Tempest®2400/900

Tempest900
Available in U.S. and Canada

Tempest2400
Available Worldwide

Superior Performance and Dependability

For Wireless Communication with the Most Options

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)

A privately held company founded in 1971, HME has continued to be a leading provider of innovative technology focused on enhancing productivity and customer service for multiple markets including pro audio, sports, and restaurants. HME developed the first wireless intercom system for pro audio and continues to introduce exciting, cutting-edge wireless intercoms that enhance communications, increase productivity and facilitate creativity for virtually any application.

The Tempest® Wireless Platform

Wireless communication is an essential part of modern day productions and has become a vital piece of most intercom systems. With fewer resources and larger production areas, crew members need to do more, go farther and be mobile— and do so without missing a beat. Having reliable wireless intercom systems has never been more critical.

Areas of the frequency spectrum that have traditionally been used for wireless intercoms are crowded and more difficult to use. Licensing requirements, radio spectrum reallocation and the wide variety of technologies compete for the same air space.
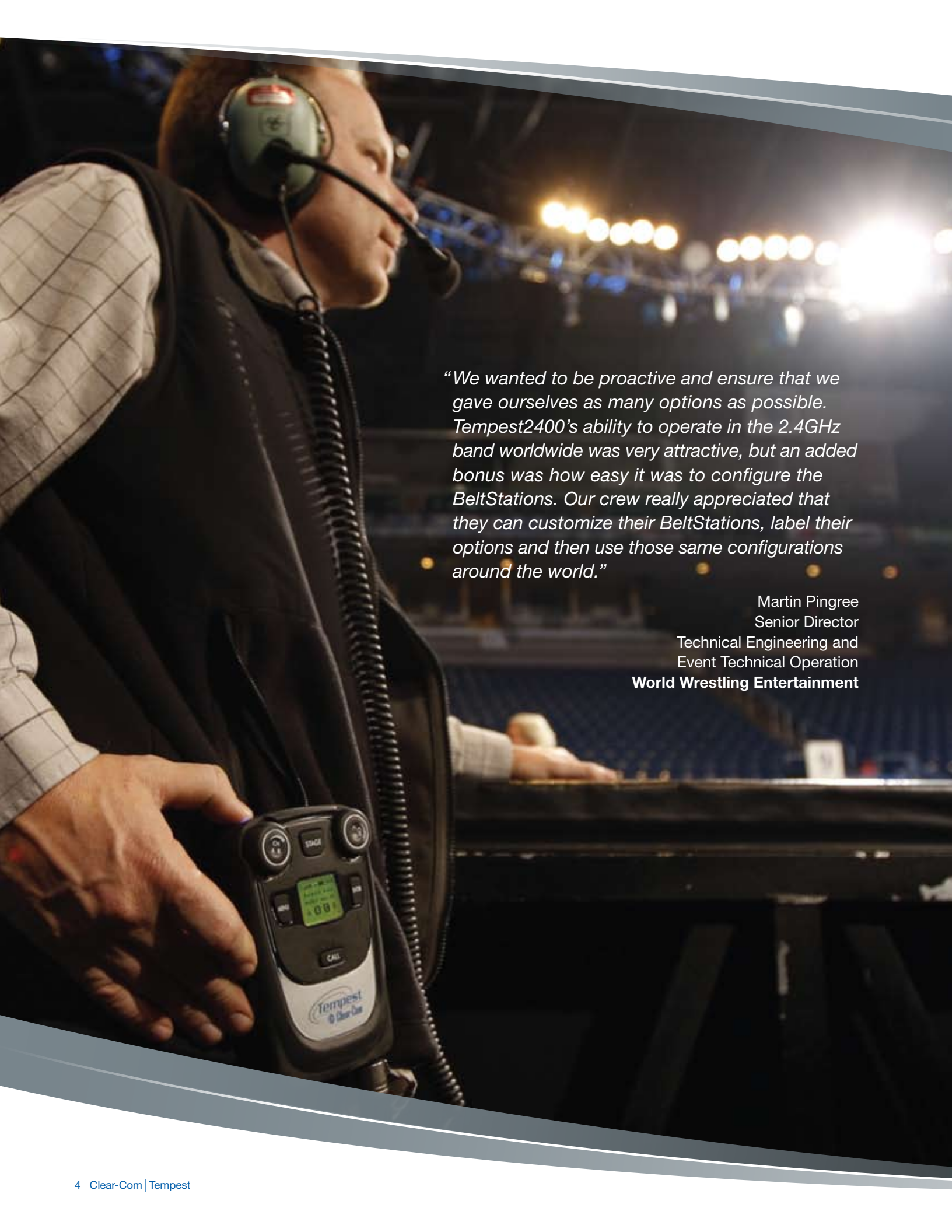
The Tempest® Wireless Platform offers a flawless solution to break through wireless interference and offer a comprehensive wired-intercom feature set with the convenience, flexibility and freedom of wireless operation.

