

DEPLOYMENT OF WIRED INTERCOM SYSTEMS

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1. ABSTRACT

This paper focuses on the design and implementation of a wired intercom system to facilitate seamless communication in both residential and commercial environments. The wired intercom system offers a reliable and efficient means of communication, allowing individuals within a building or property to easily communicate with each other across different rooms or areas. The project includes the installation of master stations at strategic locations, along with substations in individual rooms or zone. Careful consideration is given to the selection of appropriate wiring, power supply options, and integration with existing infrastructure if applicable. Through systematic planning, installation, and testing, the wired intercom system aims to provide users with a user-friendly and dependable communication solution tailored to their specific needs. Overall, this abstract highlights the enduring relevance and adaptability of wired intercom system.

.Index Terms— EBAPX, Handsets, Wire

2. INTRODUCTION

In the ever-evolving landscape of modern communication technology, the importance of efficient and reliable communication systems cannot be overstated. From bustling office environments to high-stakes industrial settings, effective communication lies at the heart of productivity, safety, and organizational success.

Wired intercom systems, also known as hardwired intercoms, have been a staple in various industries and applications for decades. They provide a direct, point-to-point or point-to-multipoint communication pathway, facilitating real-time voice transmission between designated locations or individuals within a defined network. Unlike their wireless counterparts, wired intercom systems rely on physical connections, typically utilizing cables or wires, to transmit audio signals, ensuring consistent performance and reliability.

The concept of an intercom system, allowing for internal communication within a building or a confined area, can be traced

back to the late 19th century. However, the modern intercom system as we know it today has its roots in the mid-20th century,

conclusion, the presented wired intercom system represents a robust solution for modern communication challenges. By prioritizing audio quality, security, scalability, and usability, it provides organizations with a reliable platform for fostering seamless communication, thereby enhancing productivity, safety, and overall operational efficiency

we will consider the recent advancements and innovations that have propelled wired intercom technology into the digital age, paving the way for integration with smart home automation systems and IP-based communication protocols. we navigate this landscape, we aim to underscore the enduring significance of wired intercom systems as indispensable tools for fostering seamless communication, collaboration, and connectivity in an ever-evolving world.

3.EXISTING SYSTEM

The existing system for a wired intercom typically consists of a central control unit that is connected to various intercom stations within a building or property.

The intercom stations are placed at strategic locations, such as entry points or different rooms, and allow for communication between them.

Users can press a button on their intercom station to initiate a call to another station or the central control unit. The call is established over the wired network, allowing for clear and reliable communication between parties.

The central control unit often has additional features such as the ability to broadcast announcements, control access to the property through door release mechanisms, and monitor activity through integrated video cameras. Overall, a wired intercom system provides a secure and convenient way for individuals within a property to communicate with each other and control access.

At the heart of the system, the master station serves as the centralized control unit, enabling users to initiate and receive calls while managing system settings. Substations, strategically positioned throughout the premises, house speakers, microphones, and call buttons, enabling occupants to communicate with the master station and each other.

The wiring infrastructure forms the backbone of the system, transmitting audio signals reliably and securely between stations. Powered by centralized units or individual adapters, these systems often incorporate amplifiers to enhance signal.

ensuring effective communication even in noisy environments. Optional features such as door access controls and emergency broadcast capabilities further enhance the versatility

and functionality of wired intercom systems, making them indispensable tools for internal communication and security management.

3.1 DISADVANTAGES

1. Installing a wired intercom system can be more complex and labor-intensive compared to wireless systems.
2. With wired intercom systems, users are tethered to the intercom station by the physical wiring. This limits mobility and flexibility in terms of where communication can take place.
3. Improperly monitoring the garbage cans that have been collected in real time and the need to boost efficiency.
4. This can limit the system's scalability as the building's needs evolve

4. PROPOSED SYSTEM

4.1 AREA OF PROJECT

The Session Initiation Protocol (SIP) is a signalling protocol used in VoIP (Voice over Internet Protocol) communications to initiate, manage, and terminate multimedia sessions such as voice and video calls over IP networks. Here's how SIP works at a high level:

4.2 User Agents (UA): SIP operates on a client-server model. User agents are the

endpoints in a SIP communication session. There are two types of user agents:

User Agent Client (UAC): Initiates SIP requests, such as placing a call.

User Agent Server (UAS): Receives SIP requests, processes them, and sends responses, such as answering an incoming call.

SIP Messages: SIP communication is based on a set of text-based messages exchanged between user agents. The main SIP messages are:

INVITE: Initiates a session, such as placing a call.

ACK: Confirms the receipt of a final response to an INVITE request.

BYE: Terminates a session.

CANCEL: Cancels an ongoing session initiation request.

REGISTER: Registers a user's current location (e.g., IP address) with a SIP registrar server.

200 OK: Indicates a successful response to a request.

3xx Redirection: Redirects the client to another server or URL.

4xx, 5xx, 6xx Error Responses: Indicates various types of errors.

4.3 Proxy Server:

Receives SIP requests from user agents and forwards them to the appropriate destination based on routing rules. It may also modify SIP messages or provide other services such as authentication.

Registrar Server: Maintains a database of active SIP user agents and their current location (e.g., IP address).

Redirect Server: Sends redirection responses to user agents to direct them to another server or URL.

Location Server: Stores and retrieves information about the current location of SIP user agents

To initiate a call, the UAC sends an INVITE request to the proxy server.

The proxy server routes the INVITE request to the destination UAS.

The UAS sends back a 200 OK response if it can accept the call.

Once the UAC receives the 200 OK response, it sends an ACK to confirm the acceptance.

Media negotiation may occur between the user agents to establish the parameters for the call (e.g., codec selection).

The call is established, and media (voice, video) flows between the user agents.

