1.92-1.93GHZ DIGITAL WIRELESS INTERCOM SYSTEM

CellCom®

Digital Clarity and Versatile Operations

For Unsurpassed Wireless Performance

CellCom is available in the U.S. and Canada.

Clear-Com®
AN HME COMPANY

About Clear-Com®

Clear-Com, an HME company, is a global provider in professional voice communications systems since 1968. We develop and market proven intercom technologies such as Analog & Digital Partyline, Digital Matrix, Wireless and Intercom-over-IP systems for critical communication applications in broadcast, performance venues, military, government and enterprise markets. Recognized for our legacy of intercom innovations, production teams around the world have come to depend on Clear-Com for clear, reliable and scalable communications solutions.

About HM Electronics, Inc. (HME)

HM Electronics, Inc. is a diverse group of companies providing solutions that enhance productivity and customer service in markets including restaurants, sports and professional audio. Founded in 1971, we sell, service and support products in 89 countries worldwide, via company-owned offices in the U.S., Canada, Europe, and China, and an extensive network of HME-authorized distributors, dealers and service agents. Every day quick service restaurants take over 24 million orders using HME systems. With the recent acquisition of Clear-Com, HME is the world's leading provider of professional intercom systems.

CellCom operates in the license-free 1.92-1.93GHz frequency band, where it is away from the crowded radio spectrum that is saturated with Wi-Fi or other wireless devices. CellCom can be offered as a standalone system, complete with a 1RU Base Station and up to 20 beltpacks. Alternatively, it can be utilized as a seamless wireless beltpack solution to the Clear-Com Eclipse-HX Matrix System, providing up to 35 wireless user connections per E-Que card and adapting the functions offered by the main system.

The Clear-Com CellCom Wireless Intercom System is a true class act.

Unsurpassed crystal-clear digital sound clarity gives users full-duplex (talk-listen) 7kHz "commentator" bandwidth of audio. This level of sound quality is ideal for users with extended usage needs.

Wide wireless coverage can be achieved by strategically placing up to 10 remote antennas. Each Active Antenna can be positioned as far as 3,200 feet away from the Base Station, and can create a coverage zone of up to 800 feet.

Flexible cellular roaming technologies allow users to move freely about in large, multi-room production environments without the worries of fading or losing connections. With DECT (Digital Enhanced Cordless Telecommunications) technology at its core, CellCom continuously scans, selects, and connects with the best Active Antenna for uninterrupted communication.

CellCom Base Station

The CellCom Base Station serves as the heart of the wireless communications system for all digital wireless beltpack users. The Base Station supports up to 20 full-duplex wireless beltpacks. CellCom cellular auto-roaming technology enables beltpacks to continuously detect and automatically select the best connection. Even in the most crowded RF environments, CellCom remains highly secure and free from interference.

Each beltpack can be individually addressed by the Base Station, allowing multiple combinations of beltpack-to-beltpack (point-to-point) and small-group (partyline) conversations to happen simultaneously.

CellCom **can be programmed through the software menus** on the base or via the PC-based software. All aspects of the beltpacks, the rear-panel connectors, and the creation of communication routes and groups can be configured. Relative audio levels among beltpacks, and input and output levels for the wired connections are also under software control.

The CellCom Base Station has **four 4-wire and two 2-wire intercom connections** on the rear panel that allows communication with other wired intercom systems. Program feed input, Stage Announce output and Stage Announce relay output are also available as connections at the back of the base.

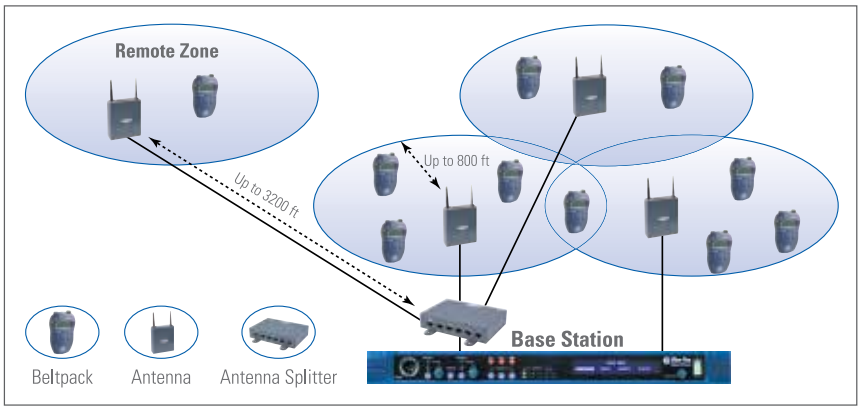
ACTIVE ANTENNA

CellCom users can **roam far distances away from the Base Station** while staying connected. This is achieved through Active Antennas, which make wireless connections to the beltpacks.