The Tempest Wireless Platform currently comprises the Tempest2400 and Tempest900 systems, available in 2- and 4-channels, and in 2.4GHz or 900MHz frequency bands, respectively.

Tempest2400
Available Worldwide

The Tempest2400 and Tempest900 were designed to complement one another and to address the inherent characteristics of each RF technology. In appropriate environments where both systems are allowed to operate, the two products can also supplement one another, allowing an increase in the number of users that may be utilized in any given environment.

Tempest900
Available in U.S. and Canada

NEW!

"We wanted to be proactive and ensure that we gave ourselves as many options as possible. Tempest2400's ability to operate in the 2.4GHz band worldwide was very attractive, but an added bonus was how easy it was to configure the BeltStations. Our crew really appreciated that they can customize their BeltStations, label their options and then use those same configurations around the world."

Martin Pingree
Senior Director
Technical Engineering and
Event Technical Operation
World Wrestling Entertainment

Designed to meet the critical demands of production environments around the world.

Interference-Free Communication: Operates in license-free frequency bands where Tempest's advanced RF circuitry makes it highly resistant to interference from other wireless devices, even in the most crowded RF environments.

Unparallel Ease of Configuration and Use: Requires virtually no user RF knowledge or intervention, making setup and user operation simple and fast. System updates are effortlessly downloadable quickly via Internet and installation via USB port.

Comprehensive Wireless Intercom Options: Available in the 2.4GHz band (Tempest2400) or 900MHz band (Tempest900); with 2 channel and 4 channel varieties. The Tempest systems offer 2- and 4-wire intercom system compatibility, T-Desk system monitoring and control software, highly durable and weather-resistant BeltStations, and more.
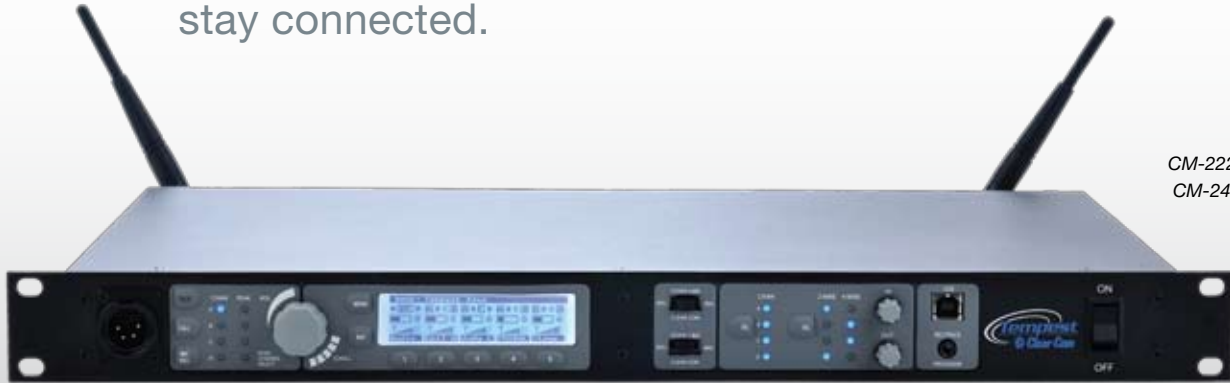
High User Capacity in Multiple Modes of Operations: Provides multiple modes of operation to meet users' needs, and allow many more simultaneous users than other wireless intercoms. An unlimited number of BeltStation users is achievable in Split or Shared Mode.

