Clear-Com®
AN HME COMPANY

Intercom Solutions for the Military, Aerospace and Government
Ensuring clear and reliable communications in diverse and dynamic environments

Photo courtesy of Emmanuel GRIMAULT, © CNES 2011 / Centre de contrôle Galileo CNES Toulouse.

For over 50 years, Clear-Com has led the industry with high quality intercom solutions that meet the critical communication needs of the military, aerospace and government. Internationally recognized for the reliability and innovation of its voice communication systems, Clear-Com has been deployed in over 100 countries worldwide and has improved collaboration, bolstered high productivity and even transformed work environments.

Clear-Com offers an unmatched portfolio of professional intercom systems for command and control, net-centric communications, training and simulation, and test and evaluation applications across the globe. Clear-Com COTS solutions facilitate simple to complex, real-time communication setups for tens of thousands of operators on a single system who need to continuously talk and/or listen, hands-free. Core technology of Clear-Com systems is based on either analog, digital, wireless, or IP. Not only is Clear-Com utilized by the Army, Navy, Air Force, Homeland Security and every major U.S. government contractor, but also for space and missile defense programs as well as missile test ranges and ground control stations for unmanned aircraft systems. Clear-Com delivers the right mix of experience, competencies and flexibility to work with customers seeking to perform at the highest level.

Photo courtesy of SMSgt. David H. Lipp / Grand Forks Air Force Base

Demonstrated Performance

Clear-Com has been supplying proven and reliable intercom solutions for a growing number of clients and programs worldwide.

The following is a sampling of Clear-Com customers along with military, aerospace and government facilities using Clear-Com.

U.S. Marines - Twentynine Palms	FT. Hood	Sikorsky
Aberdeen Proving Grounds	General Atomics	Social Security Administration
Armed Forces Network	General Dynamics	SpaceX
NASA AMES	FT. Greely	Stallion Army Air Field
Army Research Labs	Johns Hopkins	Starfire Optical Range
A.U.T.E.C.	Ronald Reagan Test Range	Stennis Space Center
Benefield Anechoic Chamber	Lockheed Martin	The Boeing Company
Camp Casey	Missile Defense Agency	White House Communications Agency
Cannon AFB	NASA Moffett Field	
NSWC - Carderock	NASA Dryden	U.S. Army Band
NAWS - China Lake	Nellis AFB	U.S. Department of Agriculture
NSWC Corona	Northrop Grumman	U.S. Department of Homeland Security
U.S. Coast Guard	Department of Energy	
Edwards AFB	NAS - Patuxent River	U.S. Department of Veterans Affairs
Eglin AFB	Peterson AFB	Vandenberg AFB
Food and Drug Administration	Raytheon	White Sands Missile Range
FT. Bragg	Sandia National Laboratories	Yuma Proving Grounds
FT. Carson	Schriever AFB	

The Right Technology Partner for Voice Communications

Clear and reliable communication is an essential component of successful missions. Access to the right information at the right place and time will empower teams to achieve envisioned results and collaborate without limits. Clear-Com has helped translate the communication needs of customers into robust, functional solutions, following through every step of the way.

Clear Communication for Operational Efficiency

Clear-Com's intercom systems supply superb audio clarity with the added benefit of ultra-low latency. The high quality and intelligibility of Clear-Com minimize errors, speed comprehension and accelerate decision making and action.

Maximize Collaboration with Unparalleled Interoperability

The interoperability of the Clear-Com systems enhances teamwork and coordination. Collaborate easier and accomplish more, locally and globally, with real-time links among system participants that can extend into the thousands. Powerful and intelligently designed, the Clear-Com intercoms seamlessly interconnect with voice conferencing technologies and a wide variety of communication systems via IP/Ethernet, fiber, MADI, T-1/E-1, POTS and radio interfaces.

Proven Reliability

Created with built-in redundancies and made to operate 24/7, the dependable Clear-Com systems maintain the same high performance even after extensive use. In fact, previous generations of Clear-Com that were installed over a decade ago are still in use today.

Future-proof Communications Platform

Ongoing, company-funded research projects enable Clear-Com to address customers' evolving needs. Systems are built for reliability with innovative technology that matches current and future requirements. Clear-Com also provides firmware and software updates to enhance system functionality and performance.

Excellent Service and Support

With an elaborate support network that spans across the globe, the Clear-Com team meets high expectations by delivering individually tailored customer care.

