Duplex Receptacle Symbol	
Data Outlet Symbol	

2 STAFF CONSOLE (CUI-06)

2.1 INTRODUCTION

CUI-06 is the staff console for Intercom NCS with the capability to make 2-way full-duplex vocal communication between the patient and the staff. It can also initiate 12 emergency code calls when connected to KT-NCS emergency code call system.

It can support up to 64 calling points in a ward with the capability to handle 4 different priority levels (Normal-Emergency-Service and Critical) with different acoustic and visual alarms.

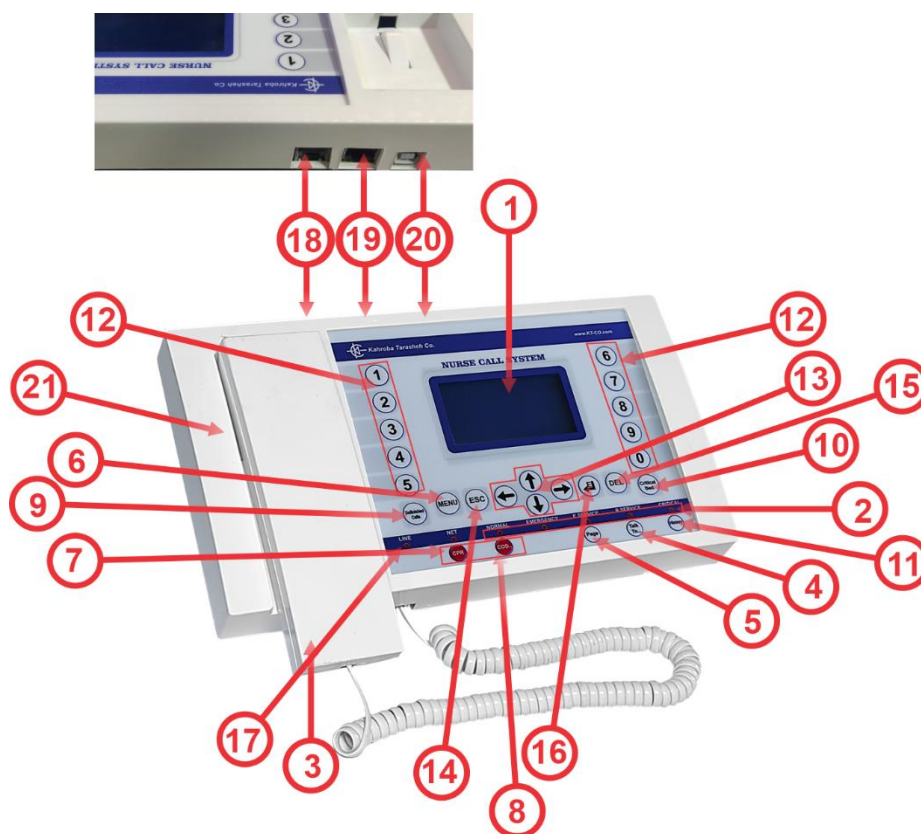
It has one RJ45 ports for connecting to the terminal box under RS-485 protocol and another RJ45 port to connect to the legacy LAN under TCP/IP protocol. to enable reporting and code call features.

It stores unlimited log of the initiated call details in its memory for reporting purposes.



Weight	827 g
Dimensions	W: 280 mm H: 48mm D: 160mm
Raw Material	Polycarbonate+ABS
Power Supply	12 VDC
Color	White
Port1	RJ45 Connector to Terminal Box (TBI-02)
Port2	RJ45 to Hospital Emergency/Group Summon System
Speaker	8 Ohms , 0.5 Watt
Operating Temperature	-10°C ~ +50°C
Operating Humidity	30% ~ 80% RH
Ingress Protection	20 or better
Mounting	Desk / Surface

Number	Item
①	128 x 64 LCD
②	Indicator Lamp Group
③	Handset
④	“Talk to” Button
⑤	“Paging” Button
⑥	“Menu” Button
⑦	Code Call Button-1
⑧	Code Call Button-2
⑨	“Unfinished Calls” Button
⑩	“Critical Bed” Button
⑪	“History” Button
⑫	Dialpad
⑬	Menu Scroll Buttons
⑭	“Escape” Button
⑮	“Delete” Button
⑯	“Enter” Button
⑰	Power LED
⑱	RJ45 Nurse Call Port
⑲	Rj45 Ethernet Port
⑳	Speaker



2.2 THE 128 X 64 LCD

This is the main user interface between the Nurse Call System and the management staff in the facility. It makes many functions of the staff console possible through providing the interfacing means and in combination with the navigation buttons on the console.

2.3 INDICATOR LAMP GROUP

These red color LED notifying indicator lamps provide the visual alarming of the staff in case of missing other means of notifications like Chimes:

2.3.1 NORMAL

This LED becomes steady illuminated if there is an unfinished Normal Call. The LED turns off if all the Normal priority calls are queried.

2.3.2 EMERGENCY

This LED becomes blinking illuminated if there is an unattended Emergency call. The LED turns off if all Emergency calls have been attended using the corresponding Cancel/Presence buttons.

2.3.3 EXT SERVICE

This LED becomes blinking illuminated if there is an unattended External Service (W.C. located in the corridor) call. The LED turns off if all External Service calls have been attended using the corresponding Cancel/Presence buttons.

2.3.4 R SERVICE

This LED becomes blinking illuminated if there is an unattended Room Service (W.C. located in the room) call. The LED turns off if all Room Service calls have been attended using the corresponding Cancel/Presence buttons.

2.3.5 CRITICAL

This LED becomes blinking illuminated if there is an unattended Critical call (From beds defined as critical in the staff console). The LED turns off if all Critical calls have been attended using the corresponding Cancel/Presence buttons.

2.4 HANDSET

The handset is used when either the nurse makes a direct connection to a bed or to query a call made by a patient.

2.5 TALK TO

This button is used to contact a specific patient by dialing his/her corresponding bed number. The system can accept 99 beds and bed number one is the first bed in the first room of the ward and the last bed in the last room in the ward corresponds to the highest bed number defined in the system. The message "Don't Exist" will pop up if the entered number is higher than the number of the beds in the ward.

The system shows the unfinished call Icon on the LCD of the staff console in the interval between choosing the target bed and picking the handset. and the option to control the volume of the speaker and sensitivity of the Microphone in the handset is activated by using the "Menu Scroll Buttons" (Number 13).

Press “Talk to” and enter the bed number



Press “Enter” (16) to get the corresponding room and bed number



Pick up the handset (3) and talk to the target bed number.

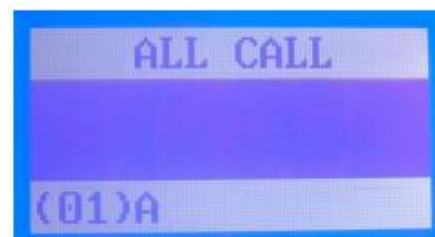
The volume of the receiving voice from the patient and the sensitivity of the microphone sending voice to the patient can be controlled using the menu scroll buttons (13)



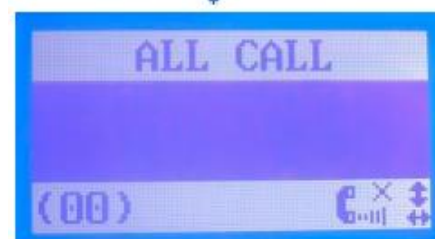
2.6 PAGE

This button is used to announce some news to all beds simultaneously. The menu scroll buttons (13) are used to adjust the volume of the announcement played via the speakers in the patients’ consoles. The system shows the unfinished call Icon on the LCD of the staff console in the interval between pressing the “page” button (5) and picking the handset. and picking the handset

Press the “Page” button (5)



Pick up the handset to announce the message to all beds.



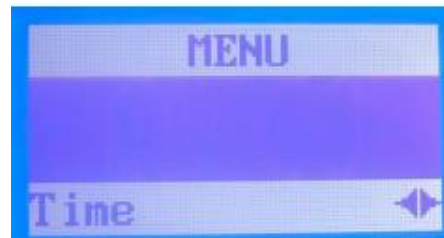
2.7 MENU

This button is used to do the settings of the system. Left-Right Scroll buttons (13) choose the desired menu and pressing the Enter button (16) enters the setting for the desired menu.

2.7.1 SETTING THE TIME

After pressing “Menu” (6) button the first screen is for setting time. It can also be reached by pressing Menu (6) and then 0 on the Dialpad (12).

Pressing “Enter” (16) will bring up the screen for setting time.



Using Up-Down Scroll Buttons (13) will change the value and using the left-Right scroll buttons (13) will change the Hour/Minute/Seconds option.

Pressing “ESC” (14) will bring a higher level in the menu settings

2.7.2 SETTING THE DATE

After pressing “Menu” (6) button the second screen is for setting the date. It can also be reached by pressing Menu (6) and then 1 on the Dialpad (12).

Pressing “Enter” (16) will bring up the screen for setting the date:



Using Up-Down Scroll Buttons (13) will change the value and using the left-Right scroll buttons (13) will change the Year/Month/Day option.

Pressing “ESC” (14) will bring a higher level in the menu settings

2.7.3 SETTING THE VOLUME OF THE ALERT CALL CHIMES

The staff console comes with 3 preset call chimes for Normal, Emergency and Critical call alerts. The volume of each Chime can be set using this setting.

Pressing Menu (6) and then 2 on Dialpad (12) or using scroll buttons (13) will bring the “Ring Volume” Menu.

Pressing “Enter” (16) will bring up the screen for setting the call alert chime



Using the Scroll Left-Right will choose the alert call chime (Melody) and the scroll up-down will adjust the volume of the corresponding alert call chime.

Pressing ESC button (14) will go to the higher level in the menu settings.



2.7.4 SETTING THE KEYPRESS SOUND

Pressing Menu (6) and then 3 on Dialpad (12) or using scroll buttons (13) will bring the “Beep” Menu.