Highly Scalable and Extensible: Effortlessly expands to accommodate more users in growing productions by stacking multiple BaseStations and interfacing with compatible 4-wire or 2-wire intercoms.

2.4GHz Frequency Band:
License-free Operations with Worldwide Acceptance

Tempest2400's robust and reliable RF technologies make it the ideal wireless solution for indoors, outdoors and touring applications. Television and live productions around the world depend on Tempest2400 for ensuring users on wireless intercoms stay connected.

CM-222 (2-ch BaseStation)
CM-244 (4-ch BaseStation as shown here)

State-of-the-art 2xTX Transmission Voice Data Redundancy assures uninterrupted, high quality audio communications.
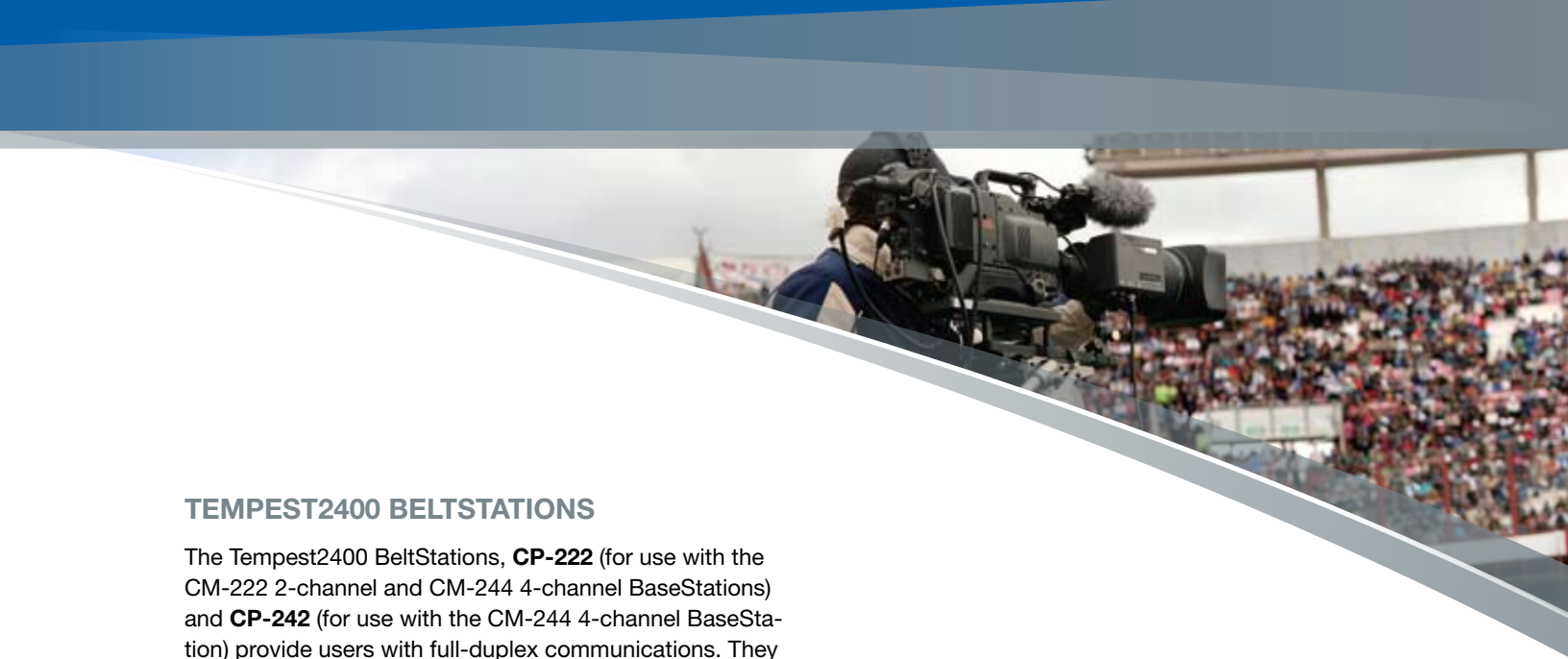
TEMPEST2400 BASESTATIONS