Services Include:

- Onsite commissioning, training and support
- Design of customized system solutions for specific application needs
- Expert consultation for equipment interfacing

- Technical support to address issues pertaining to applications, configuration and products
- Depot repair centers for rapid turnaround on system upkeep
- Call center team to assist with orders, pricing, spare parts and shipping
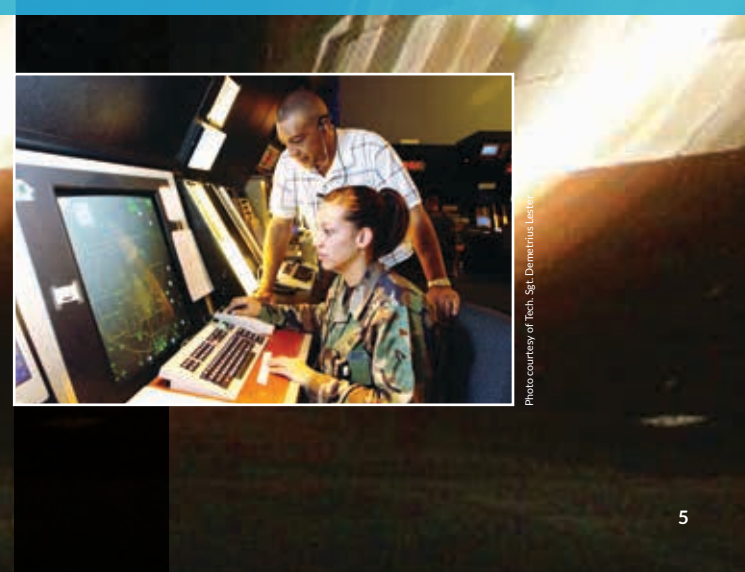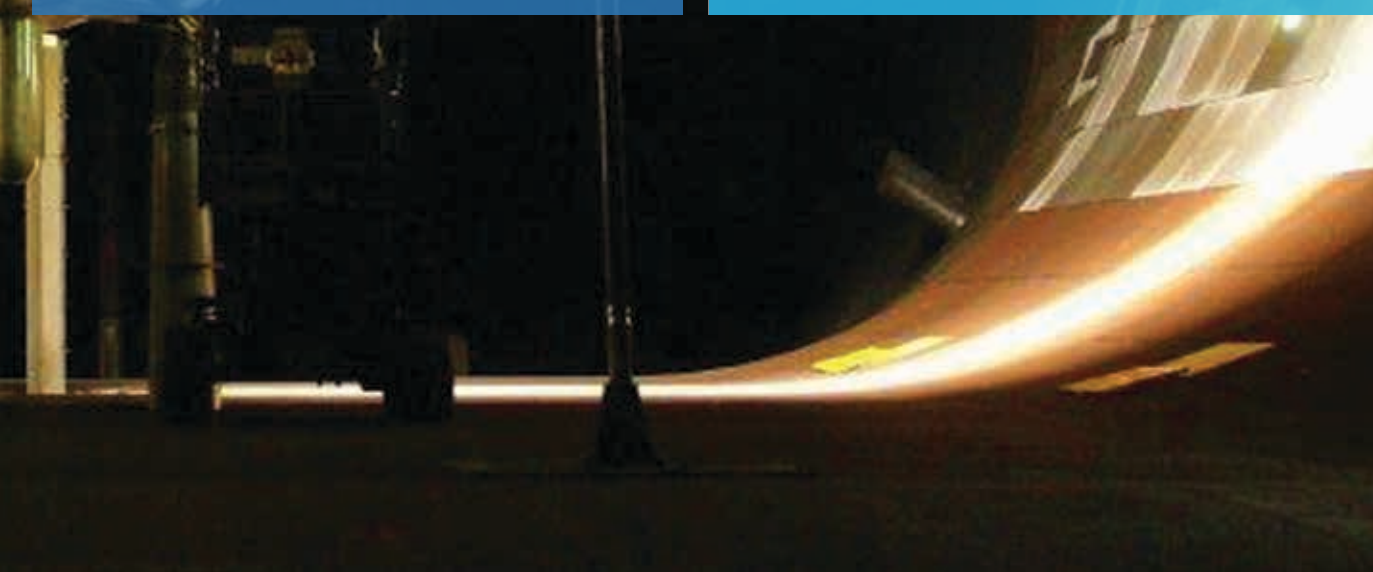- Extended warranty agreements

Photo courtesy of Tech. Sgt. Demetrius Lester

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Vital Communications Capabilities for Command and Control, Net-Centric Communications, Training and Simulation, and Test and Evaluation

Today's military, aerospace and government personnel expect more advanced functionality from intercoms and more options to communicate with one another as they engage in an extensive range of operations. Through its deep industry experience and close cooperation with users, Clear-Com has developed proven intercom solutions with key capabilities to address demanding communication requirements. Clear-Com's intercom systems are a strategic tool for being more prepared, collaborating effectively and becoming highly efficient.