Pressing “Enter” (16) will bring up the screen for setting the keypress sounds.



Using the Scroll Left-Right will choose one of the 3 keypress sound types and the scroll up-down will adjust the volume of the corresponding sound.

Pressing ESC button (14) will go to the higher level in the menu settings.

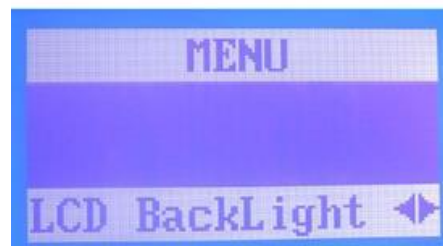


2.7.5 LCD BACKLIGHT

There are 8 different backlight intensities that can be chosen using the Dialpad keys.

Pressing Menu (6) and then 4 on Dialpad (12) or using scroll left-right buttons (13) will bring the “LCD backlight” Menu.

Pressing “Enter” (16) will bring up the screen for setting the LCD backlight.



Using the scroll up-down (13) or pressing number 2 to 9 will choose one of the 8 preset backlight intensity levels.

Pressing ESC button (14) will go to the higher level in the menu settings.



2.7.6 LCD REFRESH RATE

The system keeps updating the information displayed on the LCD at 16 different time intervals (number 1 to 16) and therefore the slowest refresh rate of the LCD content (corresponding to number 1) grants longest time to the system in facilities with high number of beds.

Pressing Menu (6) and then 5 on Dialpad (12) or using scroll left-right buttons (13) will bring the “LCD Speed” Menu.

Pressing “Enter” (16) will bring up the screen for setting the LCD speed.



Using the scroll up-down (13) will choose one of the 16 preset LCD refresh rate intervals.

Pressing ESC button (14) will go to the higher level in the menu settings.



2.7.7 DISPLAY STANDBY MODE

There are 4 preset date and time display configurations to choose for standby mode.

Pressing Menu (6) and then 6 on Dialpad (12) or using scroll left-right buttons (13) will bring the "Display Mode" Menu.

Pressing "Enter" (16) will bring up the screen for setting the Display Mode.



Using the scroll up-down (13) will choose one of the 4 preset Display Standby modes.

Pressing ESC button (14) will go to the higher level in the menu settings.



Using the scroll up-down (13) will choose one of the 4 preset Display Standby modes.

Pressing ESC button (14) will go to the higher level in the menu settings.



Using the scroll up-down (13) will choose one of the 4 preset Display Standby modes.

Pressing ESC button (14) will go to the higher level in the menu settings.



Using the scroll up-down (13) will choose one of the 4 preset Display Standby modes.

Pressing ESC button (14) will go to the higher level in the menu settings.



2.7.8 BED / ROOM NUMBER DISPLAY MODE

Pressing Menu (6) and then 7 on Dialpad (12) or using scroll left-right buttons (13) will bring the “Hundreds” Menu.

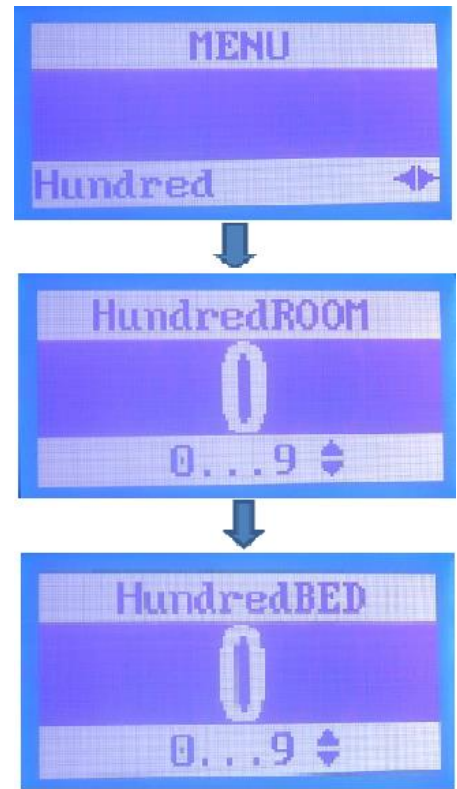
Pressing “Enter” (16) will bring up the screen for setting the Hundreds of room

Using the scroll up-down (13) will choose one of the 10 available options from 0 to 9.

Pressing “Enter” (16) will bring up the screen for setting the Hundreds of bed number.

Using the scroll up-down (13) will choose one of the 10 available options from 0 to 9.

Pressing ESC button (14) will go to the higher level in the menu settings.



2.7.9 PAGING SYSTEM SETUP

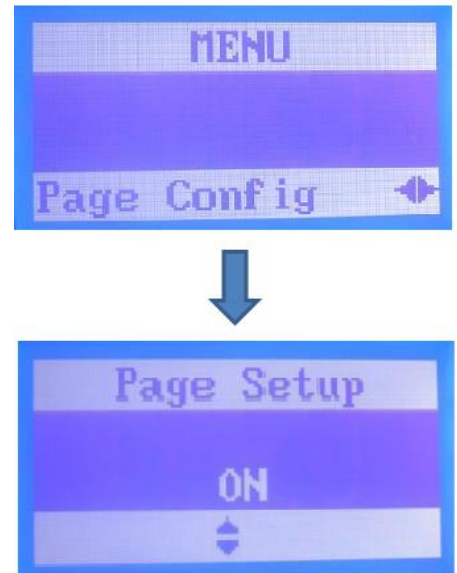
This option makes disabling the paging option possible for the facilities that do not need it.

Pressing Menu (6) and then 8 on Dialpad (12) or using scroll left-right buttons (13) will bring the “Paging System Setup” Menu.

Pressing “Enter” (16) will bring up the screen for setting the Paging system.

Using the scroll up-down (13) will choose one of the 2 available options “ON” or “Off”..

Pressing ESC button (14) will go to the higher level in the menu settings.

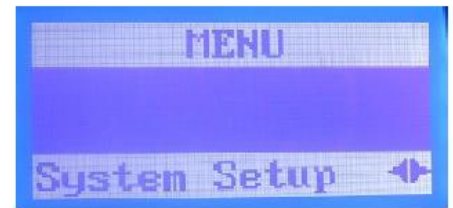


2.7.10 SYSTEM SETUP

This password protected option is just used by technicians for setting up the system according to the facility requirements and it has no application for normal users.

Pressing Menu (6) and then 9 on Dialpad (12) or using scroll buttons (13) will bring the “System Setup” Menu.

Pressing “Enter” (16) will bring up the screen for setting up the system.



This option is password protected and only used by technicians.

2.8 CPR CODE CALL BUTTON

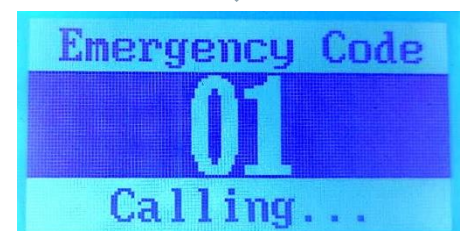
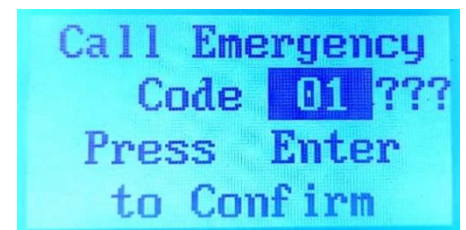
When connected to the “Emergency Code Call System”, this button will initiate a predefined Emergency Code (Normally Code 99 in Hospitals).

2.9 CODE CALL BUTTON

The system can initiate 11 more emergency code calls when connected to “Emergency Code Call System”. By pressing this button, the menu to enter the number associated with each of these 11 codes will be displayed.

Pressing “Cod.” (8) will bring the screen for choosing the number associated with the desired code using the Dialpad (12) or scroll up/down keys (13).

“Enter” (16) should be pressed after getting to the desired number on the screen.



After pressing “Enter” (16) a second confirmation screen will pop up to confirm the number of the desired Hospital code call to be initiated.

Pressing “Enter” (16) again will start the call initiation.

The screen will show the number associated with the desired Hospital code that is being called as the last step for Code initiation..

KT-NCS engineers use the following table to set the Emergency code colors if the customer does not ask for a custom configuration:

Code #	Code Color	Alert Type	Description
5	Blue	Medical	Adult Medical Emergency
4	White	Security	Aggression
3	Red	Facility	Fire
2	Orange	Medical	External Disaster
1	Green	Facility	Emergency Evacuation
0	Pink	Medical	Child Medical Emergency
11	Black	Security	Suspicious Package
10	Brown	Facility	Hazardous Material Leak
9	Purple	Security	Hostage Taking
8	Grey	Facility	Loss of Utility
7	Yellow	Security	Missing Adult Patient
6	Amber	Security	Missing Child Patient

2.10 UNFINISHED CALLS BUTTON

This button serves to display a chronological log of the location of the Emergency / Service or Critical calls that have been queried but not attended.

Pressing “Unfinished Calls” button (9) and then “Enter” (16) will show the last unattended call in chronological order.

The type of call (“E” for emergency) and location are displayed.



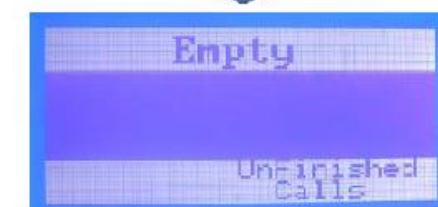
Pressing the scroll buttons (13) will navigate to the next call in chronological order. (“C” for critical).



Pressing the scroll buttons (13) will navigate to the next call in chronological order. (“S” for Service).



The last screen will assure that all unattended calls have been viewed by showing the word “Empty”.

