Electro-Voice

Pro Sound

Microphones



Born and bred in the American heartland, Electro-Voice lays claim to over 80 years of unmatched innovation in microphone design and manufacturing. Back in 1927, company founders Al Kahn and Lou Burroughs started out as true pioneers, establishing the industry standard for audio engineering excellence and reliability while continuously upping the ante with breakthrough technologies like the Humbucking coil for noise cancellation, Variable-D™ for proximity control, and VOB™ for reduced resonant distortion at low frequencies.

Eight decades on, Electro-Voice microphones continue to deliver the sound of history's most significant events. We've helped the world hear everything from the very first radio broadcasts to John Glenn's first orbit of the Earth; from Elvis and the Beatles to the largest world tours with today's biggest artists; from Knut Rockne using his "Electric Voice" at Notre Dame to the state-of-the-art wireless microphone systems at this year's Superbowl; from Presidential inaugurations to tonight's evening news; from Dr. Martin Luther King's "I Have A Dream" speech to the Next Big Thing rehearsing in the garage next door…

Staying true to its roots as a great American brand, Electro-Voice continues to reach new heights in the 21st century. We were the first to advance microphone technology with N/DYM™ neodymium magnetic structures, and the first to bring fast, automatic channel-coordination to wireless microphones with ClearScan™. But that's just the beginning—our engineers are constantly working on new ways to capture the full richness and nuance of your tone.

Whether you're outfitting a world tour, a house of worship, a professional studio, or a school auditorium, Electro-Voice microphones offer great sound, durability, ergonomics, and style. From time-tested classics to our latest innovations, every product is built to withstand both the rigors of performance and the scrutiny of your listeners. At Electro-Voice, making you sound your best—from soundcheck to encore, night after night, year after year—is both a longstanding tradition and our number-one job.

Table of Contents:

Electro-Voice Artists 2

Wired Microphones 4

Live Performance Microphones

PL Series 6
NDYM Series 8
RE Live 10
Cardinal / Raven 11

Broadcast Microphones

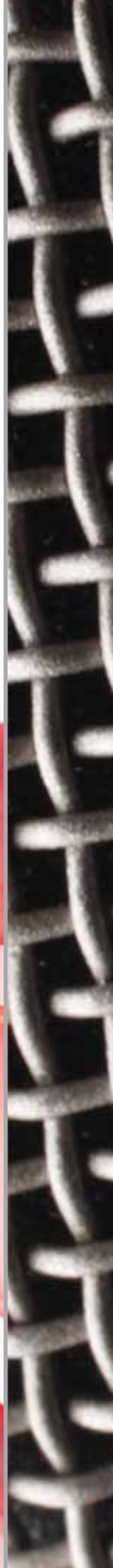
RE Broadcast 12
Field Production 13

Installation Microphones

PolarChoice 14
RE Installation 16
General Purpose 18
Wired Accessories 19
Wired Guidelines 20
Microphone Selection Chart 22

Wireless Microphones 24

RE-2 26
RE-2 PRO 28
REV 30
Wireless Antenna Accessories 32
Wireless Microphones 34
Wireless Kits, Accessories, and Cables 36
Wireless Guidelines 38



Electro-Voice Artists

Electro-Voice equipment is designed to combine superb sound quality with rugged, real-world reliability. Whether you're a regional band, a busy DJ, or an international artist on tour, the Electro-Voice name ensures your signature sound remains intact, show after show. Electro-Voice gear is made by musicians and audio enthusiasts for musicians and audio enthusiasts – you live for sound, and so do we. That's why we're the choice of hard-working performers everywhere, and that's why our community of artists continues to grow across all genres. Visit www.electrovoice.com/evartists to learn more about our family and thanks for choosing EV!

































Wired Microphones

Live Performance Microphones

Electro-Voice is a proven leader in the design and manufacture of live sound microphones. Preferred by performers the world over since the company was founded in 1927, Electro-Voice microphones have long been the choice of the music industry's greatest artists. Why do so many top-name performers choose Electro-Voice?

Trusted by artists and their skilled engineers and technicians, our legendary capsules are engineered to deliver the highest quality tone and clarity in any performance situation.

Rugged design and construction ensures that Electro-Voice capsules—the heart of any microphone's performance—remain unfazed by treatment that would ruin lesser brands.

Superior polar pattern design enables exceptional control of gain before feedback in both mains and monitors.

Performances that is sonically spectacular for both the audience and the artist. The Electro-Voice sound is synonymous with the highest quality and musicality.

Broadcast Microphones

Led by the industry-standard RE20 and RE27N/D Variable-D™ vocal microphones, Electro-Voice broadcast studio and field production microphones confidently uphold their legendary reputation for excellence. These number-one choices for voiceover and interview work in radio and television continue to define the sound and the reliability demanded by broadcast professionals around the world.

In broadcast field production, where unquestioned reliability and spot-on sonic performance are prime requirements, Electro-Voice mics are the industry's go-to workhorses. For decades, you've seen Electro-Voice microphones in the hands of reporters and news correspondents across the globe, capturing interviews ranging from the President of the United States to the family next door. EV's RE50 and 635A mics are famous in broadcast, television, and radio in-the-field broadcasts, setting the world standard for ENG (electronic news gathering) and EFP (electronic field production). Extremely rugged and able to withstand high humidity, temperature extremes, and corrosive environments such as salt-air, Electro-Voice field production microphones combine excellent sound performance with our legendary "Buchanan Hammer" durability.