Locally-powered Antennas may be located up to 3,200 ft (1,000 m) away or 800 ft (250 m) when centrally powered from the Base Station.

The **omni-directional coverage area** may be up to 800ft (50 to 150m typical) in radius, although typical distances in production environments range from approximately 160 to 640ft (50 to 200m).

Each Active Antenna supports up to **five full-duplex beltpacks in one coverage area**. By co-locating additional Active Antennas, more than five beltpacks can be supported in a particular area.



CELLCOM SYSTEM FEATURES

- License-free 1.92-1.93GHz DECT operations
- Supports up to 20 wireless beltpacks
- Point-to-point and small group wireless communications
- Creates user placed coverage zones, with up to 10 remote antennas
- 10 LED Active Antenna indicators
- Locate Active Antennas up to 3,200 ft (1,000m) from Base Station
- Create, name, and assign groups
- Two 2-wire and four 4-wire connectors
- Frequency and channel-hopping technology automatically finds clear spectrum
- Interrupted fold-back (IFB) functionality for on-screen talents
- Five wireless partyline groups
- Partyline call alert functionality

Wireless Beltpack

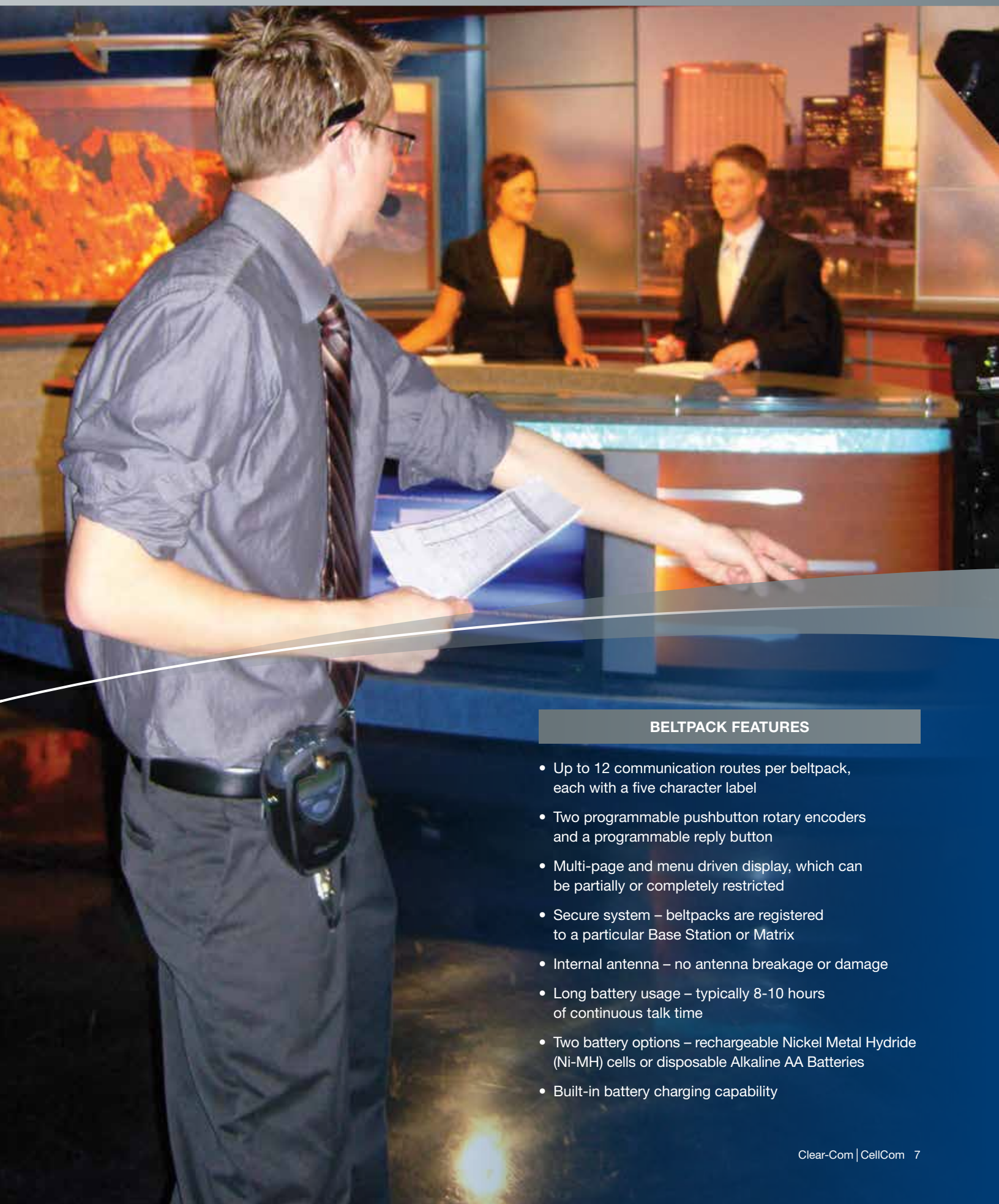
The CellCom Beltpack offers a clever design which combines an unparalleled set of features and functions with an ergonomic and compact form factor.