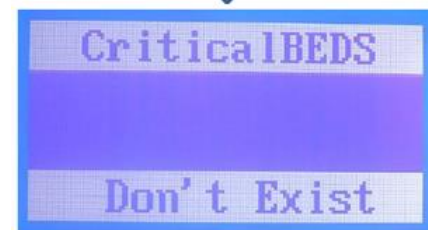


2.11 CRITICAL BED BUTTON

Pressing “Critical Beds” button (10) will show the screen to enter the number associated to the target bed using the Dialpad (12) or scroll buttons (13) and then pressing “Enter” (16).



If no bed has been associated with the entered number, the error message “Don't Exist” will be displayed.

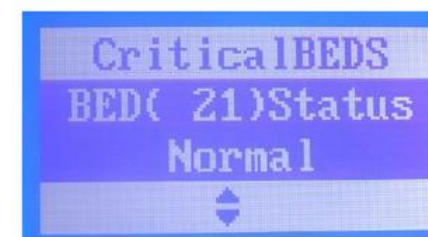


Pressing “Enter” (16) again will enable entering the new target bed number again.



After pressing “Enter” (16) the current priority status of the target bed will be displayed.

Using the scroll buttons (13) can toggle the priority between “Normal” and “Critical”.



2.12 HISTORY BUTTON

All activities of the system (Except Emergency Code initiations) are displayed in reverse chronological order on the LCD or on a connected computer with related application. (Refer to Chapter 4: Terminal Box DB9 connector)

2.12.1 NURSE CALLS RECORDS

Type and location of the Call, Action taken and exact corresponding times are displayed on the screen. Each batch of actions corresponding to a call (Labeled “E” for Emergency, “S” for Service and “N” for normal calls) is associated with a tag number and there is a counter for total events in the system in chronological order.

2.12.2 EMERGENCY / SERVICE CALL RECORDS

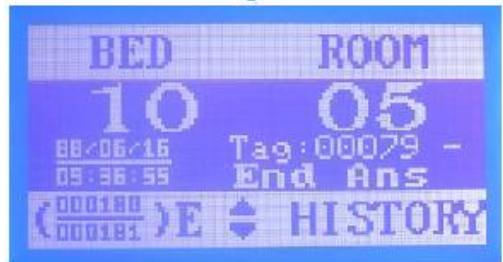
There are 4 events associated with Emergency/Service Calls which are displayed in reverse chronological order under one tag number:

REQUEST- START ANSWER- END ANSWER-CANCEL

The last action taken (Pressing Cancel Button) in a batch of an “Emergency call “tagged 00079 is displayed with corresponding time and location along with the event sequence as 000181 out of 000181 recorded events.
Pressing the down scroll Key (13) will bring the next event.



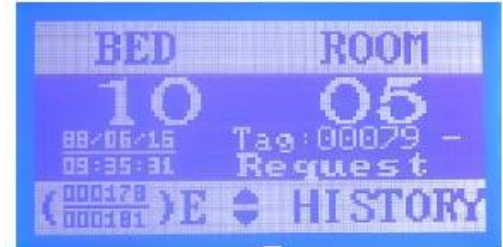
Ending the query by hanging up the handset has been recorded as the second to last event. The displayed time is 4 second before pressing the cancel button (Reverse chronological order of events). The event number is decreased to 180.
Pressing the up/down scroll Key (13) will bring the next event.



Starting the query event by picking up the handset is displayed as the 3rd to last event. The time is 2 seconds before ending the query. (Reverse chronological order of events). The event number is decreased to 179.
Pressing the up/down scroll Key (13) will bring the next event.



Initiating the emergency call by pressing the emergency button is displayed as the fourth to last event in the batch associated with tag 00079. The time is 1 min.22 seconds before starting the query (reverse chronological order of events) and the event number is decreased to 178.



Service calls are recorded in the History with “S” labels as shown below:



Checking the events associated with Service calls are similar to Emergency Calls with the same 4 events displayed in reverse chronological order.

REQUEST- START ANSWER- END ANSWER-CANCEL

2.12.3 NORMAL CALL RECORDS

There are 3 events associated with Normal Calls which are displayed in reverse chronological order under one tag number:

REQUEST- START ANSWER- END ANSWER



Picking the handset automatically Cancels a Normal call and no event is associated as "Cancel".

Ending the query by hanging up the handset has been recorded as the last event. The displayed time is 4 second after picking up the handset (Reverse chronological order of events). The event number is 000673.

Pressing the up/down scroll Key (13) will bring the next event.



Starting the query event by picking up the handset is displayed as the second to last event. The time is 4 seconds before ending the query. (Reverse chronological order of events). The event number is decreased to 000672.

Pressing the up/down scroll Key (13) will bring the next event.



Initiating the normal nurse call by pressing the Nurse Call button on the pear push/Patient Handset switch is displayed as the third to last event in the batch associated with tag 00494. The time is 1 second before starting the query (reverse chronological order of events) and the event number is decreased to 000671.



2.12.4 PAGING RECORDS

There are 3 events associated with paging which are displayed in reverse chronological order under one tag number.

End Answer—Start Answer--Request

A “Paging” tag is labeled with “A” .

Ending the paging process by hanging up the handset has been recorded as the last event. The displayed time is 4 second after picking up the handset (Reverse chronological order of events). The event number is 000693.

Pressing the up/down scroll Key (13) will bring the next event.



Starting the paging event by picking up the handset is displayed as the second to last event. The time is 4 seconds before ending the page. (Reverse chronological order of events). The event number is decreased to 000692.

Pressing the up/down scroll Key (13) will bring the next event.



Initiating the paging process by pressing the associated button on the staff console is displayed as the third to last event in the batch associated with tag 00501. The time is 3 second before starting the query (reverse chronological order of events) and the event number is decreased to 000691.



2.12.5 “TALK TO” RECORDS

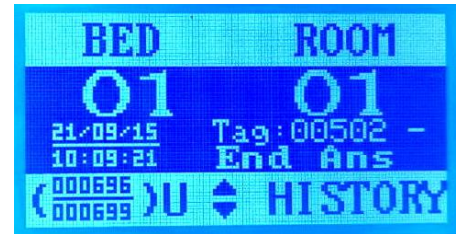
There are 3 events associated with talking to a target bed which are displayed in reverse chronological order under one tag number.

End Answer—Start Answer--Request

A “Talk to” tag is labeled with “U”.

Ending the “Talk to” process by hanging up the handset has been recorded as the last event. The displayed time is 7 second after picking up the handset (Reverse chronological order of events). The event number is 000696.

Pressing the up/down scroll Key (13) will bring the next event.



Starting the paging event by picking up the handset is displayed as the second to last event. The time is 7 seconds before ending the page. (Reverse chronological order of events). The event number is decreased to 000695.

Pressing the up/down scroll Key (13) will bring the next event.



Initiating the “Talk to” process by pressing the associated button on the staff console is displayed as the third to last event in the batch associated with tag 00502. The time is 2 second before starting the query (reverse chronological order of events) and the event number is decreased to 000694.



2.12.6 POWER ON / OFF RECORDS

The system keeps a log of any Power ON/OFF which can be viewed in this section of the History.

There is one event associated with Power ON or Power OFF.

A ”Power ON/OFF” tag is labeled with “P”.

“Power Off” is considered as one-event tag (00504) recorded as event number 000700 at 10:11:52 on 15 September 2021.



Power On” is considered as one-event tag (00505) recorded as event number 000701 (The last event in the stack of events) at 10:11:57 on 15 September 2021..



2.13 DIALAP

It is used in different actions when choosing a bed.

2.14 MENU SCROLL BUTTONS

It is used in different actions for navigation through different options.

2.15 ESCAPE BUTTON

It is only used by technicians in the system setup menu and has no use for normal users.

2.16 ENTER BUTTON

It is used to confirm choosing an option in different actions.

2.17 POWER LED

It turns on when the handset is lifted and turns off when the handset is in place.

2.18 RJ45 NURSE CALL SYSTEM PORT

It is used to connect the staff console to the terminal box of the nurse call system under RS-485 protocol

2.19 RJ45 ETHERNET PORT

It is used to connect the staff console to the legacy LAN to enable reporting and code call features. “

2.20 SPEAKER

It is used to provide the acoustic notification with 3 predefine alarm chimes each associated to one type of Nurse Call: Normal-Emergency or Critical.

3 DISPLAY UNIT (NDP02/DP01)

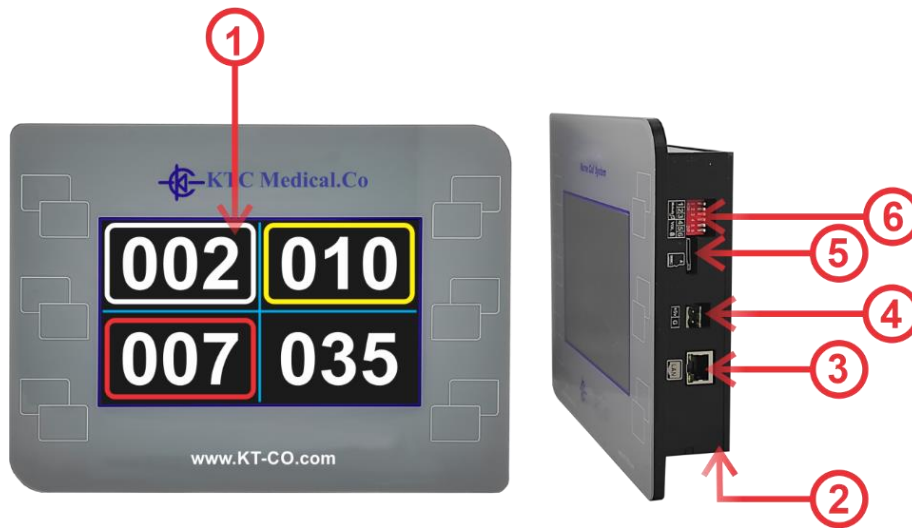
3.1 INTRODUCTION

3.1.1 NDP02

NDP02 is the display unit installed in the management center. It is used to display the four highest priority calls from top left to bottom right of the display. The same priority calls are displayed in chronological order. It connects to the terminal box through the LAN network of the hospital via its RJ45 socket

- The highest priority is for critical beds with colored border.
- The second highest is for service calls with colored border.
- The third highest is for bed emergency calls with colored border.
- The lowest is for bed normal calls with no border. The colors of the borders is customizable.