Installed Sound Microphones

Electro-Voice remains on the cutting edge of installed sound technology through innovative adaptation of our legendary RE and PolarChoice condenser capsules. These premium-grade elements are world-renowned for their superb sonic performance.

Electro-Voice's breakthrough PolarChoice technology sets new standards in installed sound convenience, reliability, and performance. Designed for versatility and error-free setup, each PolarChoice model incorporates four switchable polar patterns strategically designed for installation-specific applications. Selection and deployment is as easy as choosing the best physical design for the situation and setting the polar pattern switch for the appropriate coverage. Should installation conditions change, a simple switch of the pattern is all it takes to meet the new requirements.



The PL Series is a comprehensive family of vocal and instrument microphones for the professional live sound and studio community. Featuring seven vocal models and three instrument models, the PL Series' exceptional durability, sonic performance and contemporary styling meet the needs of today's sound system professional.

PL80a — Premium Dynamic Vocal Microphone



The PL80a is a premium-grade supercardioid dynamic microphone designed to elegantly capture the character of vocals in live sound applications. Its EQ-friendly sonic contour adapts well to any vocal texture, allowing vocals to sit nicely in the mix without sounding harsh.

Also available: PL80c with the classic beige PL finish.

- **Incredible vocal power and clarity**
- **Robust, forgiving, EQ-friendly performance**
- **Superior off-axis rejection**
- **Ultra-low handling noise**
- **Exceptionally cooperative tonal characteristics**

PL33 — Dynamic Kick Drum and Instrument Microphone



The PL33 is a supercardioid dynamic microphone designed to deliver the power, punctuation and snap of kick drums in sound reinforcement systems or recording studios of any size. Its frequency response is strategically crafted to deliver great kick drum sound with little, if any, additional EQ-ing.

- **Voiced specifically for kick drums and low-frequency instruments**
- **Powerful neodymium magnet structure**
- **Tight-mesh Memraflex™ grille**
- **Supercardioid polar pattern**
- **Dynamic element**

PL35 — Dynamic Tom, Snare, and Instrument Microphone



The PL35 is a professional-grade supercardioid dynamic microphone designed to deliver the power, punctuation and natural tones of tom and snare drums in sound reinforcement systems or recording studios of any size. Delivery includes the unique DRC-1 drum-rim clamp.

- **Voiced specifically for snare drums and tom-toms**
- **Powerful neodymium magnet structure**
- **Complete with DRC-1 drum rim clamp**
- **Supercardioid polar pattern**
- **Excellent isolation from surrounding drums**
- **Dynamic element**

PL37

Condenser Overhead and Instrument Microphone



The PL37 is a tight-cardioid condenser microphone designed to capture all the crisp detail of cymbals, high-hats and percussion instruments on stage or in the studio. The PL37 delivers the dialed-in tone and detailed response to percussive transients that professional drummers and sound system engineers require.

- **Small diaphragm condenser**
- **Voiced for drum overheads, hi-hat, and acoustic stringed instruments**
- **Tight-mesh Memraflex™ grille**
- **Tight cardioid polar pattern**

PL Drum Kits

Pre-pack Drum Kit



PL Series drum mics are also available in pre-pack assortments of our most requested drum set configurations. Ready for the gig, these kits come in a heavy-duty firm-shell gig bag (with shoulder strap) that can hold an expanded PL Series drum mic set of up to six PL35's, three PL37's, and one PL33.

PL DK model and contents:

- **PL DK7 (for a five-piece drum kit): Four PL35's, one PL33, and two PL37's**

	PL80a, PL80c	PL33	PL35	PL37
Element	Dynamic	Dynamic	Dynamic	Condenser (self-biased)
Polar Pattern	Supercardioid	Supercardioid	Supercardioid	Cardioid
Frequency Response	80 - 16,000 Hz	20 - 10,000 Hz	50 - 16,000 Hz	50 - 16,000 Hz
Impedance	600 Ω	150 Ω	600 Ω	200 Ω
Open Circuit Voltage	2.2 mV/Pascal	0.63 mV/Pascal	2.2 mV/Pascal	6 mV/Pascal
Power Requirements	Passive	Passive	Passive	11 to 52 VDC
Connector Type	Three-pin XLR	Three-pin XLR	Three-pin XLR	Three-pin XLR
Mic Type	Handheld	Instrument	Instrument	Instrument
Case Material	Die-cast Zinc	Die-cast Zinc	Die-cast Zinc	Die-cast Zinc
Finish	Textured satin black	Textured satin black	Textured satin black	Textured satin black
Woofer Size	12-inch (304.8 mm)	12-inch (304.8 mm)	15-inch (381 mm)	15-inch (381 mm)
Color	Black	Black	Black	Black
Dimensions (H x W x D)	546 x 361 x 246 mm 21.5 x 14.21 x 9.69 in	546 x 361 x 246 mm 21.5 x 14.21 x 9.69 in	648 x 465 x 386 mm 25.51 x 18.31 x 15.2 in	648 x 465 x 386 mm 25.51 x 18.31 x 15.2 in
Weight Net	28.44 lbs (12.9 kg)	28.44 lbs (12.9 kg)	53.13 lbs (24.1 kg)	53.13 lbs (24.1 kg)



The Electro-Voice N/DYM series is a class apart from any other microphone line. Featuring a powerful neodymium magnetic structure, N/DYM microphones deliver exceptionally clear sound, handling that's comfortable and safe, and EV's unique Vocally-Optimized Bass™ technology. Optimized for superior on-stage power and clarity, N/DYM microphones offer the ultimate in touring and concert performance.

