

WBS-670/680 Wireless Intercom Systems



Frequency-agile UHF wireless intercom systems

Whether you are adding to a wired intercom system or creating a stand-alone wireless communications system, the WBS-670 and WBS-680 wireless intercoms are excellent choices. Clear-Com's UHF Synthesized Wireless Intercom Systems combine frequency agility and powerful features to maintain the audio clarity and reliability that a wired system provides. These systems extend the reach of your communications system in live performance, studio and mobile television production, industrial and aerospace applications, or wherever full-duplex wireless communications are required.



Frequency-agile UHF Operation

The WBS-670 and WBS-680 operate in select frequency bands between 470-686 MHz; both wireless systems are supplied with 24 factory-selected, intermodulation-free frequencies. Select from factory presets or any suitable frequency in 25 KHz increments. 720 Tx and 720 Rx frequencies can be selected; each from independent 18 MHz operational bands.

Adjustable Transmitter Power

The beltacks can sense when operating in close proximity to the base station and intelligently reduce transmitter output by 10 dB. This effectively eliminates overloading the base station receiver front end which is the primary cause of "near-far" densing problems. WBS wireless system beltacks operate in normal power mode for typical distances; a manual high-power setting is available when operating the equipment more than 200 ft (160 m) for the base station.

Pre-Selected Compatible Frequencies and Frequency Scan

System setup is easy with the 24 internal pre-selected and intermodulation-free frequency groups. Aided by the "ClearScan" function, base stations and beltacks can typically be coordinated and working together within minutes. Memory locations can be allocated so that particular sets of frequencies can be chosen, programmed and saved as a new preset.

Graphical User Interface

A clear, backlit LCD screen displays the status of the beltacks and provides easy access to all the powerful features as well as configuration of the operational parameters. The LCD displays which beltack is transmitting, operating frequencies, and group/channel status.

Superior Audio Quality and Range

The audio quality of the WBS-670 and WBS-680 wireless systems is on par with that of professional wired party-line and digital matrix intercoms. UHF frequencies

are ideally suited for operating through obstacles; a variety of remote antenna options can help improve range in difficult, interference-prone production environments.

Seamless Connection to Wired Intercoms

WBS wireless systems can interface with a variety of 2-wire party-line or 4-wire digital matrix systems. In addition to interfacing with external intercom systems, the systems provide connections for auxiliary balanced audio input and output. Wireless Talk-Around (WTA) and Stage Announce (SA) features are available on WTR-680 and WTR-682 beltacks.

Rechargeable Battery Option

The battery pack will operate the beltack in full-duplex mode for 14 hours with a set of alkaline batteries. The optional rechargeable NiMH (nickel metal hydride) batteries will give over 11 hours of continual use. Chargers are available in single-bay or 4-bay configurations.

WBS-670 Single-Channel Wireless

The WBS-670 1RU, rack-mountable base station supports up to four full-duplex wireless beltpack. The base station features a full talk/listen headset so an additional person could communicate with the intercom channel while at the base. Rear panel connections allow multiple base station/beltpack systems to operate as one large system. The WTR-670 beltpacks are constructed of extremely light, durable cast magnesium. The detachable antennas are secured to the beltpack via threaded post connectors and thus will not break or damage easily. The beltpacks feature a low-profile volume control and a robust, distinguishable momentary latch talk button.



The LCD screen displays which beltpacks are transmitting the operating frequencies and group/channel status. In addition, the front panel provides controls to adjust the input and output levels of both the connected wired intercom and auxiliary audio connection. The rear panel offers a 3-pin XLR loop-through connectors for one channel of wired party-line intercom,

an RJ-45 connector for direct connection to a digital 4-wire intercom port, and a pair of auxiliary connectors. The base station is supplied with a pair of efficient, half-wave co-linear antennas; connected to the rear panel transmit and receive receptacles via TNC male connectors. A variety of external antennas may also be used.

WBS-680 Two-Channel Wireless

Like the WBS-670, the WBS-680 is a 1RU, rack-mountable base station that supports up to four full-duplex wireless beltpacks and provides a full talk/listen headset station. Rear panel connections allow the WBS-680 base station to connect to two separate channels of wired intercom; 2-wire, 4-wire or both. The WTR-680 beltpack provides a toggle switch enabling the user to communicate with either intercom channel A or B (including any wired intercoms connected at the base station).