The Alarm for a new call is played by an internal speaker with melodies stored on a local Micro-SD card.



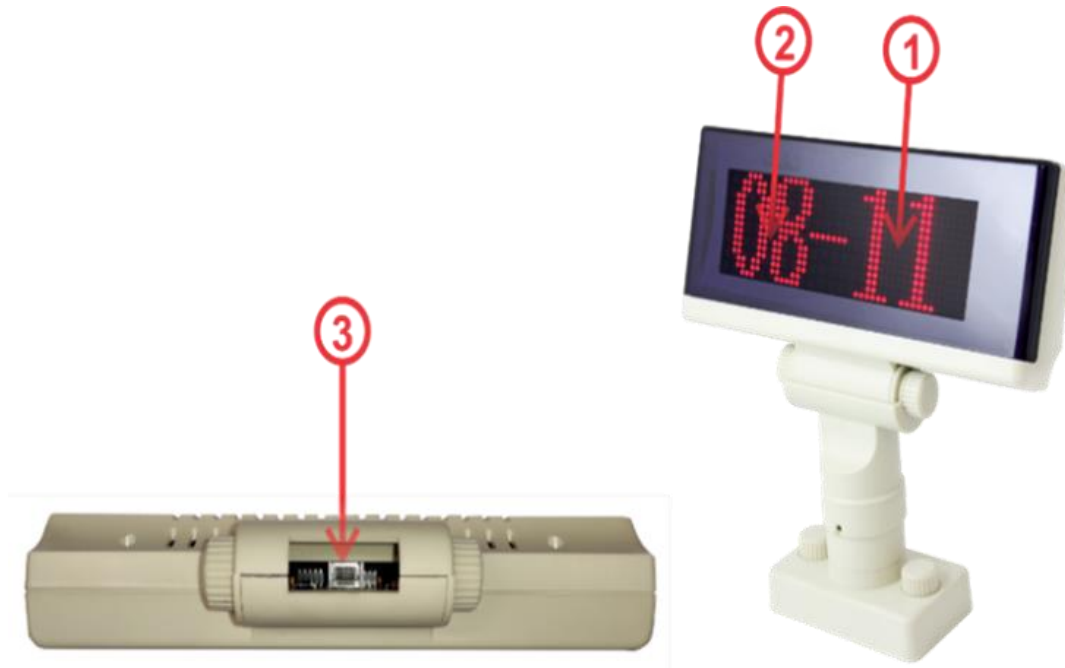
Weight	918 g
Dimensions	W: 245 mm H: 178 mm D: 47 mm
Raw Material	Plexiglass + Plexiprint
Color	White
Power Supply	5 V via external AC adapter
Display Type	7-inch TFT
Internal Speaker	2 W, 8 Ohms
Port	RJ45 to the legacy LAN
Operating Temperature	-10°C ~ +50° C
Operating Humidity	30% ~ 80% RH
Ingress Protection	20 or better
Mounting	Surface

Number	Item	Description
①	7-inch TFT display	To Display the incoming Calls in priority order
②	Speaker	To play the chime for call alerts
③	RJ45 Socket	To connect to the Nurse Call System Network
④	Input DC power Socket	5 V DC Power from the external adapter
⑤	Micro SD Socket	To store the Chimes
⑥	Melody/Volume Dip Switch	Switches 1-3 to set the chime melody & 4-6 to set the volume

3.1.2 DP-01

DP-01 is the display unit installed in the nurse station. It is used to display the room/bed number of the highest priority Nurse call. It can show the time or some advertisement while there is no active Nurse Call present.

The content of DP-01 is provided by staff console (CUI-06) through the terminal box (TBI-02) under RS-485 communication protocol.



Weight	662 g		
Dimensions	W:260 mm	H:250 mm	D:50 mm
Raw Material	ABS + Plexiglass		
Color	White		
Power Supply	12 V		
Display Type	Dot Matrix with 5 Characters and Red color LED		
Port	RJ45 to terminal box		
Operating Temperature	-10°C ~ +50° C		
Operating Humidity	30% ~ 80% RH		
Ingress Protection	20 or better		
Mounting	Surface/Desktop		

Number	Item	Description
①	Display Room Number	From 00 to 99 can be displayed in the right side of the display as the room number
②	Display Bed Number	From 00 to 99 can be displayed in the left side of the display as the bed number
③	Cat 5/6 Cable Knockout	The connection to other modules under RS485 protocol is made via the CAT5/6 cable connecting this module to terminal box.

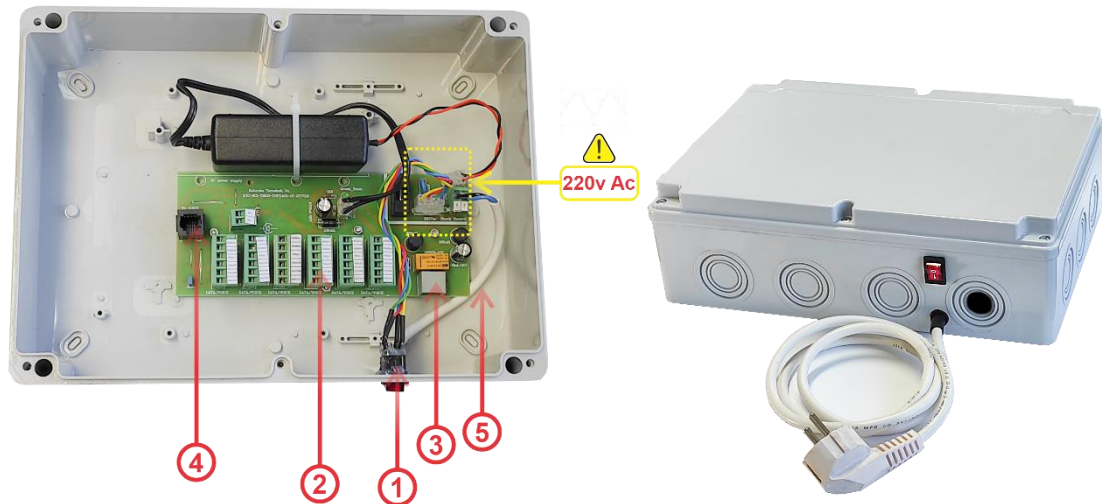
4 TERMINAL BOX (TBI-02)

4.1 INTRODUCTION

TBI-02 is the interface between Patients' Intercom Panels and the staff console under RS-485 communication protocol.

TBI-02 provides the 12VDC power for the staff console.

Weight	1223 g
Dimensions	W: 300 mm H:95 mm D: 220 mm
Raw Material	ABS
Power Supply	220 ~ 240 VAC , 0.2 A (50 HZ)
Output Power	4 W (12 VDC)
Color	Grey
Port1	RJ45 connector to Staff Console (CUI-04)
Port2	RJ45 connector to Display Corridor (DP-01)
Operating Temperature	-10°C ~ +50°C
Operating Humidity	30% ~ 80% RH
Ingress Protection	20 or better
Mounting	Surface (Max. 3 meters from Staff Console)



Number	Item	Description
①	ON/Off Switch	This is the one and only way to Turn the Nurse Call System ON and OFF.
②	Cat 5/6 Rooms Cables Knockout	The cables coming from different rooms in the facility are connected to the Terminal box through this knockout.
③	Cat 5/6 DP01 Display Cable Knockout	The Cat 5/6 cable is connected to the DP01 Display unit through this Knockout (RJ45 socket)
④	Staff Console Connector	The Staff console is connected to the terminal box via this RJ45 socket
⑤	Mains Cable	This cable knockout connects the terminal box to the 220 VAC

5 PETWO-WAY VOICE COMMUNICATION PANEL (BCP-18)

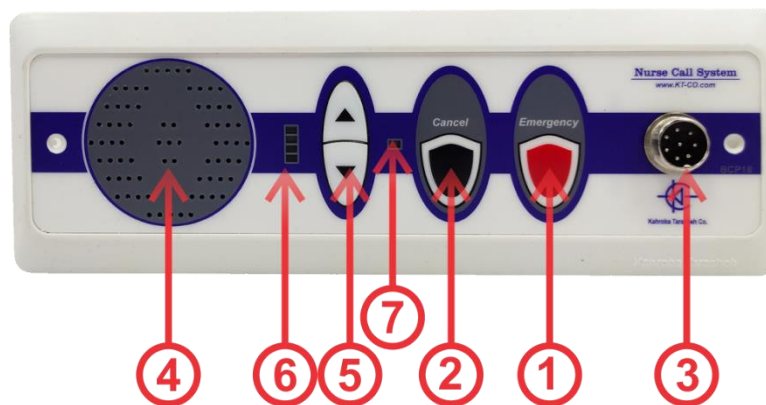
5.1 INTRODUCTION

BCP-18 is the bedside Patient's panel which enables 2-way full-duplex communication between the patient and the management staff with its speaker via the microphone on the pear push switch/handset (NCB-03/05). It has 2 buttons to adjust the volume.

BCP-18 is equipped with an 8-pin military connector to ensure constant connectivity of the panel to Patient's Handset / Pear push Button despite probable jolts.

It also has a Cancel/Presence and an emergency Nurse Call switch.