N/D267a — Versatile Dynamic Vocal Microphone



The N/D267a incorporates EV's unique VOB™ (Vocally-Optimized Bass™) technology to provide critical damping of the low-frequency resonant peak, reducing resonant distortion at low frequencies. The result is a microphone with increased finesse and vocal clarity, ensuring a clear, consistent sound that punches through the mix.

Available with on/off switch (N/D267as)

- **VOB™ technology**
- **Cardioid polar pattern**
- **Tight-mesh Memraflex™ grille**
- **Dynamic, high-sensitivity neodymium element**
- **Warm Grip™ handle for more comfortable feel and low handling noise**

N/D367s — High-performance Dynamic Vocal Microphone



Offering classic N/DYM sound, the N/D367s has proven very popular with female vocalists across a variety of musical genres, thanks to its smooth, controlled frequency response and exceptional N/DYM sensitivity. The N/D367 also provides great sound for podium use.

- **Cardioid polar pattern**
- **Dynamic, high-sensitivity neodymium element**
- **Classic N/DYM sound**
- **Tight-mesh Memraflex™ grille**
- **Smooth, controlled frequency response**
- **Superior multistage shock mount for ultra-low handling noise**
- **On/off switch**

N/D767a — Premium Dynamic Vocal Microphone



The N/D767a is the singer and engineer's first choice for outstanding vocal clarity in live performance. With low handling noise, VOB™ technology, and excellent clarity through all frequencies, the N/D767a is the top-choice dynamic mic in its class.

- **Top-class vocal microphone**
- **Multi-stage shock mount**
- **Dynamic, high-sensitivity neodymium element**
- **Tight-mesh Memraflex™ grille**
- **Condenser-like performance**
- **VOB™ technology**
- **Supercardioid polar pattern**

N/D967 — Premium High SPL Dynamic Vocal Microphone



The N/D967 is the highest gain-before-feedback performance vocal microphone on the market, making it a perfect choice for louder stage environments. Comes with a superior multistage shock mount for ultra-low handling noise.

- **Highest available gain-before-feedback**
- **Response optimized for live performance**
- **Vocal personality switch to shape the sound**
- **Dynamic, high-sensitivity neodymium element**
- **Tight-mesh Memraflex™ grille**
- **Unique removable grille and filter allows easy, hygienic cleaning**

N/DYM Series Instrument Group

Pulling double-duty on stage or in the studio, N/DYM Series instrument mics deliver outstanding performance in virtually any application. Highly acclaimed for their superior transient response and powerful tonal detail, these mics are the right choice when settling for “good enough” isn’t an option.

N/D468 Dynamic Supercardioid Instrument Microphone



Designed specifically for horns, drums, and acoustical and electric guitars, the N/D468’s large-diameter voice coil (up to 50% larger than other mics) provides a sound that’s natural yet powerful and articulate. A unique pivoting-head design ensures perfect mic placement, while the supercardioid pattern provides superior off-axis rejection and acoustic isolation in any application.

- **Designed specifically for instruments**
- **Supercardioid pattern**
- **Dynamic, high-sensitivity neodymium element**
- **Unique pivoting head for perfect placement on drums, horns, acoustic and electric guitar**
- **Accurate response, even at high sound pressure levels (SPL)**
- **Rugged steel construction**

N/D478 Dynamic Cardioid Instrument and Amplifier Microphone



More durable and natural sounding than the other “industry standard” instrument mic, the N/D478 is ideal for miking drums, percussion or guitar amplifiers. Its integrated VOB™ technology reduces resonant distortion at low frequencies. The N/D478 also does a great job as a vocal microphone.

- **Outstanding choice for electric guitar/bass guitar amplifier, toms, snare, cymbals, hi-hat, brass and acoustic guitar**
- **Dynamic, high-sensitivity neodymium element**
- **Cardioid pattern for superior feedback rejection and acoustic isolation**
- **VOB™ technology provides tailored bass response for controlled “proximity effect”**

N/D868 Dynamic Cardioid Kick Drum Microphone



The N/D868 is truly a top performer in any application, thanks to its ability to handle incredibly high sound pressure levels without distortion. With a frequency response specifically designed for the perfect kick drum sound, the N/D868 has been applauded by drummers and engineers the world over.