Full-duplex 7kHz bandwidth offers high audio quality and reduces the strain on the user's ears after extended usage.

Two push-to-talk rotary encoders and multi-page display allow up to 12 communication routes to be assigned to each beltpack. These can be any desired combination of group and point-to-point communication assignments.

Large LED backlit display provides extensive information, including the names of beltpacks, assigned users and groups of each beltpack, battery level, and signal strength.

A variety of **beltpack menus are accessible via the display** including headset levels, microphone levels, audible alert at low battery level, and adjustable local sidetone.



BELTPACK FEATURES

- Up to 12 communication routes per beltpack, each with a five character label
- Two programmable pushbutton rotary encoders and a programmable reply button
- Multi-page and menu driven display, which can be partially or completely restricted
- Secure system – beltpacks are registered to a particular Base Station or Matrix
- Internal antenna – no antenna breakage or damage
- Long battery usage – typically 8-10 hours of continuous talk time
- Two battery options – rechargeable Nickel Metal Hydride (Ni-MH) cells or disposable Alkaline AA Batteries
- Built-in battery charging capability

Unique to Clear-Com, CellCom Integra is the only seamlessly integrated wireless beltpack to Digital Matrix Systems intercom solution on the market.

CellCom Integra allows all CellCom beltpack users to communicate to any matrix panel, partyline or interface on the Clear-Com Matrix System on a one-to-one or group basis. The CellCom Beltpack seamlessly integrates with the Clear-Com Eclipse HX-Omega, Eclipse HX-Median and Eclipse HX-Delta Matrix Systems via a cell controller card called the E-Que card, which is directly fitted in the matrix frames.