Weight	217.5 g
Dimensions	W: 227 mm H:80 mm D:40 mm
Raw Material	ABS + Polycarbonate
Power Supply	12 V DC (via an external Power Adaptor)
Color	White
Port1	RJ45 Connector to Layout Ring/loop Wiring
Port2	8-pin, Military male connector to Patient's Handset
Speaker	8 ohms, 0.5 Watt
Operating Temperature	-10 ° C ~ +50° C
Operating Humidity	30% ~ 80% RH
Ingress Protection	20 or better
Mounting	Flush (Cavity Dimension: 192mm x 60 mm)



Number	Item	Description
①	Emergency Call Button	To be pressed in emergency conditions
②	Cancel/Presence Button	To annulate an emergency call or declare presence following an emergency call
③	Patient Handset Connector Socket	Male socket to connect the handset/pear push switch
④	Speaker	To play the staff voice during the 2-way full duplex communication
⑤	Volume Control Buttons	To adjust the volume of the sound played by the speaker
⑥	Volume Level LEDs	To provide the visual assurance for the level of the volume of the speaker
⑦	Nurse Call LED	To provide the visual assurance for the state of calling the nurse (Steady red for Normal and blinking red for Emergency calls)

6 PATIENT HANDSET / PEAR PUSH SWITCH (NCB-03/05/028)

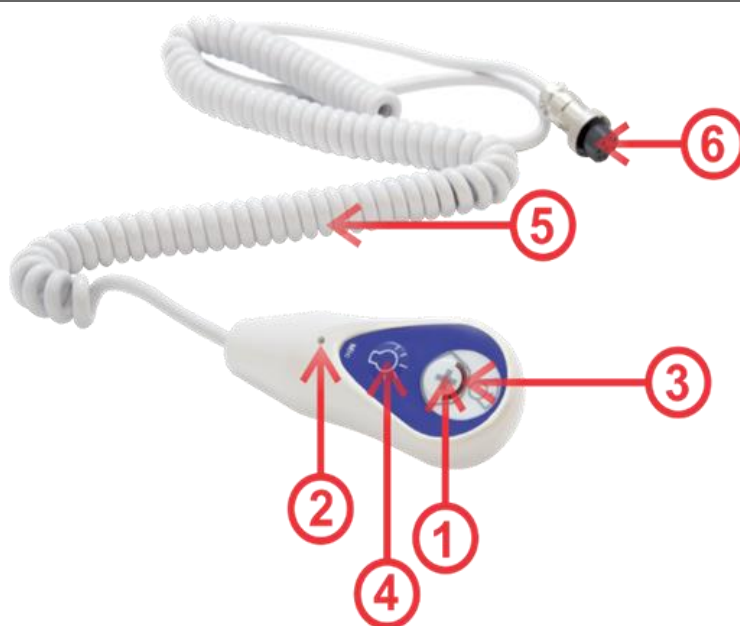
6.1 INTRODUCTION

6.1.1 NCB-03/28

NCB-03(NCB-028) is the pear push nurse call switch attached to the patient's intercom panel (BCP-18) via a coiled cord secured by an 8-pin military socket preventing detachment from the panel by any jolt.

NCB-03 (NCB-028) also has a microphone for a 2-way communication to the staff console (CUI-04) in combination with the speaker in the patient's panel (BCP-18).

Weight	150 g
Dimensions	W:40 mm H:100 mm D: 28 mm
Raw Material	Body: Polycarbonate +ABS Coiled Cable: PUR
Power Supply	12 VDC
Color	White
Connection	8-Pin Gx16 (Female)
Cable Length	4 m
Operating Temperature	-10°C ~ +50°C
Operating Humidity	30-% ~ 80% RH
Ingress Protection	54 or better
Mounting	Tabular at the bedside/Wall



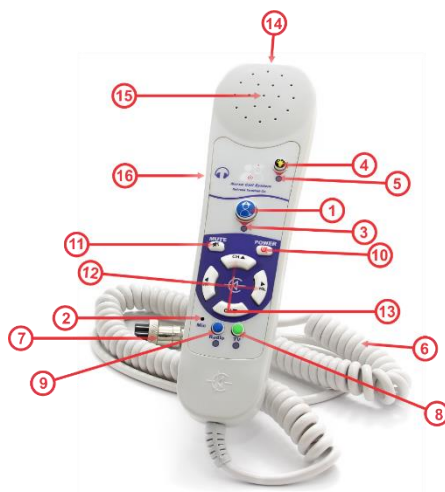
Number	Item	Description
①	Nurse Call Switch	To initiate a normal nurse call (it can initiate a Critical call if the bed has been tagged as Critical)
②	Microphone	To speak to the staff in full-duplex 2-way communication
③	Call Assurance/Back Illumination LED	To provide the back illumination for patient's ease of operation at night and bright red illumination for reassurance when call is activated
④	Study Light On/Off Switch	To turn on/off the study light in bed head unit
⑤	Coiled Medical Grade Cord	Extendable to 5 meters with no risk of detachment with higher endurance compared to normal phone cords
⑥	8-pin GX16 Female Plug	To provide the means for fastening the cord securely against any jolt introduced by patients during use.

6.1.2 NCB-05

NCB-05 is the advanced patients' handset with a Nurse Call switch attached to the patient's intercom panel (BCP-17/BCP-18) via a coiled cord secured by an 8-pin military socket preventing detachment from the panel by any jolt. It also has a microphone for a 2-way full-duplex communication to the staff console (CUI-06) in combination with the speaker in the patient's panel (BCP-17/BCP-18).

It also acts as a pillow speaker for FM radio and a keypad for T.V./Radio control. It comes with a 5mm headphone jack and has a switch to turn on/off the reading light in the Patient's console.

Weight	245 g
Dimensions	W: 55 mm H: 200 mm D: 23mm
Raw Material	Body: Polycarbonate +ABS Coiled Cable: PUR
Color	White
Connection	8-pin Gx16 (Female)
Port1	Headphones 5mm Jack
Speaker	0.5 W / 8 Ohm
Keypad	Membrane
Cable Length	4 m
Remote T.V./Radio Control	Yes
Operating Temperature	-10°C ~ +50°C
Operating Humidity	30-% ~ 80% RH
Ingress Protection	54 or better
Mounting	Tabular at the bedside/Wall



Number	Item	Description
①	Nurse Call Switch	To initiate a normal Nurse call (Critical nurse call if the bed has been tagged as critical)
②	Microphone	To provide the means to have a 2-way full duplex communication with the staff
③	Call Assurance LED	To provide the visual assurance for an activated nurse call
④	Study Light On/Off switch	To turn on/off the study light in bed head unit
⑤	Study Light Indicator LED	To provide the visual assurance for the status of the study light
⑥	Coiled Medical Grade Cord	Extendable to 5 meters with no risk of detachment with higher endurance compared to normal phone cords
⑦	8-pin Gx-16 Female Plug	To provide the means for fastening the cord securely against any jolt introduced by patients during use.
⑧	T.V. Selection Button	To toggle the functions of the membrane keypad to radio
⑨	Radio Selection Button	To toggle the functions of the membrane keypad to Television
⑩	T.V./Radio On/Off Button	To turn on/off the radio or T.V.
⑪	T.V. /Radio Mute Button	To mute/unmute Radio or T.V.
⑫	Volume Control Buttons	To control the volume of T.V. or Radio
⑬	Channel Display Buttons	To change the channel in Radio/T.V.
⑭	InfraRed (IR) Lamp	To be pointed towards the T.V. IR receiver
⑮	Radio Speaker	To listen to the Radio
⑯	3.5 mm Audio Jack	To connect the earphones for listening to the radio
⑰	Handset Cradle	To keep the handset next to the bed

7 PULL CORD NURSE CALL SWITCH (TB-12/13)

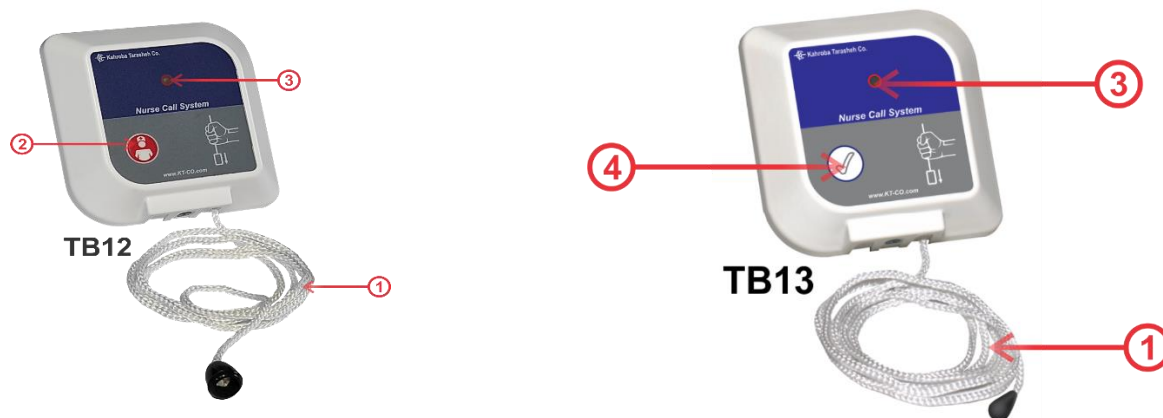
7.1 INTRODUCTION

Pull cord switch is used in patient's bathroom, shower or similar areas making the call easier by pulling the cord.

It activates an Emergency call in the management center which has a higher priority than normal nurse calls.

TB-12 normally comes with an emergency call switch on the panel which can also be replaced by a Cancel/Presence switch for TB-13.