- **Designed specifically for kick drum**
- **A go-to mic for live or studio environments**
- **Optimized sensitivity for the high sound pressure levels found in bass drum miking**
- **Excellent on bass guitar, floor toms and electric guitar cabinets**
- **Extended low-frequency response**
- **Frequency response tailored for instant kick drum sound**

	N/D267a	N/D367s	N/D767a	N/D967	N/D468	N/D478	N/D868
Element	Dynamic	Dynamic	Dynamic	Dynamic	Dynamic	Dynamic	Dynamic
Polar Pattern	Cardioid	Supercardioid	Supercardioid	Supercardioid	Supercardioid	Cardioid	Cardioid
Frequency Response	45 - 15,000 Hz	25 - 20,000 Hz	35 - 22,000 Hz	50 - 13,000 Hz	20 - 22,000 Hz	45 - 15,000 Hz	20 - 10,000 Hz
Impedance	300 Ω	300 Ω	300 Ω	150 Ω	150 Ω	300 Ω	150 Ω
Open Circuit Voltage	2.9 mV/Pascal	3 mV/Pascal	3.1 mV/Pascal	4 mV/Pascal	3.1 mV/Pascal	2.9 mV/Pascal	1 mV/Pascal
Power Requirements	Passive	Passive	Passive	Passive	Passive	Passive	Passive
Connector Type	Three-pin XLR	Three-pin XLR	Three-pin XLR	Three-pin XLR	Three-pin XLR	Three-pin XLR	Three-pin XLR
Mic Type	Handheld	Handheld	Handheld	Handheld	Instrument	Instrument	Instrument
Case Material	Metal	Metal	Metal	Metal	Metal	Metal	Metal
Finish	Non-reflective black	Non-reflective black	Non-reflective black	Non-reflective black	Non-reflective black	Non-reflective black	Non-reflective black



With sonic quality and versatility proven at the highest levels, the performance group from EV's RE Series have become trusted industry standards for both stage and studio use. These premium-grade handheld and stand-mount condensers boost your stage sound from good to great, and they also deliver the depth, personality, and sheen required for professional recording.

RE320

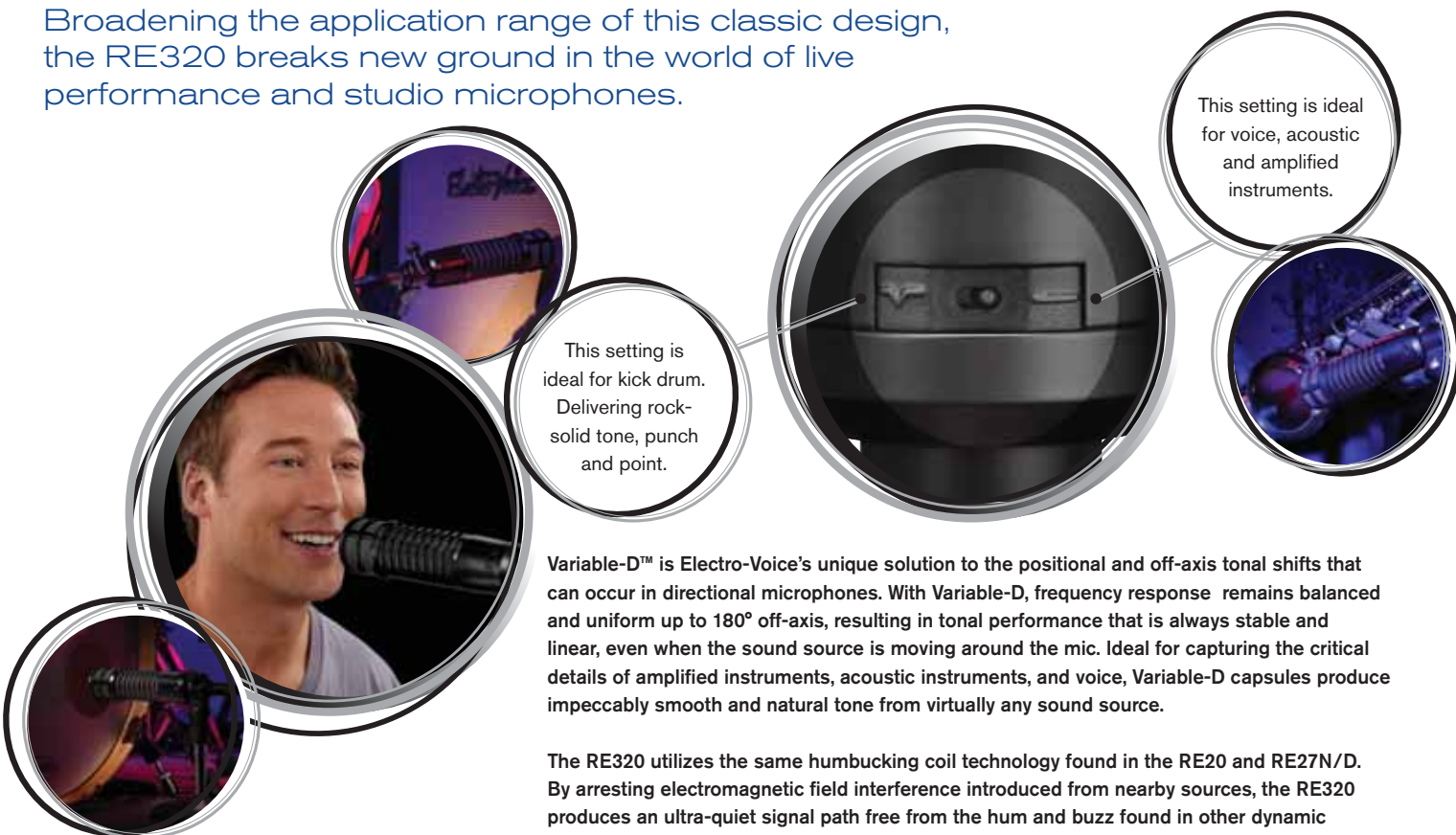
A New Addition to the RE Performance Group



A professional-grade dynamic microphone designed specifically for recording and sound reinforcement applications requiring extremely low noise and the best possible tonal and transient response. Ideal for capturing a wide variety of vocal and instrument sources, the RE320 delivers unparalleled detail, dynamic response, and pleasing natural tone.