The Tempest **CM-222** (2-channel) and **CM-244** (4-channel) BaseStations are the most powerful systems in its class. In Normal Mode, the Tempest2400 wireless system can have up to 5 wireless BeltStations per BaseStation in full duplex, simultaneous operation. A total of 10 Tempest BaseStations and 50 Tempest full duplex wireless BeltStations can operate in close proximity while maintaining excellent system performance. The Shared and Split modes provide expanded user capacity and operational flexibility. (More details on pages 10-11).

Both CM-222 and CM-244 Tempest2400 BaseStations are compatible with existing 4-wire matrix or 2-wire Clear-Com, RTS or AudioCom partyline intercom systems. The LCD display makes setup easy and efficient while providing real time status of active BeltStations.*

Tempest2400 BaseStations are feature-packed with Stage Announce, Stage Relay, Auxiliary In/Out and Relay connections, Remote Mic Kill, Minimum and Maximum volume levels adjustable on a per BeltStation basis, and Wired BeltStation Call capabilities. Battery monitoring is available at the BaseStation and through the T-Desk application. BaseStations are provided with Omni-Directional Whip antennas and a Remote Transceiver that can be placed up to 1,500 ft (450 meters) from the BaseStation is available as an option.

*Only available for BeltStations operating in Normal Mode.

TEMPEST2400 BELTSTATIONS

The Tempest2400 BeltStations, **CP-222** (for use with the CM-222 2-channel and CM-244 4-channel BaseStations) and **CP-242** (for use with the CM-244 4-channel BaseStation) provide users with full-duplex communications. They are designed to be both comfortable and rugged in order to withstand the most challenging production environments.

The BeltStations are made of a durable, weather-resistant ABS co-polymer blend with a high performance polyurethane overmold. Tempest BeltStations are provided with a rechargeable Li-Polymer battery capable of 9+ hours of operation or can be powered by (3) Standard AA Alkaline batteries. Each BeltStation has its own back-lit display and menu functions which allow settings to be changed at the BeltStation locally as well as the BaseStation and T-Desk application in Normal Mode.

CP-222 BeltStation (2-channel audio) is capable of true dual talk/listen functionality, allowing each user to simultaneously monitor and/or talk on both channels (A and B).

CP-242 BeltStation (4-channel audio) is capable of true dual talk/listen functionality, allowing each user to simultaneously monitor and/or talk on two of the four channels (A or B and C or D).

Tempest2400 BaseStations and BeltStations Compatibility Summary:

	BELTSTATION MODELS	
BASESTATIONS	CP-242 (4-ch)	CP-222 (2-ch)
CM-222		X
CM-244	X	X

900MHz Frequency Band:
License-free Operations in U.S. and Canada

NEW!

Tempest900 ensures robust performance with less data packet loss and better coverage in environments where there are more structural obstacles, including dense walls (made from concrete or brick).

CM-944 (4-ch BaseStation) as shown here
CM-922 (2-ch BaseStation)

TEMPEST900 BASESTATIONS

The Tempest **CM-922** (2-channel) and **CM-944** (4-channel) BaseStations operate in the 900MHz frequency bands. Both CM-922 and CM-944 Tempest900 BaseStations are compatible with existing 4-wire matrix or 2-wire Clear-Com, RTS or AudioCom partyline intercom systems. The LCD display makes setup easy and efficient while providing real time status of corresponding BeltStations. BaseStations* can operate in one of three modes: Normal, Shared or Split (more details on Page 10-11).

In Normal Mode, the Tempest900 wireless system can have up to 5 wireless BeltStations per BaseStation in full duplex, simultaneous operation. A total of 5 Tempest900 BaseStations and 25 Tempest full duplex wireless BeltStations can operate in close proximity while maintaining excellent system performance.