Exceptional Audio Clarity: With a wide audio bandwidth, built-in noise reduction and low distortion mechanisms, Clear-Com's intercoms have very low latency and superior sound quality.

Ease of Use: Intuitive user interface and optimally positioned buttons that are easy to locate, identify and control enable simple operation.

Interconnectivity: Through a variety of interfaces, intercoms intelligently integrate with additional Clear-Com systems, other third-party technologies and existing communication infrastructures.

Seamless Interoperability: Leverage the capabilities of many disparate and incompatible systems through the management of a single interconnected system.

Scalability and Networkability: Easily expand a single system via integration with many other technologies to achieve direct or one-to-many connections, locally or globally.

Effortless Configuration: Immediately access system settings and configuration for a fast and painless setup. Quickly reprogram the system and customize communications for changing application requirements.

Wireless Intercom Solutions

Clear-Com has a broad range of basic, advanced and expert level wireless intercom solutions from 470 MHz - 2.4 GHz on a variety of different transmission schemes. These systems include the DX Series®, FreeSpeak II®, and WBS 670/680.

DX300ES

The DX300ES wireless intercom supports hands-free, two-way digital conversations with two-channel interfacing for intercom communications. Its compact design makes it highly portable and very quick to set up and operate. With digital spread spectrum, the system requires no frequency coordination or license for operation.

Each base can support up to three full-duplex or 15 push-to-transmit shared users; four bases linked to support a maximum of 60 users. It can supports connectivity of up to two radios using the 4-wire + GPIO ports.

DX410

The DX410 is a two-channel digital wireless system that operates in the 2.4GHz band. The DX410 system is based on the DX Series technology that is known for quality and performance, but the DX410 differs with wide-band audio and an all-new base station, wireless beltpack, and All-in-One wireless headset.

DX410 is the first DX Series system to feature 7kHz wideband audio, which is the same audio quality as high-end wireless intercoms. Its increased intelligibility enables even soft whispers to be heard clearly. With an upgraded radio and a lost packet concealment capability, the DX410 delivers an overall better experience in performance, range and sound.

Each DX410 base station can support up to 15 registered BP410 wireless beltpacks and/or WH410 all-in-one wireless headsets. In single-channel operation, any of the four beltpack users can engage in simultaneous, full-duplex (talk-listen) communication, while three users may be in full-duplex mode in dual-channel operation.

FreeSpeak II

FreeSpeak II is a distributed-antenna wireless intercom system that is offered in either the 1.897-1.933GHz band or the 2.4GHz band. It delivers superior roaming capability for reliable wireless connections, digital 'Clear-Com Sound' for clear intelligibility and ultimate audio comfort, and innovative intercom features. The system is designed for extensive communication in large-scale operations.

As a standalone system, the robust 1RU base station can support up to 25 digital wireless beltpacks using either or both 1.9GHz and 2.4GHz bands. Alternatively, FreeSpeak II wireless beltpacks can seamlessly integrate with the Eclipse HX matrix system, providing up to 25 1.9GHz or 40 2.4GHz wireless user connections per E-Que-HX cellular card. Expansive wireless coverage can be achieved by strategically placing up to 40 distributed remote antennas.

The two frequency bands can work together seamlessly within the base station or matrix intercom, allowing a single system to expand into a larger wireless system for supporting a growing number of users.

Eclipse® HX Digital Matrix

Eclipse HX systems are the world's most advanced digital matrix intercoms. They provide direct (point-to-point) and one-to-many (group and partyline or conference) connections. They also enable interoperability on missions and interconnect to two-way radios, telephone lines, two-wire intercoms, E1/T1 circuits and networks. Multiple connection schemes are possible for linking communication points back to the frame, including CAT5, fiber, coax, MADI, AES and IP/Ethernet. The Eclipse HX platform also offers a broad selection of powerful system frames for applications of any size and complexity.