- **Variable-D™ pattern control minimizes positional and off-axis tonal shifts**
- **Integrated humbucking coil and integral pop filters provide virtually noiseless performance**
- **Unique dual-voicing switch selects from two response curves**

Broadening the application range of this classic design, the RE320 breaks new ground in the world of live performance and studio microphones.



Variable-D™ is Electro-Voice's unique solution to the positional and off-axis tonal shifts that can occur in directional microphones. With Variable-D, frequency response remains balanced and uniform up to 180° off-axis, resulting in tonal performance that is always stable and linear, even when the sound source is moving around the mic. Ideal for capturing the critical details of amplified instruments, acoustic instruments, and voice, Variable-D capsules produce impeccably smooth and natural tone from virtually any sound source.

The RE320 utilizes the same humbucking coil technology found in the RE20 and RE27N/D. By arresting electromagnetic field interference introduced from nearby sources, the RE320 produces an ultra-quiet signal path free from the hum and buzz found in other dynamic microphones. The RE320 also incorporates a two-position frequency response contour switch that increases versatility by tailoring performance for two distinctly different applications.

RE200 True Condenser Cardioid Microphone



The RE200 is a cardioid condenser microphone designed for the exacting reproduction of acoustic sound sources in live performance and studio recordings, including choirs, strings, percussion, acoustic guitar, and brass instruments.

- **True condenser design**
- **Continuous presence rise enhances sound quality**
- **Transformerless output**
- **Cardioid pattern**
- **Small, unobtrusive profile**

RE410 Premium Condenser Cardioid Vocal Microphone



Optimized to capture the human voice in professional club and concert sound as well as studio recording, the cardioid condenser RE410 provides crisp, clear top-end and sweet mid-range. Delivering the critical details other mics leave behind, the RE410 pulls the voice front-and-center in any mixing situation.

- **Premium-grade handheld condenser**
- **Cardioid pattern for excellent feedback rejection and acoustic isolation**
- **Ideal for both singing and spoken word**
- **High-compliance shock mount effectively eliminates handling noise**
- **Tight-mesh Memraflex™ grille**
- **Multistage pop filter**

RE510 Premium Condenser Supercardioid Vocal Microphone withHPF



The RE510's 5/8-inch diameter, self-biased condenser capsule offers the warmth of a larger capsule design without sacrificing off-axis performance or transient response. A supercardioid polar pattern enhances acoustic isolation and off-axis rejection while a low-frequency roll-off switch tailors the low end for any application.

- **Premium-grade handheld condenser**
- **Supercardioid pattern for excellent feedback rejection and acoustic isolation**
- **Wide dynamic range**
- **High-compliance shock mount effectively eliminates handling noise**
- **Tight-mesh Memraflex™ grille**
- **Multistage pop filter**

RE920 Premium Condenser Instrument Microphone



Featuring a specially designed instrument-mount for clipping to musical instruments, the cardioid condenser RE920 is a premium-grade solution for drums, brass, woodwinds, and stringed instruments. Terminated in a TA4F connector for use with EV and Telex bodypack transmitters, it can also be hard-wired with an optional TXA XLR preamp.

- **Unidirectional horn/drum mic**
- **Back-electret condenser element**
- **Cardioid polar pattern**
- **TA4F connector for wireless bodypacks**
- **A wired solution when coupled with a TXA**
- **High SPL handling**
- **Custom clip for secure mount to a variety of instruments**

	RE200	RE320	RE410	RE510	RE920
Element	True Condenser	Dynamic N/Dym Magnet Structure	Condenser (self-biased)	Condenser (self-biased)	Condenser (back-electret)
Polar Pattern	Cardioid	Cardioid	Cardioid	Supercardioid	Cardioid
Frequency Response	50 - 18,000 Hz	30 - 18,000 Hz (kick curve) 45 - 18,000 Hz (general curve)	50 - 20,000 Hz	50 - 20,000 Hz	80 - 18,000 Hz
Impedance	200 Ω	150 Ω balanced	250 Ω	150 Ω	1000 Ω
Open Circuit Voltage	10 mV/Pascal	2.5 mV/Pascal	3.2 mV/Pascal	2.5 mV/Pascal	1.3 mV/Pascal
Power Requirements	12 - 52 VDC Phantom	None	24 - 48 VDC Phantom	12 - 52 VDC Phantom	5 VDC (via optional bodypack)
Connector Type	Three-pin XLR	Three-pin XLR	Three-pin XLR	Three-pin XLR	TA4F
Mic Type	Instrument	Instrument/vocal	Handheld	Handheld	Instrument
Case Material	Metal	Metal	Metal	Metal	Metal
Finish	Semi-gloss camera black	Semi-gloss black	Non-reflective black	Non-reflective black	Non-reflective black



A mic with real personality, the Cardinal couples Class-A discreet ultra-low noise amplifier circuitry with a gorgeous, streamlined modern design to deliver an exceptional visual and aural experience. Hand-crafted from natural hardwood, and finished with a luxurious and durable cherry-red high-gloss poly coat, the Cardinal turns both eyes and ears. Offering both the finesse required for studio work and the durability needed for live gigs, the Cardinal is a new EV classic that more than holds its own in looks and performance.