Tempest900 BaseStations come fully featured with Stage Announce, Stage Relay, Auxiliary In/Out and Relay connections, Remote Mic Kill, Minimum and Maximum volume levels per BeltStation, and Wireless BeltStation Call capabilities. Battery monitoring is available at the BaseStation and through the T-Desk application. In addition, all BaseStations are provided with an Omni-Directional Whip antenna and a Remote Transceiver is available as optional accessory.

*For BeltStations operating in Normal Mode

TEMPEST900 BELTSTATIONS

The Tempest900 BeltStations, **CP-922** (for use with the CM-922 2-channel or CM-944 4-channel BaseStation) and **CP-942** (for use with the CM-944 4-channel BaseStation) provide users with full-duplex communications. Similar to Tempest2400 BeltStation models, the Tempest900 BeltStations are designed with a comfortable and rugged casing for long-term durability, can operate in either Normal or Shared Mode, and with flexible battery options.

CP-922 BeltStation (2-channel audio) is capable of true dual talk/listen functionality, allowing each user to simultaneously monitor and/or talk on both (A or B).

CP-942 BeltStation (4-channel audio) is capable of true dual talk/listen functionality, allowing each user to simultaneously monitor and/or talk on two of the four channels (A or B and C or D).

Tempest900 BaseStations and BeltStations Compatibility Summary:

	BELTSTATION MODELS	
BASESTATIONS	CP-942 (4-ch)	CP-922 (2-ch)
CM-922		X
CM-944	X	X

Unique to Tempest Systems, all BaseStations offer 3 modes of operation: Normal, Shared and Split Mode. All three modes are available in both Tempest2400 and Tempest900 systems.

NORMAL MODE

In Normal Mode, users can have up to 5 BeltStations per BaseStation. All BeltStations in this mode are in the standard operating mode giving the user control of the channels on which they operate and dual listen/talk functionality at any given time.

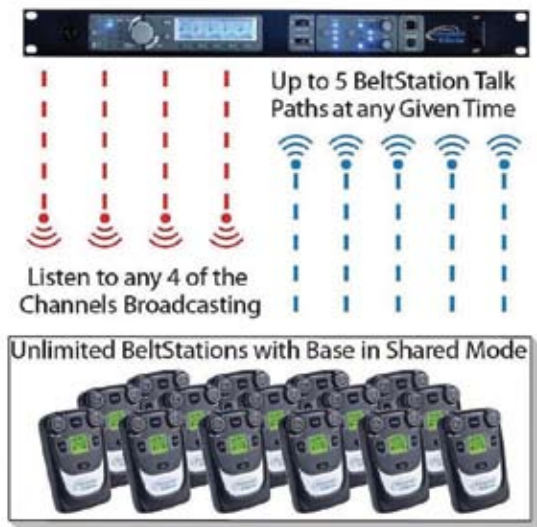- Each BeltStation has full duplex capability at all times

- BeltStation talk buttons may be operated in either momentary or latching mode

- Sidetone and microphone gain can be set individually for each Beltstation

- Full BeltStation telemetry is available in real-time at the BaseStation and T-Desk; settings can be adjusted from the BaseStation and/or T-Desk

Talk in Normal Mode

Listen in Normal Mode

SHARED MODE

The Shared Mode utilizes only BeltStations set as Shared, allowing an unlimited number of BeltStations per BaseStation. Only 5 Shared BeltStations may talk at any given time; however, they have all four channels available with dual talk and dual listen capability.
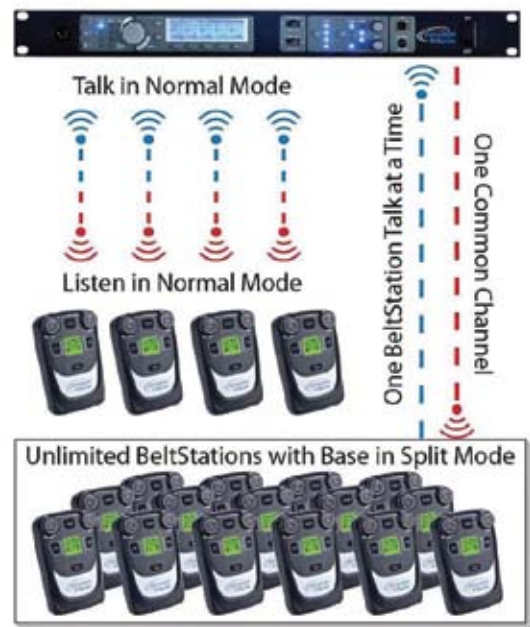
- All Shared BeltStations:

  » Are inherently full duplex (talk/listen at the same time)

  » Can easily be set into Shared Mode instead of Normal Mode from BeltStation menu

  » Operate in PTT (Push-to-Talk) only

  » Feature Stage Announce, Wireless ISO and Relays

  » No Telemetry or remote control from BaseStation and T-Desk

SPLIT MODE

In Split Mode, users are operating in a combination of the other two modes: Normal and Shared Modes. This mode offers the use of 4 BeltStations (per BaseStation) that utilize the full duplex capability and allows an unlimited number of Shared BeltStations to operate on the final slot.

- Four full-duplex BeltStations operating in Normal Mode

- Unlimited number of shared BeltStations may be used on a single channel

- BeltStations are inherently full duplex (talk/listen at the same time)

- Shared BeltStations operate in Push-to-Talk (PTT)

- One user of the common channel can speak at a time. Normal Mode users can be latched.

- Telemetry and remote control available from BaseStation or T-Desk for Normal Mode

T-Desk Software (Included with all Tempest systems)

All Tempest Wireless Intercom Systems are supplied with T-Desk, a PC-based desktop application for monitoring and managing the devices in a wireless network. Not only does T-Desk simplify the configuration and management process, it provides ultimate flexibility by allowing these functions to be performed from a remote location via a LAN (Local Area Network) connection. T-Desk provides an intuitive, self-evident method of optimizing multiple Tempest BaseStations and their associated BeltStations. T-Desk software is available for both 2.4GHz and 900MHz systems.

T-DESK BENEFITS

- Real time system monitoring and management
- Load and Save BeltStation and BaseStation profiles
- Visually friendly and easy to use interface
- 2-wire/4-wire and Auxiliary level control
- Mic Kill functionality
- Battery alert status
- Remote Beltpack sidetone and microphone adjustment (Normal Mode BeltStations only)

Profiles Screenshot

BaseStation Screenshot

BeltStation Screenshot

CCT-9RT (900MHz)

CCT-RT (2.4GHz)

T-BC5A: 5-Bay Battery Charger
Tempest 5-bay battery charger for charging Lithium-Polymer batteries outside of the BeltStation.

* Charger and batteries sold separately

CCT-RT: Remote Transceiver
Tempest Remote Antenna Transceiver is powered by Tempest BaseStation via CAT-5 cable up to 1500 feet (457 meters).

* Includes 15 ft (4.5 m) CAT-5 cable and two whip antennas.

CCT-DAKIT1: Directional Antenna Kit
Only available for Tempest2400
9 dBi directional antenna kit:
(2) 9 dBi directional antennas (w/mounting brackets),
(1) L-bracket (w/ (2) 5/8" (15.9mm) dia. mounting posts),
(2) 10 ft (4.5m) coax cables, (1) Bogen "C" clamp.

* Not available in EU countries.

T-LP1: Lithium-Polymer Battery
Tempest 3.6VDC, 2000mAh rechargeable Lithium-Polymer battery. The T-LP1 provides up to 9 hours of active use.

* Not available in EU countries.