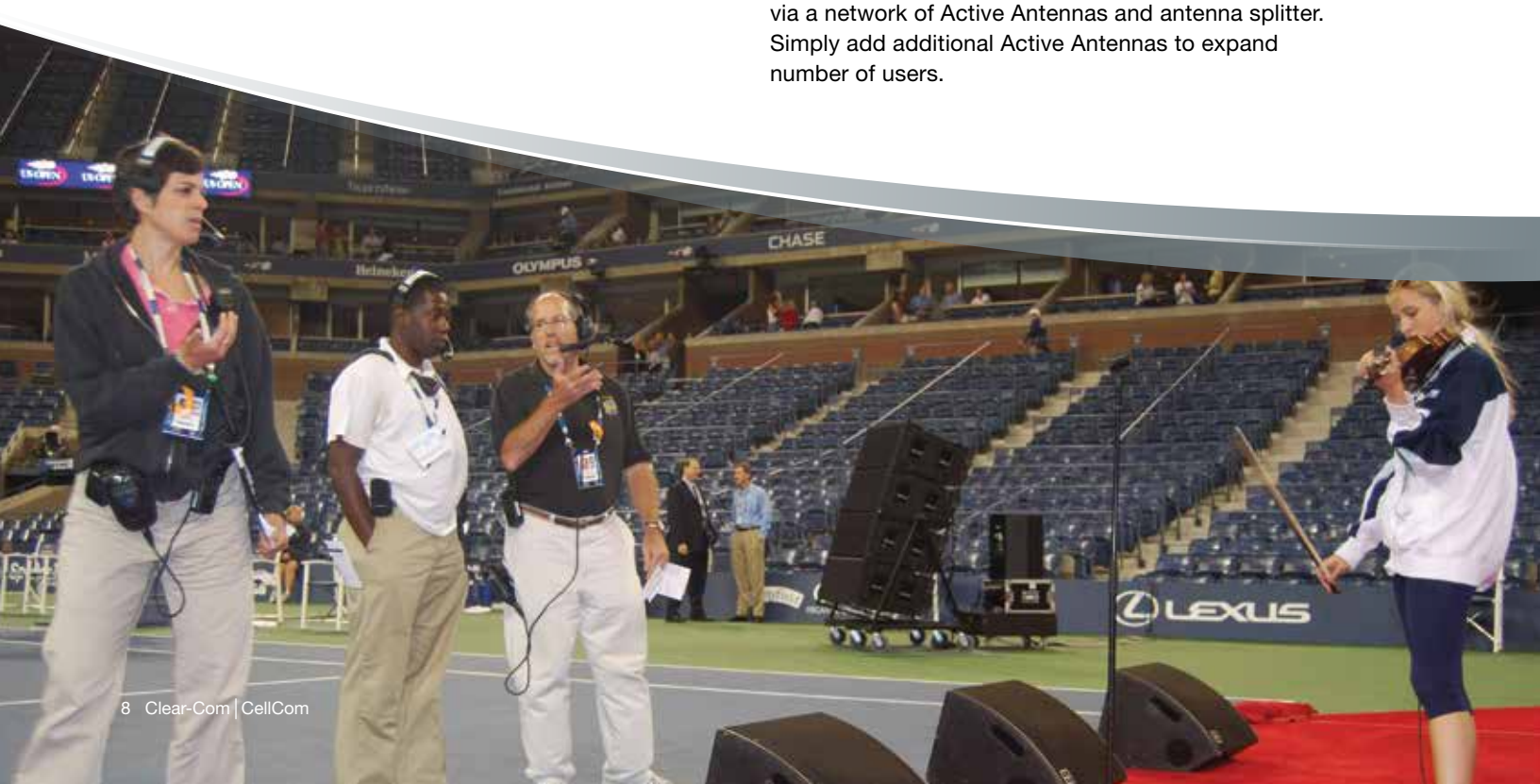
The E-Que card provides connectivity between the beltpacks and any number of ports within the Matrix System, thereby creating **a truly seamless environment**.

Up to **35 wireless beltpacks** per E-Que card (depending on environment) can roam between 40 Active Antennas and communicate on a Matrix System. Up to four E-Que cards can be used in one Matrix frame.

CellCom Integra offers the ability to **individually address** each beltpack and then connect that beltpack to one or many users on the Matrix.

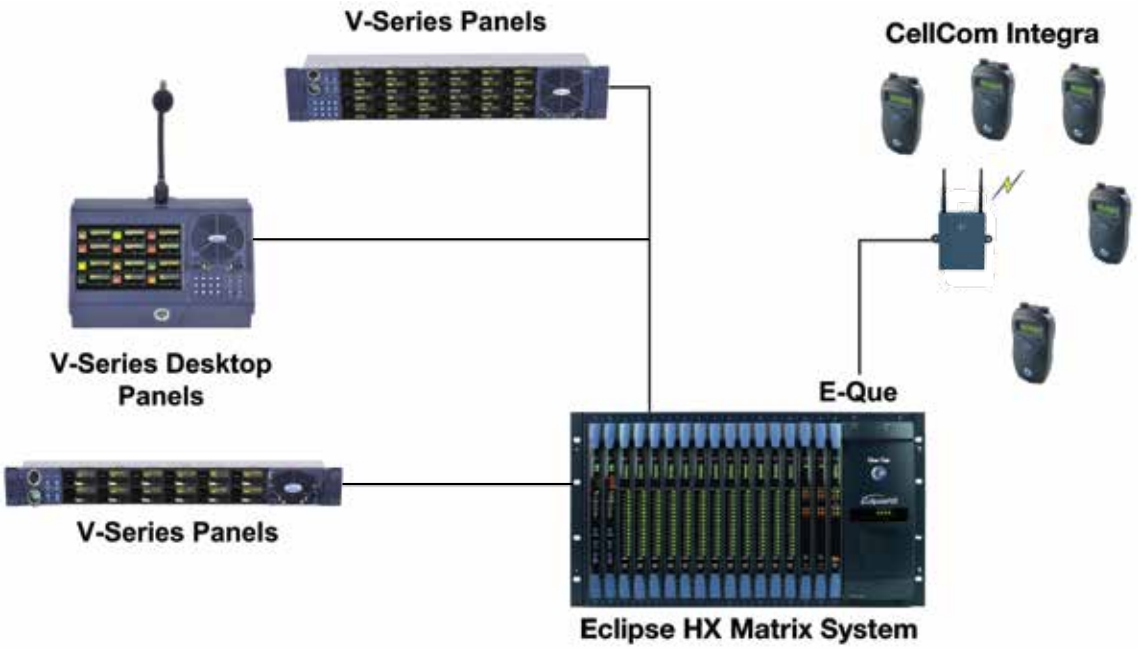
Patented Dynamic Port Allocation technology allows the beltpacks to roam between Active Antennas without breaking connections to the Matrix users.