System Frames

Eclipse HX-PiCo
- 36 ports in a 1RU system
- Ideal for communication in small to mid-size applications
- Built-in display and menu system for configurations and updates

Eclipse HX-Delta
- 256 ports in a 3RU system
- Houses two CPU cards, four frame cards, and three interface modules
- Ideal for applications with limited real estate but requiring diverse interconnectivity
- Optimal for the remote areas that need a smaller expansion

Eclipse HX-Median
- 448 ports in 6RU system
- Houses two CPU card, seven 6RU frame cards and up to eight 3RU interface modules
- Ideal for environments where rack space is limited

Eclipse HX-Omega
- 512 ports in 6RU system
- 15 slots available for supporting any combinations of frame cards
- Multiple matricies of any type can be intelligently linked together for large scale applications with many users or destination points located in two or more different facilities in a single cluster

User Control Panels

V-Series
V-Series panels provide Digital Signal Processing, 10-character display, dual label support and native IP technology. Multi-functional V-Series panels can route two channels of audio and intercom over IP. They also have built-in relays, logic controls and rear connections for Audio I/O and GPI control. V-Series panels are available in 12- and 24- rotary key, lever key and pushbutton varieties.
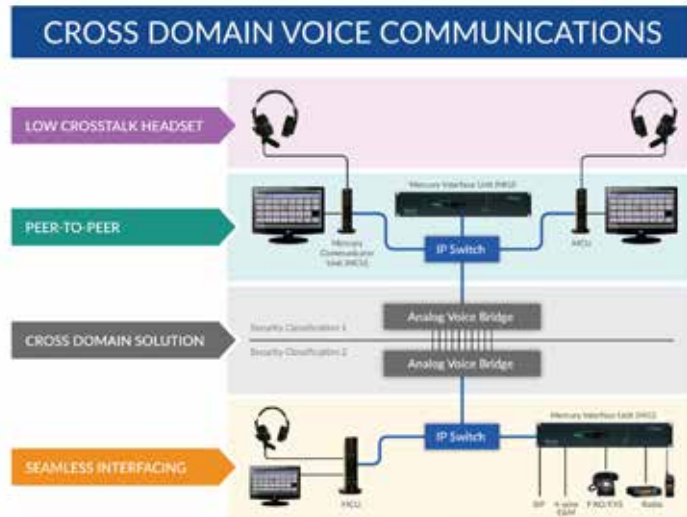
i-Series
Rugged 1RU i-Series panels are built with four five-character display selector modules and a microphone headset module. The 32 key panels also include keypads. Using the AUX-101 auxiliary audio I/O module, the user can have multiple audio sources, and multiple speaker and headset I/O.

Trilogy Mercury Communications Solution

The Trilogy Mercury product line is designed to specifically meet a variety of communications challenges relating to both infrastructure and usability. The solution delivers high-quality, low-latency audio over existing Local and Wide Area IP networks.

Through class of service implementation, the Mercury system can adapt to the capabilities of existing network topography whether communicating over high-speed links or celestial. Mercury is unparalleled in its ability to satisfy the most demanding requirements within the mission critical industry through its deployability, usability, scalability and interoperability.

Mercury offers the **Cross Domain Voice Communications Solution** that features a unique set of capabilities:

Low Crosstalk Headset

The patented technology of the MLS (Multilevel Security) Low Crosstalk Headset prevents any secondary audio from leaking into the system.

Peer-to-Peer Architecture

Designed for both scalability and high availability, Mercury operates in a true "Peer-to-Peer" manner which provides a means of interconnecting Mercury components directly to one another through standard IP networking. The result is a system that can scale to a large capacity with a very high operational availability having no single point of failure (i.e. the loss of any one component will not affect the communications of any other component).

Cross Domain Solution

Mercury features the Analog Voice Bridge to facilitate simultaneous voice communication paths across domains in a manner that has satisfied PL4 (Protection Level 4) accreditation and ICD 503 (Intelligence Community Directive 503). Multiple bridges can co-exist within a single system.

Seamless Interfacing

Mercury has varying capabilities to suit specific operational requirements. The Mercury Interface Unit (MIU) facilitates interfacing with a variety of third-party equipment such as Radios, POTS lines, SIP endpoints or balanced 4-wire connections. These resources can then be made available to any communication endpoint within the system.

Headsets

CC-Series Headsets

The single– or double-ear headsets possess a flexible design, offer excellent noise attenuation and provide superior comfort. Able to rotate 300 degrees, the microphone boom acts an on/off switch for quick microphone muting.

CC-300

CC-110

CC-400

CC-220

IP Communications

IP Communications provide remote users with easy, cost-effective, and flexible intercom access without the need to invest in new cables or hardware.

Agent-IC™

Agent-IC is a downloadable app that freely connects to an IVC-32 interface card in an Eclipse-HX matrix resulting in a fully featured virtual panel operable on a smartphone and tablet devices over Wi-Fi, 3G, 4G and LTE networks.

Clear-Com Concert®

Clear-Com Concert is a SaaS solution that enables instant and reliable communication over LANs, WANs and the Internet. An intuitive, point-and-click user interface and low latency audio make it ideal for many applications. Concert permits enterprise-wide collaboration, enables remote access to existing intercoms, and can interface with any balanced audio connection.