Weight	58g		
Dimensions	W: 80 mm	H: 80 mm	D:20 mm
Raw Material:	Polycarbonate + ABS		
Color	White		
Power Supply	12 V		
Cord Capacity	Max 20 Kg		
Operating Temperature	-10°C ~ +50°C		
Operating Humidity	30-% ~ 80% RH		
Ingress Protection	X4 or better		
Mounting	Surface/Flush		



Number	Item	Description
①	Plastic Cord	To be pulled in an emergency condition in the washroom/shower
②	Emergency Call Button	To initiate an emergency call
③	LED indicator	To provide the visual assurance of an activated emergency call (Blinking)
④	Cancel/Presence Button	To annulate an emergency call initiated or declare presence by the staff after an emergency call has been initiated

8 CANCEL / PRESENCE SWITCH (CB-17)

8.1 INTRODUCTION

CB-17 is a Cancel/Presence switch usually installed by the door of the patients' room. It can cancel any Normal/ Emergency/Service or Critical Nurse Call activated from the room.

The nurse will use CB-17 after a call has been taken care of and there is no more activated call associated with the room.

Weight	58 g
Dimensions	W: 80 mm H: 80 mm D: 20 mm
Raw Material	Polycarbonate + ABS
Color	White
Power Supply	12 V
Operating Temperature	-10°C ~ +50° C
Operating Humidity	30% ~ 80% RH
Ingress Protection	20 or better
Mounting	Surface/Flush



Number	Item	Description
①	Cancel/Presence Button	To annulate an initiated call or declare presence by the staff after an emergency call has been initiated
②	LED Indicator	To provide the visual assurance for an activated emergency call (Blinking)

9 CORRIDOR STATUS LIGHT (ODL-19)

9.1 INTRODUCTION

ODL-19 is a wedge-shape Corridor light noticeable from 5 angles which is installed above the patients' room door in the corridor.

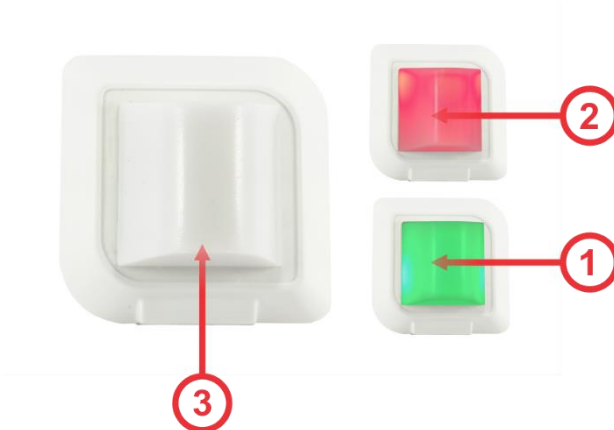
It has 2 different LED Light colors that will illuminate showing the following states:

Green Color (Steady): Normal Nurse Call notification.

Red Color (Blinking): Emergency/Service/Critical Nurse Call notification.

The light is OFF when no Nurse Call has been activated.

Weight	70g		
Dimensions	W: 80 mm	H:80 mm	D: 60 mm
Raw Material	ABS		
Color	White		
Power Supply	12 V		
Light Type	LED		
LED Colors	Green/Red		
Operating Temperature	-10°C ~ +50°C		
Operating Humidity	30-% ~ 80% RH		
Ingress Protection	20 or better		
Mounting	Flush/Surface		



Number	Item	Description
①	Green LED	To make the visual notification for the staff for an initiated Normal call (Steady Green)
②	Red LED	To make the visual notification for the staff for an initiated Emergency /Critical call (Blinking Red)
③	Dome	To provide the wedge shape for the light to be observed from 5 angles

10 EXTERNAL SERVICE CONTROL BOARD

10.1 INTRODUCTION

The external washrooms in the ward cannot connect to the loop configuration of the patient's Panel for connection to the staff console and therefore needs an external control panel to connect them as a separate node in the Nurse call System configuration.

Each external washroom needs one SCB01 module and a Cat5/6 cable connects it to the terminal box under RS485 protocol.



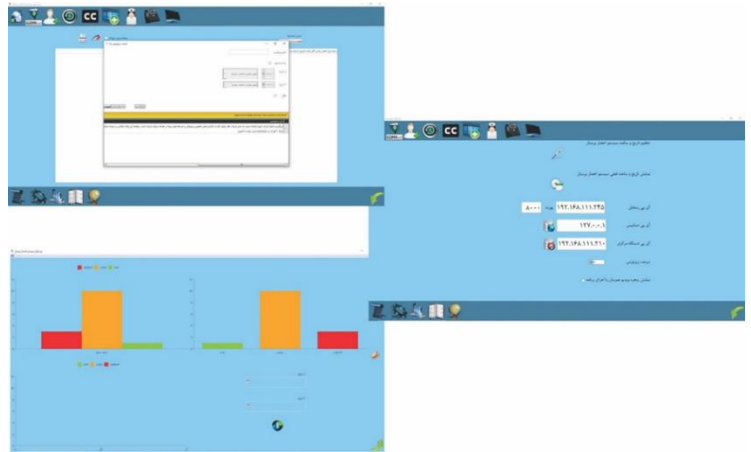
Weight	385 g
Dimensions	W:202 mm H: 77 mm D: 45 mm
Raw Material	ABS
Color	White
Power Supply	220 VAC (2-pin Phoenix Connection)
Port1	Phoenix 6-pin (to Rj45 of the Terminal Box)
Port 2	Phoenix 5-pin (To Pull cord, Corridor Light and Cancel Switches)
Operating Temperature	-10°C ~ +50° C
Operating Humidity	30% ~ 80% RH
Ingress Protection	00 A
Mounting	Surface

11 REPORTING SOFTWARE (CUS)

11.1 INTRODUCTION

CUS is a windows-based application to Record, Monitor and Analyze Call types, Staff Performance, Call Response Delay and Call Breaches in any given time period. The reports can be in PDF format or column charts.

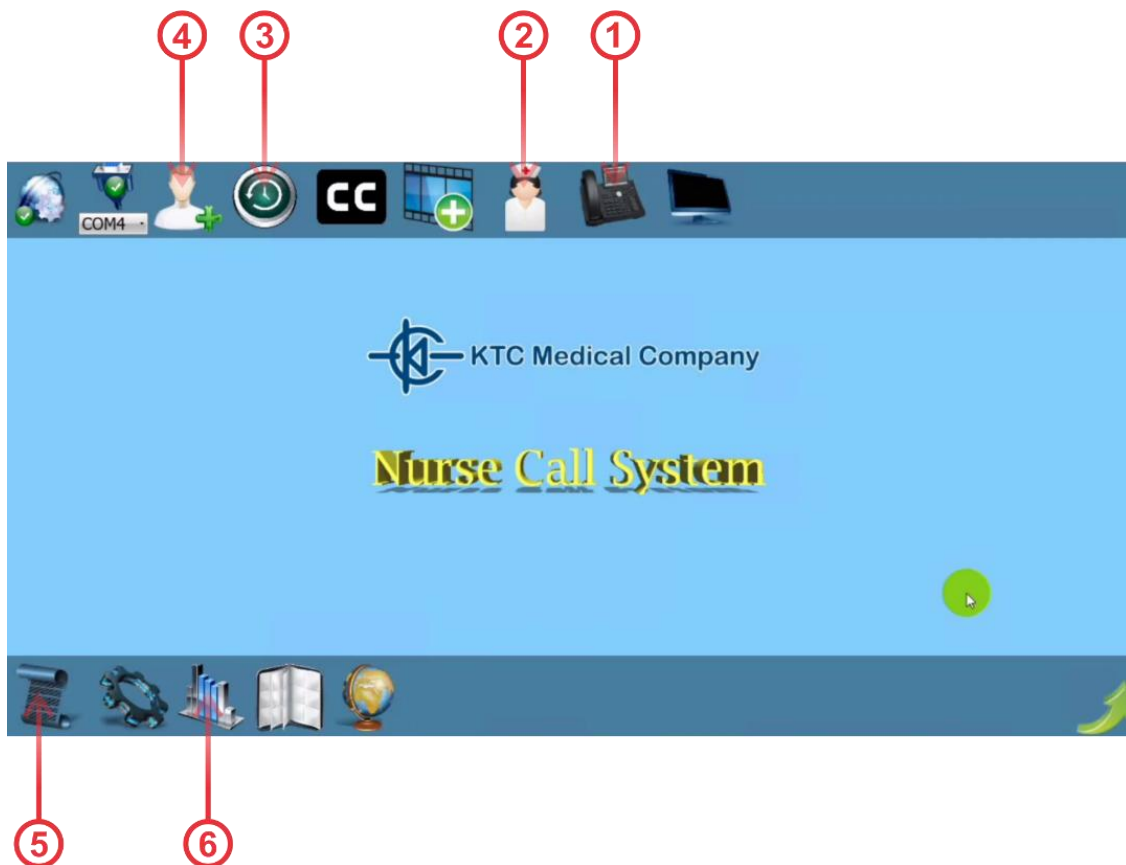
CUS is installed on the managerial computer connected to the LAN querying the events from the staff displays connected to the LAN and showing them on a graphical user interface.