Cardinal — Condenser Vocal and Instrument Microphone



The Cardinal is a cardioid condenser microphone designed to capture vocal and instrumental details in live sound or studio applications. With Class-A discrete amplifier circuitry for smooth, clear performance, the Cardinal is sure to please even the most discerning artists and engineers. Initially designed for vocals, the Cardinal's unique tonal and transient response characteristics have also made it a go-to favorite for tom miking and drum overheads.

- **Pressure gradient condenser**
- **Very musical cardioid polar pattern**
- **Class-A discrete ultra-low noise circuitry**
- **Unique double swivel-mounted design for ideal positioning**
- **Innovative visual design with cherry finish**
- **Great for voice or instruments**
- **Outstanding performance on tom-toms and drum overheads**

	Cardinal
Element	Condenser (self-biased)
Polar Pattern	Cardioid
Frequency Response	35 - 20,000 Hz
Impedance	50 Ω
Open Circuit Voltage	10.6 mV/Pascal
Power Requirements	24 - 48 VDC phantom
Connector Type	Three-pin XLR
Mic Type	Vocal / Instrument
Case Material	Metal/wood
Finish	Cherry Wood





CARDINAL



Offering classic design and rugged performance, the Raven dazzles both eyes and ears with its build, fit, and finish. Featuring a high-performance dynamic element housed within a bullet-proof metal body, the Raven is an ideal choice for vocals of any kind, and shines as well as for acoustic and electric instruments with wide dynamic range. Stable even when subjected to transients of up to 162 dB SPL, the Raven delivers superb detail under the harshest acoustical conditions.

Raven

Dynamic Vocal and Instrument Microphone



The Raven is a stylish dynamic microphone designed to capture the character of live and studio vocals. It's also ideal for live and studio instruments, and is the top choice of hundreds of engineers for miking electric guitar cabinets. The Raven incorporates collaborative designs from top industry microphone engineers to provide unparalleled performance in a stunning package.

- **Dynamic microphone with studio detail and clarity**
- **Cardioid pattern with excellent off-axis rejection**
- **Unique double swivel-mounted design for ideal positioning**
- **Great for voice or instrument**
- **A top choice of live and studio engineers for miking electric guitar cabinets**
- **Stylish retro design**



	Raven
Element	Dynamic
Polar Pattern	Cardioid
Frequency Response	45 - 16,000 Hz
Impedance	335 Ω
Open Circuit Voltage	2.51 mV/Pascal
Power Requirements	Passive
Connector Type	Three-pin XLR
Mic Type	Vocal / Instrument
Case Material	Metal
Finish	Non-reflective black

R A V E N™



Building on a long legacy of outstanding performance and reliability, Electro-Voice studio and field production microphones have earned their place at the top of the broadcast industry. From the announce booth to the recording studio and out into the field, EV radio and television mics are the number-one choice for anyone who makes their living with their voice. Led by the legendary RE20 and RE27N/D Variable-D™ vocal microphones, our broadcast line sets the standard that professionals everywhere depend on.

RE20

Broadcast Announcers Microphone with Variable-D



The RE20 dynamic cardioid microphone is truly an industry standard, a firm favorite among broadcasters and sound engineers worldwide. Its popularity also extends into music production as a premium grade instrument microphone. Its Variable-D™ design and heavy-duty internal pop filter excel for close-in voice work, while an internal element shock-mount reduces vibration-induced noise.

- **Variable-D™ for minimal proximity effect**
- **True cardioid with no coloration at 180-degrees off-axis**
- **Voice tailored frequency response**
- **Studio condenser-like performance**
- **Large diaphragm**
- **Humbucking coil**
- **Bass roll-off switch**

RE27N/D

Broadcast Announcers Microphone with Variable-D and N/DYM Cap



The RE27N/D is a high-performance, neodymium-equipped industry-standard broadcast microphone. Superb resolution and depth for voice and instruments have also made the versatile RE27N/D a favorite of recording studios and live sound engineers around the world.

- **Variable-D™ for minimal proximity effect**
- **Neodymium element design brings 6 dB more sensitivity**
- **Ultra-flat frequency response**
- **Studio condenser-like performance**
- **Three selectable filters: -6 dB from 250-100 Hz, -12 dB from 1000-100 Hz and -3 dB high frequency roll-off**
- **Integral wind and blast filters**