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Clear-Com Encore® Partyline

Clear-Com Encore is the most complete set of two-wire intercom systems for reliable, group communications. The systems are highly compatible with other Clear-Com or third-party products and were created to withstand arduous usage in fast-paced, high intensity applications.

Main/Remote Stations

Two- or four- channel rack-mount or portable Main or Remote Stations permit talk, listen and call operations with built-in fail-safe power supply, internal speaker, microphone and headset connections. Up to 40 user beltpacks can be supported on a single Main or Remote Station.

RS-700 Series Wired Beltpacks

Housed in a rugged, ergonomically-designed casing, the one- or two- channel beltpacks provide super audio clarity, have functions that are easily customizable and are simple to operate.

Speaker Stations

One- or two- channel Speaker Stations grant talk/listen operations. Integrated speaker and push-to-talk capability are built-in features of these stations.

HelixNet® Partyline

HelixNet is a flexible, scalable and intelligent digital network partyline intercom for dynamic group communication. It delivers superb digital sound, ease of deployment and operation, and simplified cabling.

HelixNet Main/Remote Stations

The HelixNet Main and Remote Station provide full-duplex, four channel operation. The Main Station can host 24 channels distributed across up to 70 endpoints such as Beltpacks, Remote Stations, Speaker Stations and interface modules.

HelixNet Beltpack

Delivering superb digital sound quality, the two-channel HelixNet digital beltpack enables access to two or more of the system's 24 channels over either Power over Ethernet (PoE) or using Powerline technology using standard microphone cable. Its rugged and ergonomic design offers utmost reliability and durability.

HelixNet Speaker Station

The four-channel HelixNet Speaker Station enables communication on any of the four assignable audio channels. The Speaker Station can be wall mounted into a 4-gang standard electrical box or an optional S-Mount enclosure.

Linking and Interface Modules

The HelixNet Main Station accepts Ethernet and Fiber linking modules as well as 2-wire and 4-wire interface modules. The Ethernet module facilitates system expandability and connectivity to the browser-based management utility (CCM). The modules also provide connectivity to two-wire and four-wire audio systems.

Intercom Connectivity Solutions

Intercom Connectivity (ICON) Solutions is a collection of communication products that link local or geographically distributed intercom terminals and end-points together. The systems operate over IP/Ethernet networks and/or optical fiber links.

Interoperability

Clear-Com interoperability solutions address the challenge of linking and bridging a myriad of disparate communication systems.

LQ™ Series

LQ Series IP Interfaces can interface with any balanced, unbalanced or SIP audio connection over any standard IP network. The 4-wire+GPIO model facilitates seamless system-wide radio interfacing and bridging. Through the support of its native IP connectivity to Eclipse HX Matrix, LQ offers a simple and secure method of system-wide integration of nearly any audio source or destination.

FIM-S222

FIM-S222 two-channel fiber interface converts an intercom channel's analog audio and digital data to and from an optical format to enable transmission over fiber. Panels can be connected 12 miles from the matrix frame using FIM-S222.

Clear-Com Gateway

Clear-Com Gateway enables connection between communication systems, such as two-way radios, intercoms, and telephony. It also provides IP interfacing for Voice over IP (VOIP), Radio over IP (ROIP), and SIP applications. Many module options permit customization of the system configuration.

Signal Transport Solutions

Clear-Com's signal transport systems carry, distribute, and route audio, intercom, and video signals as well as control data. The high performance and resilient systems deliver high channel count, synchronous data transmission, extremely low latency, scalability and redundancy.

ProGrid®

ProGrid rapidly transports and distributes audio, intercom, and control data. The infrastructure solution can be quickly and easily deployed over optical fiber. 47 possible combinations of these systems with different I/O options allow for tailored solutions.

MUX-22-CC

The MUX-22-CC platform provides scalable, protocol independent routing, repeating, transport and distribution of multiple professional video and audio signals over optical fiber. MUX-22-CC can be used as a standalone system or operate with ProGrid.

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About Clear-Com®

Clear-Com, an HME company, is a trusted global provider of professional real-time communications solutions and services since 1968. We innovate market proven technologies that link people together through wired and wireless systems.

For 50 years, Clear-Com has provided professional communications solutions for command & control, training & simulation, test & evaluation, and net-centric communications. Clear-Com's partyline, digital matrix, wireless systems, fiber transport and intercom-over-IP conferencing solutions have led the industry with high quality audio performance that meets critical needs in a variety of military, aerospace, federal and government operations. Our COTS solutions and after-sales service and support have resolved the military and defense's toughest communication challenges.

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