Required Operating System	Windows 10/Server
Required H.D.D.	Min.120 GB
Required RAM	Min4G
Required Hardware	Ethernet Port
Required Processor	Min Core i3 or equivalent
Centralized Database	MSSQL



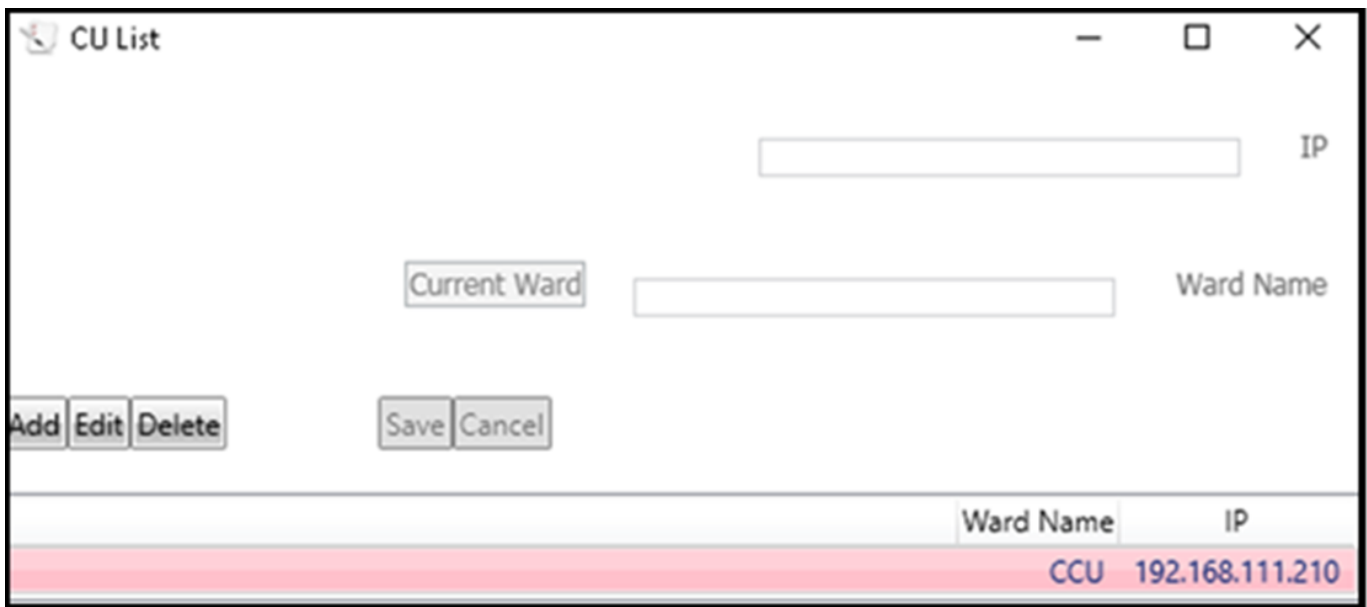
The useful tabs of the home screen are given in the following table. The remaining tabs are used by the technicians at the time of installation of the system.



Number	Item
①	Staff Console I.P Setting Tab
②	Staff RFID Card Setting Tab
③	Work Shift Time Setting Tab
④	Access Level Setting Tab
⑤	Reporting Tab
⑥	Graphical Chart Reporting Tab

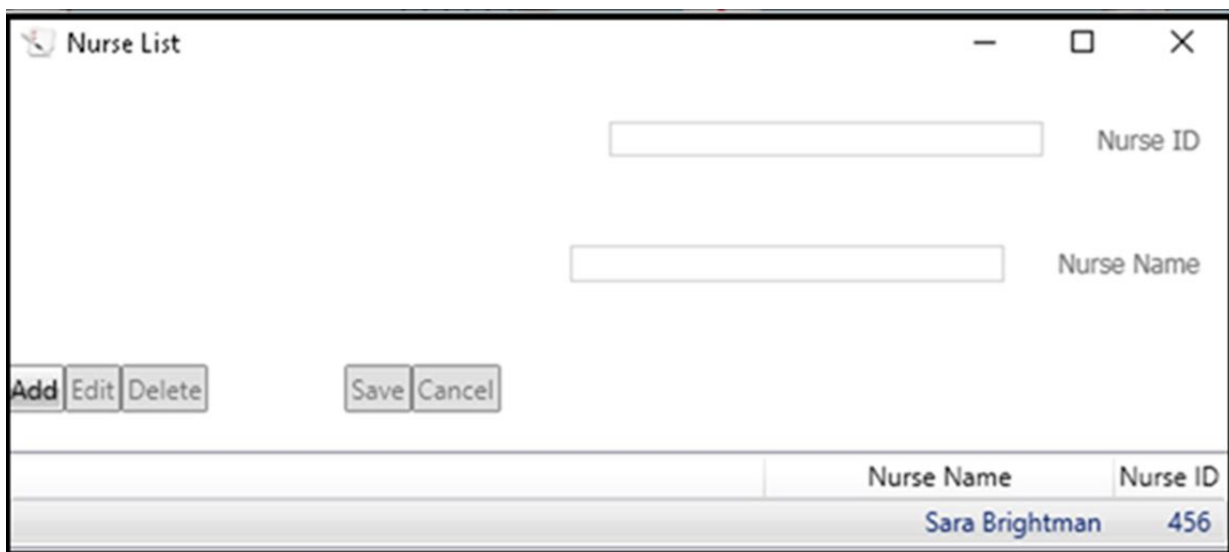
11.2 STAFF CONSOLE I.P. SETTING TAB

This Tab enables adding new staff console units in the facility to be considered for logging and reporting means. The operator needs to add the corresponding I.P. of the unit in the pop up screen as illustrated below:



11.3 STAFF RFID CARD SETTING TAB

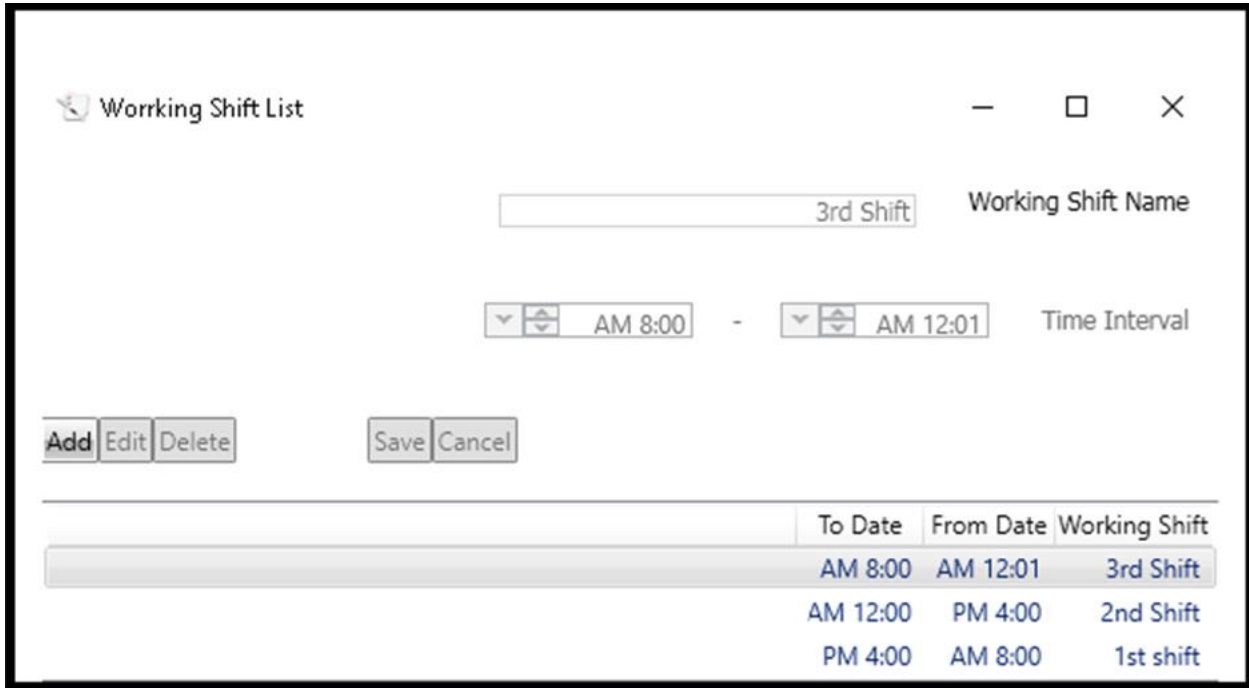
This tab will associate each RFID tag to one of the staff members so that the activity of the work force using RFID cards can be logged and reported accordingly as illustrated below:



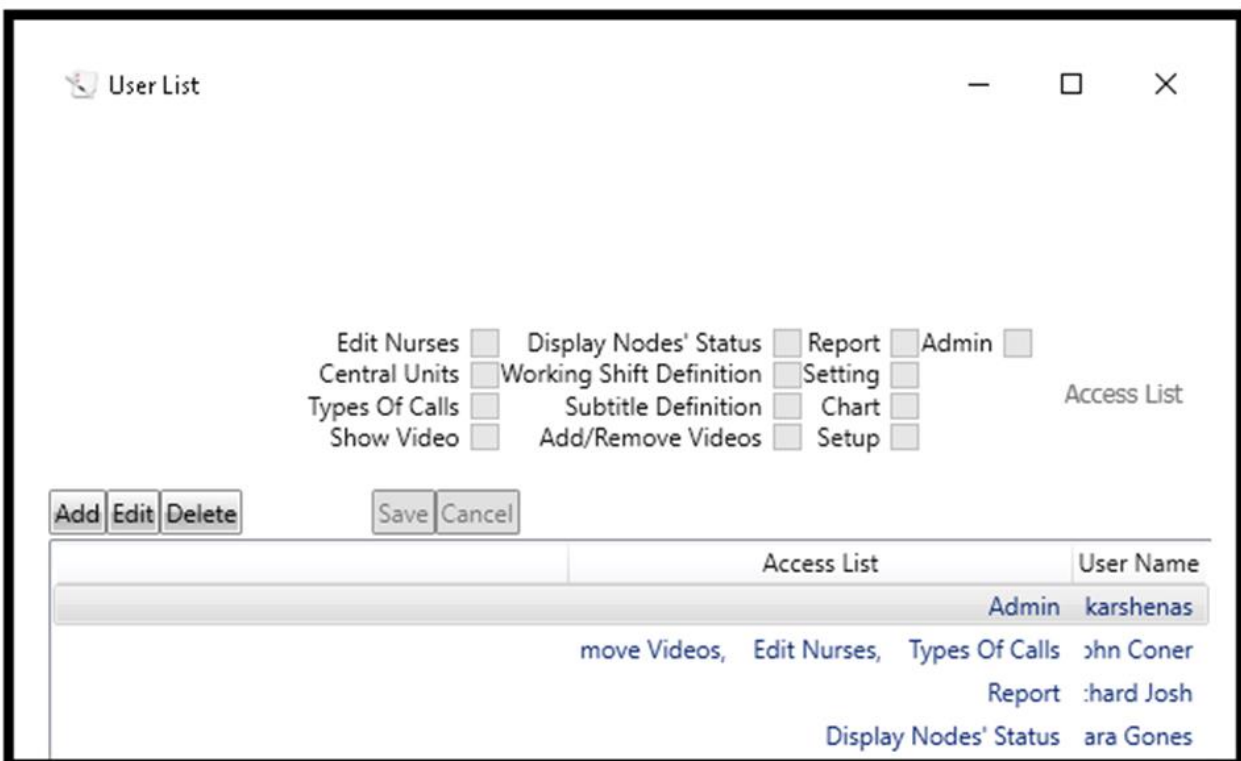
This tab will only be used if the Patient panels are equipped with RFID tag reader