The WTR-680 and WTR-682 beltpacks offer advanced features such as the Wireless-Talk-Around (WTA) and Stage Announce (SA) which provide added flexibility and expands the control of the mobile user.



The WTA button momentarily routes audio to only the wireless beltpacks monitoring the current channel. This effectively isolates communications to the wireless beltpacks on that channel; this isolation (ISO) channel is useful in complex productions where WTA is often used as a third channel. The Stage Announce (SA) button allows a (dry) relay signal to be fired from the Stage Announce output on the back of the base station. This

relay can activate a loudspeaker, two-way radio, IFB or any other relay activated device.

The WTR-682 is the most versatile beltpack as it provides two separate volume controls and two separate channel select buttons (A and B). The WTR-682 allows the user to simultaneously talk/listen to both channels while maintaining the ability to control the level of each individual channel.

WBS-670/680 Specifications

Overview

	WBS-680/WBS-670 Base Station	WTR-680/WTR-682/WTR-670 Beltpacks
RF Frequency Range	518-608 MHz, 614-686 MHz in 18 MHz TX and RX bands WBS-670: G9 band, 796-814 MHz Tx, Germany only	518 - 608 MHz, 614 - 686 MHz in 18 MHz TX and RX bands WTR-670: G9 band, 844-862 MHz Tx, Germany only
Power Requirement	100-240 VAC, 50-60 Hz, IEC receptacle	6 Alkaline "AA" Cells (NiMH optional)
Typical Battery Life Alkaline	N/A	14 Hours (Continuous duty with talk light on)
Typical Battery Life - Nickel Metal Hydride (1500 mAh)	N/A	11 Hours (Continuous duty with talk light on)
Current Draw	N/A	140 mA (Push-to-Talk, Talk On)
Temperature Range	-4°F to 140°F (20°C to 55°C)	-4°F to 140°F (20°C to 55°C)
Dimensions	19.0" W x 1.72" H x 14.0" D (48.3 cm x 4.4 cm x 35.6 cm)	3.75" W x 5.05" H x 1.65" D (9.5 cm x 12.8 cm x 4.2 cm)
Weight	WBS-680: 7 lbs. 2 oz. (3.24 kg) WBS-670: 6 lbs. 15 oz. (3.15 kg)	16 oz. (0.454 kg) with batteries 15 oz. (0.425 kg) with batteries
Transmit Antenna	1/2 Wave (supplied), TNC Male Connector	1/4 Wave (supplied), Screw type
Receiver Antenna	1/2 Wave (supplied), TNC Male Connector	1/4 Wave (supplied), Screw type
FCC ID	B5DM514	B5DM515
Frequency Response	300 Hz - 8,000 Hz	300 Hz - 8,000 Hz
Four-Wire Input	Level Adjustable (2 Vrms typical)	N/A
Four-Wire Output	Level Adjustable (2 Vrms typical)	N/A
Clear-Com® Party-line Levels	Input/Output Level Adjustable (1 Vrms typical), Line Impedance 200 W	N/A
RTS® Party-line Levels	Input/Output Level Adjustable (0.775 Vrms typical), Line Impedance 200 W	N/A
Telex® Party-line Levels	Input/Output Level Adjustable (1 Vrms typical), Line Impedance 300 W	N/A
Auxiliary Input	Adjustable (2 Vrms typical)	N/A
Auliliary Output	Adjustable (2 Vrms typical into 600 W) (at rated deviation)	N/A
Stage Announce Output (WBS-680 only)	Internally Adjustable (1Vrms typical at rated deviation into 100K W)	N/A
Stage Announce Relay (WBS-680 only)	Dry contact, rated at 1Amp, 24 V Max. / N/A	N/A