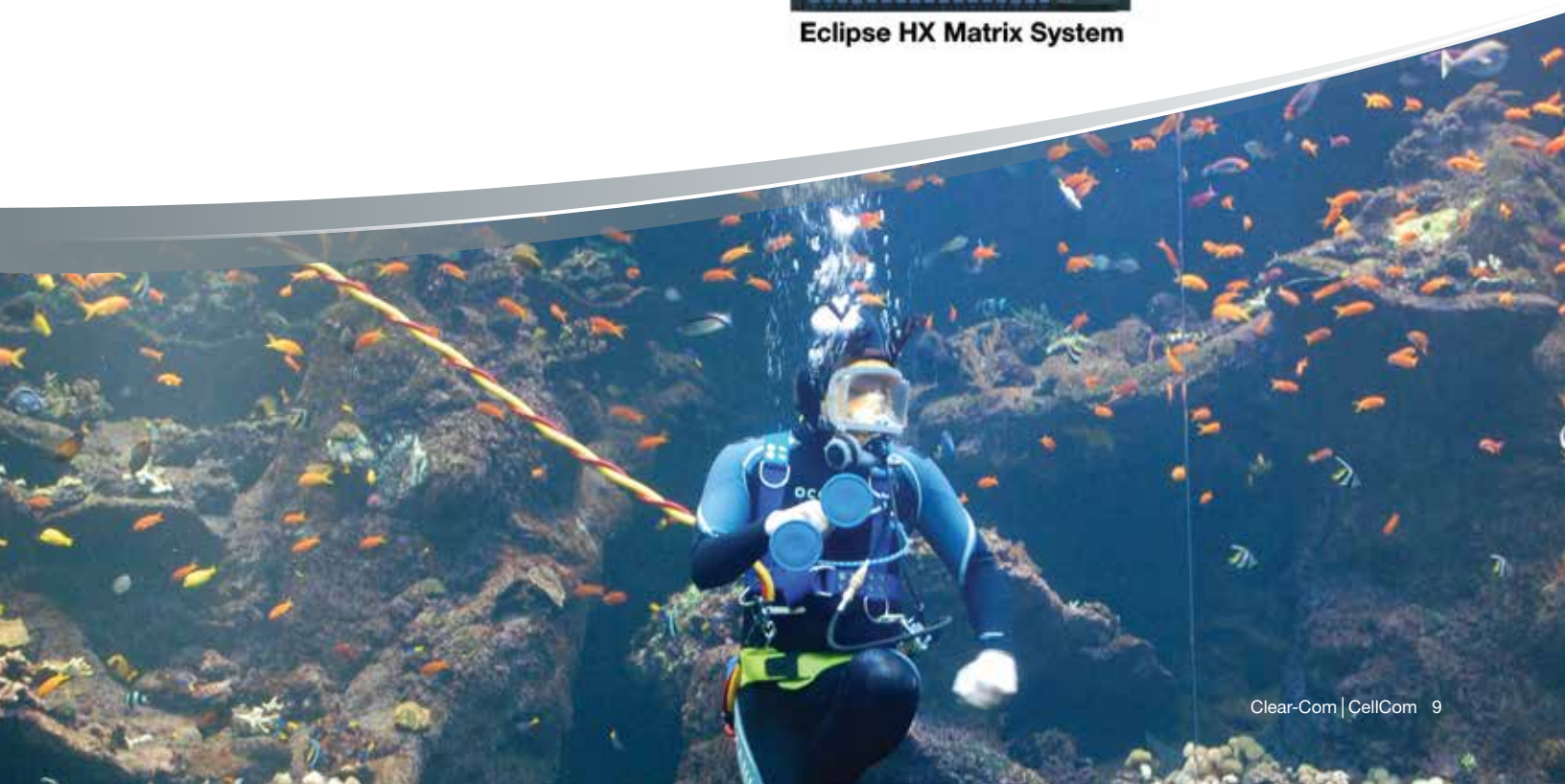
Standard CAT-5 cabling connects beltpacks to the Matrix via a network of Active Antennas and antenna splitter. Simply add additional Active Antennas to expand number of users.