11.4 WORK SHIFT TIME SETTING TAB

This tab enables setting the timings for different working shifts in the facility for shift filtering purposes of the report based on the time of an incident as illustrated below:



11.5 ACCESS LEVEL SETTING TAB



11.6 REPORTING TAB

This tab gives a chronological report of the incidents in the facility along with the related staff activity as illustrated below:

Request	Bed	Room	Ward	Call Type	Row
2021/07/19 18:10:18	0	2	CCU	Service	1
2021/07/19 18:10:18	0	2	CCU	Service	2
2021/07/19 18:10:18	0	2	CCU	Service	3
2021/07/19 18:10:18	0	2	CCU	Service	4
2021/07/19 18:10:18	0	2	CCU	Service	5
2021/07/19 18:10:18	0	2	CCU	Service	6
2021/07/19 18:10:18	0	2	CCU	Service	7
2021/07/19 18:09:54	4	2	CCU	Critical	8
2021/07/19 18:09:17	4	2	CCU	Normal	9
2021/07/19 18:09:17	4	2	CCU	Normal	10
2021/07/19 18:09:09	4	2	CCU	Emergency	11
2021/07/19 18:09:09	4	2	CCU	Emergency	12
2021/07/19 18:09:09	4	2	CCU	Emergency	13
2021/07/19 18:09:09	4	2	CCU	Emergency	14
2021/07/19 18:09:09	4	2	CCU	Emergency	15
2021/07/19 18:09:09	4	2	CCU	Emergency	16
2021/07/14 17:54:01	4	2	CCU	Emergency	17

11.7 GRAPHICAL CHART REPORT TAB

The reports can be presented in graphical chart for better analysis of the type of incidents and staff response characteristics using this tab as illustrated below:



12 CARE AND CLEANING

12.1 SYSTEM CHECK

Before using the Nurse Call System,

- Check if there is any mechanical damage in the system and accessories.
- Check if all the power cable and accessories are firmly connected.
- Check all the functions of keyboard and modules to make sure that the monitor is in proper condition.

If you find any damage on any module in the system stop using it and contact the biomedical engineer of the hospital or local After Sale Service.

The overall check of the system, including the safety check, should be performed only by qualified personnel.

All checks which need any module to be opened and safety and maintenance checks should be performed by After Sales Service.

12.2 CLEANING AND DISINFECTION

12.2.1 GENERAL POINTS

Use only the substances approved by us and methods listed in this chapter to clean or disinfect your equipment.

Manufacturer makes no claims regarding the efficacy of the listed chemicals or methods as a means for controlling infection. For the method to control infection, consult your hospital's Infection Control Officer or Epidemiologist. See also any local policies that apply within your hospital.

KT-NCS SMART Nurse Call System elements fall in the following Ingress Protection groups:

- o CUI32/ODL35/NDP31/TBX31/BCU34-N/CBN31: IP 20 or better
- o NCB35/NCB33: IP 54 or better
- o TB31: IP X4 or better.



1. Sterilization may cause damage to the device and is therefore not recommended.
2. If you see any signs of damage or deterioration in the device and its accessories, do not use it, and if necessary, contact the after-sales service company.
3. Allow the modules of the system to dry completely before making connections. And please make sure all connectors tightly connected to the system before using the system.



Please pay special attention to the following items:

- All the modules in the system shall be kept dust-free.
- Do not use strong solvents such as acetone or ammonia.
- Most cleaning agents must be diluted before use.
- Don't use rough or sharp material or your fingernail to remove stubborn stains.
- Do not let the cleaning agent enter into the chassis of the system.
- Do not leave the cleaning agents on any part of the equipment.



Do not use ETO gas to disinfect any module in the system.

12.2.2 EXTERNAL SURFACES

In-between patients and as required:

For cleaning: wipe gently using a moist cloth for disinfection use Alcohol 70%

12.2.3 DISPLAY SCREEN

Use clean and soft cloth with screen cleaner or moist with Isopropyl alcohol may be used for cleaning and disinfection.



- Take extra care when cleaning the screen of the staff console because it is more sensitive to rough cleaning methods than the housing.
- Don't spray a liquid directly on the screen.

12.2.4 ACCESSORIES

Accessory holders and extension cables should be cleaned and disinfected after each patient or when necessary, using a soft, clean cloth soaked in mild soapy water and, if necessary, Isopropyl alcohol, and then wiped with a soft and dry cloth.



1. To avoid damaging of the cable, probe, sensor or connector, do not immerse it in any liquid.
2. Disposable accessories shall not be sterilized or reused.
3. To prevent environmental pollution, the disposal of any part shall be done in accordance with the policies of the hospital.

The following table summarizes the methods of cleaning, disinfecting and sterilizing different parts of the device:

Device parts	Cleaning	Disinfection	Sterilization
External surface of device	In-between patients and as required wipe gently using a moist cloth and warm soapy water or mild detergent.	In-between patients and as required with: <ul style="list-style-type: none"> • Alcohol 70% • Isopropyl Alcohol • N-Propanol 	If needed, can be done using Ultra-violet or gamma ray methods.
Holders of accessory, Extension cables		I In-between patients and as required with: <ul style="list-style-type: none"> • Isopropyl Alcohol 	
Display screen	In-between patients and as required: Clean and soft cloth with screen cleaner.		

12.3 PREVENTIVE MAINTENANCE (PM)

To ensure that the device is kept in the best condition, it shall be kept clean and all points related to the maintenance of the system shall be observed. There are no repairable parts in the system and all repairs shall be done by the manufacturer.

12.3.1 STORAGE

The storage environment shall be clean and dry. If possible, use the original packaging of the device.



If any module falls from a height and is damaged or in the vicinity of a very high temperature and high humidity, contact the company's after-sales service at the earliest opportunity to ensure the correct operation.

Thoroughly clean the system before and after the system is not used for a while.

12.3.2 WEEKLY CHECKS

- Device cleanness
- Visual inspection of device (case, screen, keys and indicators)
- Visual inspection of accessories
- Function of accessories

12.3.3 MONTHLY CHECKS

- Visual inspection of device
- Device cleanness
- Function of keys and indicators
- Visual inspection of accessories

The preventive maintenance (PM) checklist # KT-NCS-PM-CHK-WIRLSS-NCS should be completed by responsible individuals of healthcare center. It should be noted that PM checklist only is used to perform systematic inspection of the equipment and will not guarantee their correct function.

12.4 PREVENTIVE MAINTENANCE (PM) CHECKLIST

KT-NCS Co Form # KT-NCS-PM-CHK WIRLSS-NCS.					
City:		Facility:		Ward:	
Bedside:		Corridor/Ward/Room:		Management Center:	
Model:		Serial Number:	Installation Date:		Inspection Date:
No.	Test and Inspection Item		OK	NOT OK	N/A
1	Visual inspection	No damage or breakage in the back case and panel			
		Cleaning and disinfection according to the user manual			
2	Display screen	Correct display of information			
3	Alarms	Alarm activation			
		Clarity of alarm sound			
		Correct function of alarm LEDs			
4	Setup	Saving date & time settings			
5	Switches	Correct function			
6	Connectors	Firmly fastened			
7	Pull Cords	Correct function			
8	Assurance LEDs	Correct function			
9	Speakers	Clarity of sound			
Final Decision:			PASS:		FAIL:
Recommendation:					
Name and signature of responsible individual			Name and signature of expert:		

13 TROUBLESHOOTING

Repairing the internal parts of any module in the system must be only done by trained and authorized personnel of “After Sale Service”; otherwise manufacturer will not take any responsibility for any possible hazard to the patient and the monitor.

Troubleshooting guide is intended to help users to solve minor problems caused by incorrect use of any module.

When you face any problem, please make sure that you have followed all procedure mentioned in Correct Action column before contacting “After Sale Service”.

For symptoms not mentioned in the table, please turn OFF the system and contact “After Sales Services” department.

Fault Symptom	Possible Cause	Correct Action
Staff Display is OFF	12 V DC adapter not connected	Connect the 12 V DC adapter to the mains
	12 V DC adapter Broken	Replace the 12 V DC Adapter
No Nurse Calling Function from all rooms in the ward	Staff display not programmed	Contact the technician to set the staff display
No Nurse Calling function from a specific room	The adaptor not connected/broken	Connect/replace the adapter
	The battery depleted	Replace battery
Self-triggering	Another transmitter at 433 MHz present	Intermittent problem, contact the technician
Service room Alarm Self Triggering	The unit has been exposed to water	Dry the Unit and check the sealing /Replace the unit
One of the Nurse call panels in a room not working	No Power to the panel	Connect the power supply
		Replace the Battery
No Chime from staff console	Broken staff console	Replace the unit /Factory Reset the unit
	Volume down	Raise the volume
Bed/Room wrong numbering	Wrong initial setup / Change of bed number after setup	Contact the technician to do the setup
Call/Cancel switch on the Nurse call panel not working	No Power to the unit	Replace the battery/Connect the adapter
Pull cord switch not working	No Power to the unit	Replace the battery/