Session Termination:

To end a call, either user agent can send a BYE request to the other user agent.

The receiving user agent responds with a 200 OK to acknowledge the termination.

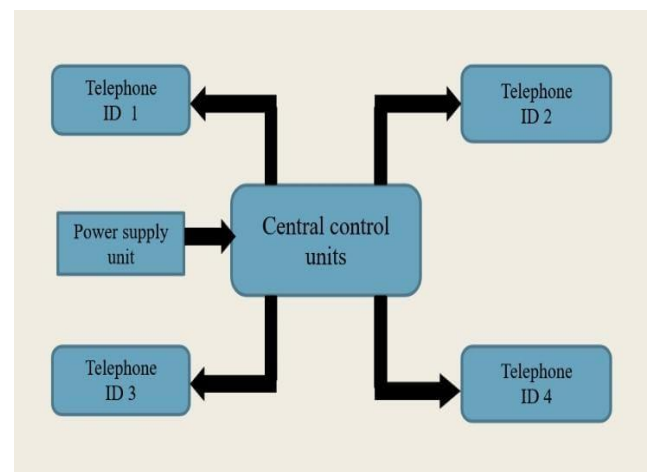
Once both user agents have acknowledged the BYE request, the call is terminated.

Optional Features:

SIP supports additional features such as call transfer, call forwarding, conference calling, and presence information.

Overall, SIP provides a flexible and extensible framework for establishing and managing multimedia communication sessions over IP networks. It is widely used in VoIP systems, IP telephony, and unified communications solutions.

4.4 BLOCK DIAGRAM



a) BLOCK DIAGRAM OF WIRED INTERCOM

4.5 CIRCUIT DIAGRAM

A wired intercom circuit diagram typically consists of several key components interconnected to facilitate communication between different stations. of the various parts typically found in a wired intercom

managing communication and may include features like routing audio

signals, controlling volume levels, and managing system settings.



b) CIRCUIT DIAGRAM OF WIRED INTERCOM

A wired intercom circuit diagram illustrates the connections and components necessary for setting up a wired intercom system. Typically, it includes various elements such as intercom stations, central control units, power supplies, amplifiers, and wiring connections.

Intercom stations are the devices used by users to communicate with each other, and they are typically connected to the central control unit through wiring. The central control unit serves as the main hub for

Power supplies provide the necessary electrical power to the intercom system, ensuring that all components function correctly. Amplifiers may be included to boost the audio signals transmitted between intercom stations, improving the clarity and range of communication.

The wiring connections depicted in the diagram illustrate how the various components are connected together to form a functional intercom system. These connections ensure that audio signals can be transmitted between intercom stations and that power is supplied to all components as needed.

4.6 CENTRAL CONTROL UNIT

In a wired intercom system, the central control unit serves as main hub for managing communication within the system. It typically include components such as a central processor, amplifiers, and interface modules. The central control unit facilitates communication between different intercom stations by routing audio signals, controlling volume levels, and managing system

settings. It may also provide features like call forwarding, group calling, and integration with other security or communication systems. Essentially, the central control unit acts as the brain of the wired intercom system, ensuring smooth and efficient communication between users.



c) CENTRAL CONTROL UNIT

These technologies work together to convert voice signals into electrical signals, process them as needed, and transmit them over the EPABX system.

The resulting electrical signals are then routed, switched, and delivered to the appropriate destinations within the communication network, allowing users to communicate with each other over voice calls

4.11 POWER SUPPLY

The power supply is essential for providing electricity to the various components of the system, such as the master station, substations, amplifiers, and

any other devices connected to the system. The power supply typically converts AC

(alternating current) from the mains power source into DC (direct current) suitable for powering the intercom system's components. This DC power is then distributed through the wiring to each station or device, ensuring they have the necessary power to function properly. Additionally, the power supply may include features such as over current protection and voltage regulation to safeguard the system from electrical faults and fluctuations.

5. RESULT

A wired intercom system is improved communication and security within a building or property. Wired intercom systems allow for clear and instant communication between different locations, such as between a master station and substations or between different rooms or areas within a building. They provide a reliable means of communication, unaffected by interference or signal loss often experienced with wireless systems

Additionally, wired intercom systems can enhance security by enabling residents or staff to screen visitors before granting access, as well as allowing for emergency communication in case of fire, medical emergencies, or other situations requiring immediate attention. Overall, the result of implementing a wired intercom system is

increased efficiency convenience, in safety, and communication



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d) Set up of the project

6. CONCLUSION

The wired intercom system offers reliable communication, enhanced security, and convenient. functionality.

Its installation is straightforward, providing seamless integration into various environments. With its robust features and potential for future expansion, the wired intercom system ensures long-term reliability and satisfaction for users.

The wired intercom system offers reliable communication, enhanced security, and convenient. functionality.

It could highlight the importance of considering specific needs and requirements when choosing between wired and wireless intercom systems.

7. FUTURE SCOPE

The future scope for wired intercom systems lies in the integration of advanced technologies to enhance functionality, efficiency, and user experience. Some potential areas of development include:

1. Integration with smart home or building automation platforms for enhanced control and accessibility. This could involve voice-activated commands, integration with virtual assistants, and remote monitoring capabilities. Android apps with dustbin locators can be created so that users can track the nearest bin and its status if the system is used to monitor trash containers in bigger areas.
2. Integration with Internet of Things (IoT) devices to enable seamless communication with smart devices such as door locks, surveillance cameras, and sensors, expanding the functionality and versatility of the intercom system
3. Integration with Internet of Things (IoT) devices to enable seamless communication with smart devices such as door locks, surveillance cameras, and sensors,
4. expanding the functionality and versatility of the intercom system
Using a camera sensor to process images of the state of the road's cleanliness

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