KEY FEATURES

- Up to 35 users per E-Que card (depending on the environment)
- Up to four E-Que cards can be used in one Matrix (expanding up to 40 Active Antennas per system)
- Up to 800ft (50 to 150m typical) range under good radio frequency conditions - adding more Active Antennas can extend the range
- Cellular Roaming –free roaming between Active Antennas
- Digital encoding keeps calls private
- Quick & easy programming of audio routes from the beltpack via standard software
- Seamlessly integrates with Eclipse HX-Omega, Eclipse HX-Median and Eclipse HX-Delta matrices





BELTPACK-TO-BASE STATION TECHNICAL SPECIFICATIONS

CELLCOM BASE STATION	
Base-to-Beltpack Frequency Response	100Hz - 7.1kHz
No. of Beltpacks Per Base Station	20
No. of Transceiver/ Antennas Supported by Base, Basic Base	10
No. of Active Antenna Ports	2
PC Programming Port	DB9
Relay Port	DB9
Partyline Intercom A and Intercom B (each)	XLR-3F with XLR-3M loop through, on/off termination switch (via software)
Four-Wire/Matrix Connection	4 RJ-45 (Intercom 3 – 6)
Program Input	XLR-3F, transformer isolated, line-level input
Stage Announce Output	XLR-3M, transformer isolated, line-level output
Front-Panel Headset	4-pin male connector with 2-channel capability and individual talks and listens
Front-Panel Display	254 x 32 dot-graphic VFD
Front-Panel Indicators	2 Talk LEDs for front-panel headset, CH A and CH B partyline enable LEDs, Program Input enable LED, 10 individual antenna LEDs
Base-Station Programming/Editing	Push-to-enter rotary encoder
Dimensions	1RU unit, 1.75 x 19.0 x 12.5in (44 x 483 x 312mm) (HxWxD)
Weight	10.8lbs (4.9kg)

BELTPACK	
Audio Bandwidth	200Hz - 7.5KHz (G.722)
No. of Pages	3
No. of Full-Duplex Audio Paths	Up to 6 with individual level control (3 pairs)
Mode of Operation	Full-duplex on all routes
Level/Talk Controls	2 top-mounted push-to-talk rotary encoders
"Page"/Menu Scroll Buttons	2
Enter/Answer-Back Button	1
Frequency Spectrum	1.92-1.93GHz DECT Cellular auto-roaming technology
RF Output	200mW Burst, 17mW average
Range	Up to 800ft (50 – 150m typical) in good radio frequency conditions
Battery	4 AA Alkaline cells Rechargeable: 4 AA Ni-MH cells
Battery Charging	In unit, via external power supply connected to beltpack
Battery Life	8-10 hours with 4 x Ni-MH – also accepts 4 x Alkaline AA cells
Headset Connector	4-pin male, Clear-Com standard
Microphone Type	Electret and Dynamic, selectable in beltpack menu
Microphone Level and Headset Limiter	Selectable in beltpack menu
Headset Limiter	Selectable from beltpack menu
Environmental	-67°F to +158°F (-55°C to +70°C)
Dimensions	Tapered design at largest points approx. 1.5 x 3.5 x 5.75in (38 x 87 x 144mm) (dwh)
Weight	8.8oz (0.25kg) excluding batteries 12.4oz (0.35kg) including batteries