Transmitter

	WBS-680/WBS-670 Base Station	WTR-680/WTR-682/WTR-670 Beltpacks
Type	Synthesized, 720 channels	Synthesized, 720 channels
Transmit Power	WBS-680: 100 mW max. (High), 10 mW (normal) WBS-670: 50 mW max. (High), 5 mW (normal)	WTR-680/WTR-670: 50 mW max. (auto-power reduction when close to base)
RF Frequency Stability	0.005%	0.005%
Modulation	FM, 40 KHz Deviation	FM, 40 KHz Deviation
Modulation Limiter	Peak-Responding Compressor	Peak-Responding Compressor
Modulation Frequency Range	300 Hz -8,000 Hz +2 dB	300 Hz -8,000 Hz +2 dB
Microphone Audio Input	30 W - 3,500 W	30 W - 3,500 W
Microphone Input Sensitivity	9 mV	9 mV
Radiated Harmonics & Spurious	Exceeds FCC specifications	Exceeds FCC specifications
FCC Acceptance	Type accepted under FCC Part 74	Type accepted under FCC Part 74

Receiver

	WBS-680/WBS-670 Base Station	WTR-680/WTR-682/WTR-670 Beltpacks
Type	Dual Conversion Superheterodyne, Synthesized, FM, 720 channels	Dual Conversion Superheterodyne, Synthesized, FM, 720 channels
RF Sensitivity	<0.7 mV for 12 dB SINAD	<0.7 mV for 12 dB SINAD
Signal-to-Noise Ratio	95 dB	95 dB
IF Selectivity	3 dB at 230 KHz	3 dB at 230 KHz
Image Rejection	70 dB or better	70 dB or better
Squelch Quieting	95 dB	95 dB
RF Frequency Stability	0.005%	0.005%
Distortion	<1% at full deviation	<1% at full deviation
Local Headset Output	40mW output into 600 W (1% distortion)	40mW output into 600 W (1% distortion)
FCC Acceptance	Notification under FCC Part 15	Notification under FCC Part 15

WBS-670/680 WBS Battery Chargers

WTR1C

The WTR1C is a single battery charger that provides built-in maintenance capability to maximize the battery cycle life for the WBS-670 and WBS-680 wireless intercom systems. It helps to optimize the battery and maintains the battery's peak capacity while it is charging. There is no restriction to how long the battery can remain in the charger. Rapid Charge capabilities fully charge batteries in less than 2 hours.



WTR4C

The WTR4C has the same features as the WTR1C, except that the WTR4C can charge up to 4 batteries simultaneously.



Status Indicators:

- Charging LED - Solid light indicates battery pack is charging
- Ready LED - Solid light indicates battery is fully charged
- Rejected LED - Flashing light indicates faulty or dead battery
- Power LED - Solid light indicates there is power to the charging slot
- Conditioning Cycle LED - Flashing light indicates discharging process

Features:

- Easy-to-read LED status indicator lights
- Battery is fully charged in less than 2 hours
- Maintains battery at peak capacity
- Optimizes battery life
- Battery can remain in charger indefinitely

WBS-670/680 Specifications

BC-800NM4 & BC-800NM Battery Chargers

Physical Characteristics	BC-800NM4	BC-800NM
Product Dimensions	13" (33cm) W x 1.7" (4.5cm) H x 7" (17.8cm) D	3" (7.62cm) W x 3.5" (8.89cm) H x 6" (15.24cm) D
Product Weight	4lbs (1.5kg) without battery adapters	1lb, 6oz (0.62kg)
Shipping Dimensions	11.5" (29.2cm) W x 10.5" (26.7cm) H x 18.5" (47cm) D	7" (17.8cm) W x 4.5" (11.43cm) H x 7" (17.8cm) D
Shipping Weight	10lbs, 9oz (4.8kg) with battery adapters, power supply, & rechargeable battery packs	2lbs, 10oz (1.2kg) with rechargeable battery pack & power supply
Material	ABS KJW fire retardant plastic, textured	ABS KJW fire retardant plastic, textured

Features	
Conditioning Cycle	Provides built-in maintenance capability to maximize battery cycle life
Status Indicators	'Charging', 'Ready', 'Rejected' (dead battery), 'Conditioning Cycle' and 'Power LED' indicators make the BC-800NM simple and easy to use
Intelligent Charging	• Optimizes the battery • Battery can remain in the charger indefinitely • Maintains battery at peak capacity
Rapid Charge Capability	Charges in less than 2 hours