TECHNICAL SPECIFICATIONS

TEMPEST2400 AND TEMPEST900 COMPARISON		
Model	Tempest2400	Tempest900
Frequency Range	2400-2480Hz	902-928Hz
Number of Discrete Frequencies	43	37
Number of Hopping Patterns	64	64
Number of Co-locatable Bases	10	5
Dual Antenna Technology	Yes	No
2xTX Technology	Yes	No
Propagation Tendencies	Reflects off hard surfaces	Penetrates hard surfaces
Band Adjustment Capability	Yes	No
RF Cable Loss	Up to 3x more than Tempest900	Up to 1/3 of Tempest2400

SYSTEMS SPECIFICATIONS		
Model	Tempest2400	Tempest900
RF Frequency	2400 to 2480GHz	902-928MHz
Effective Radiated Power	100mW EIRP using 2dBi antenna	250mW EIRP using 2dBi antenna
Radio Certification	FCC Part 15.247 and ETS 300.328 rules, license free	FCC Part 15 Canadian RSS-210, license free
RF Scheme	FHSS with TDMA	
Receiver Sensitivity	-93dBm for 10BER	-100dBm for 10BER
Audio Dynamic Range	>94dB	
Transmission Range	Up to 1,000ft (305m); 500 - 900ft (150 - 275m) typical	
Audio Frequency Response	300Hz - 3.8KHz with proprietary audio voice shaping	

BELTSTATION SPECIFICATIONS				
Model Number	CP-242	CP-222	CP-942	CP-922
RF Frequency	2400 to 2480GHz	2400 to 2480GHz	902-928MHz	902-928MHz
Intercom Audio Channels	4	2	4	2
Headset Connector	4-pin male XLR			
Microphone Type	Dynamic or Electret, Auto-Selected			
Antenna	Internal Patch			
Supplied Battery	Lithium Polymer			
Battery Charging	via mini USB connector using supplied charger			
Battery Life, Rechargeable-Lithium-Polymer	Up to 9+ hours	Up to 9+ hours	Up to 8+ hours	Up to 8+ hours
Battery Life, Alkaline	Up to 4 hours		Up to 3.5 hours	
Charge Time, Rechargeable Lithium Polymer	2 3/4 hours in BeltStation with mini USB charger; 2 1/2 hours in 5 bay charger (from empty)			
Alternative Power	3 Standard AA Alkaline cells			
Weight	14.3 oz (0.41kg)			
Environmental	-4˚ – 122˚F (-20˚ – 50˚C)			
Dimensions	4.0" (W) x 6.1"(H) x 1.75" (D) (102mm x 156mm x 44.5mm)			
Charger Input	100-240V, 0.3A, 50/60Hz			
Charger Output	5V, 1.25A			

BASESTATION SPECIFICATIONS				
Model Number	**CM-244**	**CM-222**	**CM-944**	**CM-922**
RF Frequency	2400 to 2480GHz	2400 to 2480GHz	902-928MHz	902-928MHz
Intercom Audio Channels	4	2	4	2
No. of Antenna Ports per BaseStation	2	1	1	1
No. of Synchronized BaseStations	10	10	5	5
No. of BeltStations (Normal)	5 per BaseStation/50 max	5 per BaseStation/50 max	5 per BaseStation/25 max	5 per BaseStation/25 max
No. of BeltStations (Shared)	Unlimited	Unlimited	Unlimited	Unlimited
Antenna Connector Type	RP-TNC			
BaseStation/BeltStation Pairing	3.5mm Mini-jack/cable			
Programming Port	USB			
Stage Announce and GPO Closures	6 relays via DB15			
2-Wire Intercom Interface	4 channels	2 channels	4 channels	2 channels
2-Wire Intercom Compatibility	Clear-Com, RTS and Balanced compatible			
4-Wire/Matrix Connection	4 ports via RJ-45	2 ports via RJ-45	4 ports via RJ-45	2 ports via RJ-45
Aux Output	1/4" 3-conductor jack nominal -12 to +8dBV, balanced, transformer isolate			
Front Panel Headset	4-pin male XLR			
Microphone Type	Dynamic or Electret, Auto-Selected			
Weight	10.5 lb (4.75 kg)			
Environmental	-4˚ – 122˚F (-20˚ – 50˚C)			
Dimensions	19in. W x 1.75in. H x 12in. D (483mm x 44mm x 305mm)			
Power	100-240V, 50/60Hz, 11-32V, DC Power			

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