ACTIVE ANTENNA	
Beltpacks Supported Per Active Antenna	5
Active Antenna Transmission Range	Up to 800ft (50 – 150m typical) to beltpack (50 to 150m typical)
Active Antenna Output	200mW burst, 80mW average
Maximum Distance, Base to Antenna Via Transceiver Port	3,200ft (1,000m) on 4-pair CAT-5 or better cable
Maximum Distance, Antenna Powered by Base	975ft (300m) on CAT-5 or better cable
Local Powering	24VDC power supply
Connection to CellCom Base	RJ-45
Antenna Connector Type	Reverse Polarity SMA, two; supplied omnidirectional whip antennas
Mounting	Via integral tabs with holes for screws
Dimensions	1.5 x 5.0 x 6.1in (38 x 125 x 153mm) (HxWxD)
Weight	14oz (0.4kg)

ACTIVE SPLITTER	
No. of Antennas	5
No. of Splitters Per Base	2
Connection Between Base and Splitter	CAT-5 or better cable with RJ-45
Connection Between Splitter and Antennas	CAT-5 or better cable with RJ-45
Powering of Splitter	Locally powered via supplied external power supply
Weight	16oz (0.45kg)

TRANSMISSION METHOD	
Method of RF Operation	Uses two slots per beltpack for wider frequency response
Modulation	QPSK
Frequencies of Operation	from 1.92-1.93GHz (restricted by software)
RF Output	250mW burst, average as new FCC level 1 – 4mW

INTEGRA INTEGRATED WIRELESS TECHNICAL SPECIFICATIONS

SYSTEM (CELL CONTROLLER CARD, ACTIVE ANTENNA & ANTENNA SPLITTER)	
Frequency Spectrum	1.92 – 1.93GHz DECT Cellular auto-roaming technology
Size	**Cell Controller Card (in Matrix):** Standard 6RU Eurocard (HxWxD) **Active Antenna:** 6.18 x 5.04 x 1.61in (157 x 128 x 41mm) **Antenna Splitter:** 6.18 x 5.04 x 1.61in (157 x 128 x 41mm)
Maximum Beltpacks per Cell Controller	35
Maximum Cell Controller Cards per Matrix	4
Maximum Antenna per Cell Controller Card	10
Connection between Cell Controller Card & Active Antenna	2 x RJ45 (CAT-5 screened cable) up to 4,800ft (1,500m) from matrix
Environmental	-67°F to +158°F (-55°C to +70°C)

BELTPACK	
Audio Bandwidth	100Hz – 7.1KHz (G.722)
No. of Pages	6
Number of Duplex Routes Per Beltpack	Up to 12 with individual level control (6 pairs)
Mode of Operation	Full-duplex on all routes
No. of Full-Duplex Audio Paths	Up to 6 with individual level control (3 pairs)
Level/Talk Controls	2 top-mounted push-to-talk rotary encoders
"Page"/Menu Scroll Buttons	2
Enter/Answer-Back Button	1
Frequency Spectrum	1.92-1.93GHz DECT Cellular auto-roaming technology
RF Output	200mW Burst, 17mW average
Range	Up to 800ft (50 – 150m typical) in good radio frequency conditions
Battery	4 AA Alkaline cells, Rechargeable: 4 AA Ni-MH cells
Battery Charging	In unit, via external power supply connected to beltpack
Battery Life	8 - 10 hours with 4 x Ni-MH – also accepts 4 x Alkaline AA cells
Headset Connector	4-pin male, Clear-Com standard
Microphone Type	Electret and Dynamic, selectable in beltpack menu
Microphone Level and Headset Limiter	Selectable in beltpack menu
Headset Limiter	Selectable from beltpack menu
Environmental	-67°F to +158°F (-55°C to +70°C)
Dimensions	Tapered design at largest points approx. 1.5 x 3.5 x 5.75in (38 x 87 x 144mm) (dwh)
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Weight	16oz (0.45kg)

TRANSMISSION METHOD	
Method of RF Operation	Uses two slots per beltpack for wider frequency response
Modulation	QPSK
Frequencies of Operation	1.92-1.93GHz (restricted by software)
RF Output	250mW burst, average as new FCC level 2 – 4mW

Clear-Com®
AN HME COMPANY

Americas and Asia-Pacific Headquarters
California, United States
Tel: +1.510.337.6600
Email: SalesSupportUS@clearcom.com

Europe, Middle East, and Africa Headquarters
Cambridge, United Kingdom
Tel: +44 1223 815000
Email: SalesSupportEMEA@clearcom.com

China Office
Beijing Representative Office
Beijing, P.R.China
Tel: +86-10-65811360/65815577

www.clearcom.com

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