User Environment	
ESD	8KV continuous contact discharge; 15KV from air to all surfaces without contact
Humidity	95% relative humidity (non-condensing)
Drop	Unit functions normally after 4ft./1.2m drop to concrete
Storage Temperature	-40° to 122°F/-40° to 50°C
Operating Temperature	32° to 122 F/0° to 50°C
Power Supply	BC-800NM4: (Universal): 90V-230VAC, 50/60 Hz Output: 15 VDC, 5A or 24 VDC, 4.5A BC-800NM: (Universal): 90V-230VAC, 50/60 Hz Output: 15 VDC, 1.5A or 24 VDC, 1.3A
Safety Standards	Charger & power supply UL listed (UL 1950), CSA Certified (C 22.2 No. 223); Compliant to FCC part 15 Class A and CE Marking (Electromagnetic Compatibility) Directive 89/336/EEC and Low Voltage Directive 73/23/EEC; C15PR-22 Class B

Performance Characteristics	
Rapid Charge	Charges batteries to 90+% capacity in 2 hours or less
Complete Charge	Completes 100% capacity charge in 4 hours or less
Conditioning	Completely discharges a battery and automatically switches to charging mode
Maintenance Charge	Maintains the battery at optimum capacity indefinitely

User Interface	
Power LED	Indicates POWER to charging slot
Conditioning/Charging LED	Flashing indicates discharging process
Reject LED	Flashing indicates faulty battery
Conditioning/Charging LED	Solid indicates battery pack is being charged
Ready LED	Solid indicates battery charged

WBS-670/680 UHF Frequency Band Chart

NTSC TV CHANNEL	Start Frequency	End Frequency	Frequency Band Options	PAL TV CHANNEL	Start Frequency	End Frequency	
14	470	476	88	21	470-478		
15	476	482			22	478-486	
16	482	488			23	486-494	
17	488	494			24	494-502	
18	494	500			25	502-510	
19	500	506			26	510-518	
20	506	512			27	518-526	
21	512	518	A	28	526-534		
22	518	524			29	534-542	
23	524	530			30	542-550	
24	530	536	B	31	550-558		
25	536	542			32	558-566	
26	542	548	C	33	566-574		
27	548	554			34	574-582	
28	554	560	E	35	582-590		
29	560	566			36	590-598	
30	566	572	NOT USED IN USA	37	598-606		
31	572	578			38	606-614	
32	578	584			39	614-622	
33	584	590			40	622-630	
34	590	596			41	630-638	
35	596	602			42	638-646	
36	602	608			43	646-654	
37	608	614			44	654-662	
38	614	620			45	662-670	
39	620	626			46	670-678	
40	626	632	2	47	678-686		
41	632	638			48	686-694	
42	638	644			49	694-702	
43	644	650	3	50	702-710		
44	650	656			51	710-718	
45	656	662	4	52	718-726		
46	662	668			53	726-734	
47	668	674			54	734-742	
48	674	680	6	55	742-750		
49	680	686			61	790-798	
53	704	710			62	798-806	
54	710	716	C6 not available in parts of N. America	63	806-814		
55	716	722			64	814-822	
					65	822-830	
	796	802	G	66	830-838		
	802	808			67	838-846	
	808	814			68	846-854	
	844	850	9	69	854-862		
	850	856					
	856	862					

- Transmitt Bands
- Receive Bands

Single Channel Wireless Intercom System (WBS-670) Frequency Band Options: A2, B4, C3, C6, G9

Two-Channel Wireless Intercom System (WBS-680) Frequency Band Options: A2, B4, C3, C6, E88



Americas and Asia-Pacific

850 Marina Village Parkway, Alameda, California 94501, United States. Tel: 1.510.337.6600 Fax: 1.510.337.6699

Europe, Middle East and Africa

7400 Beach Drive, IQ Cambridge, Cambridge CB25 9TP, UK. Tel: +44 1223 815000 Fax: +44 1223 815099

China

Rm 706, Tower B, Derun Building, YongAn Dongli A No.3, Jianwai Ave., Chaoyang District, Beijing, China 1000223. Tel: 008610-8528-8740
北京市朝阳区建国门外大街永安东里甲3号德润大厦B座706

Montreal

Clear-Com Research, 1440 Hocquart Street, Suite 221, Quebec J3V 6E1, Canada. Tel: 1.450.653.9669 Fax: 1.514.292.7915