	RE20	RE27N/D	RE16	RE50-B	RE50 N/D-B	635A	635N/D-B
Element	Dynamic	Dynamic	Dynamic	Dynamic	Dynamic	Dynamic	Dynamic
Polar Pattern	Cardioid	Cardioid	Supercardioid	Omni	Omni	Omni	Omni
Frequency Response	45 - 18,000 Hz	45 - 20,000 Hz	80 - 15,000 Hz	80 - 13,000 Hz	80 - 13,000 Hz	80 - 13,000 Hz	80 - 13,000 Hz
Impedance	150 Ω	150 Ω	150 Ω	150 Ω	150 Ω	150 Ω	150 Ω
Open Circuit Voltage	1.5 mV/Pascal	3.1 mV/Pascal	1.4 mV/Pascal	2.0 mv/Pascal	2.0 mV/Pascal	1.4 mV/Pascal	2.8 mV/Pascal
Power Requirements	Passive	Passive	Passive	Passive	Passive	Passive	Passive
Connector Type	Three-pin XLR	Three-pin XLR	Three-pin XLR	Three-pin XLR	Three-pin XLR	Three-pin XLR	Three-pin XLR
Mic Type	Vocal / Instrument	Vocal / Instrument	Handheld	Handheld	Handheld	Handheld	Handheld
Case Material	Steel	Steel	Steel	Aluminum	Aluminum	Steel	Steel
Finish	Fawn Beige	Satin Nickel	Fawn Beige	Semi-gloss camera black	Semi-gloss camera black	Fawn Beige	Non-reflective black

Field Production Group

There's a reason that EV's RE series and model 635 microphones are legendary as broadcast workhorses. Designed for ENG (Electronic News Production) and EFP (Electronic Field Production), these top-notch television and radio microphones deliver the excellent sound performance that broadcast professionals demand, and they are also extremely rugged, built tough to hold up to years of work in the field. Able to withstand adverse conditions including high humidity, temperature extremes, and corrosive environments such as salt-air, these mics are ready to work no matter where the story takes you.

RE16 — Dynamic Supercardioid Handheld with Variable-D



A dynamic supercardioid microphone designed for the most exacting professional use. EV's Variable-D™ design keeps frequency response uniform regardless of directionality. An integral blast filter permits handheld and outdoor use without "P-popping" or excessive wind noise.

- **Variable-D™ dynamic microphone,**
- **Supercardioid polar pattern**
- **Great for podium or handheld use**
- **Unique blast filter prevents pops in close-up use**
- **Uniform response independent of angle**
- **Humbucking coil reduces electromagnetic hum pickup**

RE50B — Handheld Interview Microphone



The RE50B is the industry standard for handheld interview mics in broadcast television production. Used on interviews with everyone from the President of the United States to the family next door, the RE50B is heard and seen in the reporting of news correspondents around the globe.

- **Omnidirectional polar pattern**
- **Dynamic element**
- **Extremely low handling noise via Dyna-Damp™ "mic in-a-mic" shock mount system**
- **Impervious to wind noise and p-pops via its four-stage pop filter**
- **Withstands high humidity, temperature extremes, and corrosive salt air**

RE50N/D-B — Handheld Interview Microphone with N/DYM Capsule



The RE50N/D-B delivers all of the outstanding performance of the industry-standard RE50B with the added benefit of a high-output neodymium capsule magnet. A top choice in broadcast television production where the additional gain of a neodymium capsule is well-suited for particular camera or recording device inputs.

- **Omnidirectional dynamic**
- **Higher output neodymium magnet structure**
- **Extremely low handling noise**
- **Four-stage filter blocks wind noise and pops**
- **Withstands high humidity, temperature extremes, and corrosive salt air**

635A — Classic Handheld Interview Microphone



The classic 635A live interview wired microphone is the most popular (ENG) electronic news gathering mic in the world. It delivers great sound and is known as "The Buchanan Hammer"—a nod to EV's ancestral Michigan home—for its rugged durability.

Also available in black (model: 635A/B).

- **Omnidirectional polar pattern**
- **Dynamic element**
- **Incredibly robust and durable**
- **Linear frequency response**
- **Completely pop-free**
- **Four-stage pop and dust filter**
- **Effective internal shock absorber**

635N/D-B — Classic Handheld Interview Microphone with N/DYM Capsule



The 635N/D-B has the same "hammer-like" toughness and classic performance and reputation as the 635A with the added benefit of increased output from its neodymium magnet structure.

- **Omnidirectional dynamic**
- **Neodymium element for higher output**
- **Acoustalloy™ diaphragm material for very smooth response over a wide frequency range**
- **Integral windscreen and blast filter**
- **Black semi-gloss finish**



Available in a variety of boundary, podium, and desktop models, EV's PolarChoice installation microphones feature user-selectable polar patterns—omnidirectional, cardioid, supercardioid, and hypercardioid (figure "8" on the PC Boundary)—that allow a single mic to be used in multiple situations. No matter which pattern you select, PC mics have a consistent voicing optimized for speech, delivering excellent clarity and intelligibility with outstanding feedback rejection.

PC Boundary Multi-pattern Boundary Layer Microphone



The PC Boundary is a very low-profile area microphone that can be used on any surface and with virtually any mic mixer. Featuring multiple on-board polar patterns—three directional and one omni—the PC Boundary is ideal for any installation where premium-grade area coverage is required.

- **Easy switching between omni, cardioid, supercardioid, or figure "8" polar patterns**
- **Versatility for different acoustic environments**
- **Consistent microphone voicing across all four patterns**
- **Easy-to-use mute switch, programmable for either latching on/off or momentary operation**

PC Desktop Multi-pattern Desktop Microphone



The PC Desktop is a free-standing tabletop microphone with a dual-section gooseneck and an elegant base. With easy switching between four polar patterns—omni, cardioid, super-cardioid, or hyper-cardioid—the PC Desktop is always the right microphone, even under a variety of conditions.

Available with 5-, 12-, or 18-inch gooseneck.

- **Easy switching between omni, cardioid, supercardioid, or hypercardioid patterns**
- **Mute switch with LED can be programmed as either push on/off or push-to-mute**
- **Smooth, uniform frequency response in all patterns**
- **Extended low-frequency response and switchable high-pass filter**
- **Sturdy steel base**

PC Plus Multi-pattern Podium Microphone



The PC Plus with dual-section gooseneck is the first podium microphone that has the flexibility to be installed into any environment. Delivering four switchable PC polar patterns, it can be mounted via a standard three-pin XLR connector or permanently flush-mounted to a podium or tabletop.

Available with 5-, 12-, or 18-inch gooseneck.

- **Easy switching between omni, cardioid, supercardioid, or hypercardioid patterns**
- **Mute switch with LED can be programmed as either push on/off, or push-to-mute**
- **Smooth, uniform frequency response in all patterns**
- **Extended low frequency response and switchable high-pass filter**
- **Sturdy steel base**

PC/XLR Multi-pattern Gooseneck Microphone with XLR



The PC/XLR podium microphone with dual-section gooseneck is designed for installation into an existing three-pin XLR-F jack. Offering four switchable PC polar patterns, it can be mounted into flush-mount, recessed, or standard connectors on a podium or tabletop.

Available with 12- or 18-inch gooseneck.

- **Easy switching between omni, cardioid, supercardioid, or hypercardioid patterns**
- **Smooth, uniform frequency response in all patterns**
- **The most natural-sounding podium mic on the market**
- **Mates well with the CPSM recessed shock mount accessory**

PC/FL Multi-pattern Gooseneck Microphone with Flange Mount



PC/FL models are the flange-mount equivalent of the PC/XLR microphone. The four available PC polar patterns are switched at the cable mounted XLR-M sized preamp module at the end of the 20-foot low-noise cable.

Available with 12- or 18-inch gooseneck.

- **Easy switching between omni, cardioid, supercardioid, or hypercardioid patterns**
- **Smooth, uniform frequency response in all patterns**
- **The most natural-sounding podium mic on the market**
- **Installs via an included flange mount kit with knurled brass threaded housing**

PolarChoice Wireless Conversions

PolarChoice Satellite models combine the performance and versatility of our wired PC microphone models with the portability, ease-of-use, and ease of secure storage that only a wireless solution can offer. Excellent for any installation, they are perfect for jobs where modification of existing furnishings is prohibited or where functional requirements make portability the best solution. Coupled with an Electro-Voice or Telex brand wireless bodypack system, these Satellite models become a key component in an ideal wireless solution.

PC Boundary Satellite Multi-pattern Boundary Layer Microphone



The PC Boundary Satellite is a low-profile area microphone that can be used on any surface and conveniently adapted to any Electro-Voice or Telex wireless bodypack transmitter. Featuring the identical polar pattern, filter, and mute-switch functionality as its wired counterpart, it is ideal for any wireless installation requiring premium-grade area coverage.

- **Accepts EV (REV, RE2, RE2PRO) and Telex (FMR or SAFE1000) bodypack transmitters**
- **Easy switching between omni, cardioid, supercardioid, or figure “8” polar patterns**
- **Versatility for different acoustic environments**
- **Easy-to-use mute switch, programmable for either latching on/off or momentary operation**

PC Desktop Satellite Multi-pattern Desktop Microphone



The PC Desktop Satellite is a tabletop microphone, including base and dual-section gooseneck, that can be conveniently adapted to any Electro-Voice or Telex brand wireless bodypack transmitter. Featuring the identical polar pattern, filter, and mute-switch functionality as its wired counterpart, it is ideal for virtually any wireless installation requiring a premium-grade tabletop with gooseneck.
Available with 5-, 12-, or 18-inch gooseneck.

- **Accepts EV (REV, RE2, RE2PRO) and Telex (FMR or SAFE1000) bodypack transmitters**
- **Easy switching between omni, cardioid, supercardioid, or hypercardioid patterns**
- **Mute switch with LED can be programmed as either push on/off or push-to-mute**
- **Extended low frequency response and switchable high-pass filter**

	PC Boundary	PC Desktop	PC Plus	PC/XLR	PC/FL	PC Boundary SAT	PC Desktop SAT
Element	Dual condenser (back-electret)	Dual condenser (back-electret)	Dual condenser (back-electret)	Dual condenser (back-electret)	Dual condenser (back-electret)	Dual condenser (back-electret)	Dual condenser (back-electret)
Polar Pattern	Omni Cardioid S-cardioid Figure 8	Omni Cardioid S-cardioid H-cardioid	Omni Cardioid S-cardioid H-cardioid	Omni Cardioid S-cardioid H-cardioid	Omni Cardioid S-cardioid H-cardioid	Omni Cardioid S-cardioid Figure 8	Omni Cardioid S-cardioid H-cardioid
Frequency Response	50 to 20,000 Hz	50 to 20,000 Hz	50 to 20,000 Hz	50 to 20,000 Hz	50 to 20,000 Hz	50 to 20,000 Hz	50 to 20,000 Hz
Impedance	200 Ω	200 Ω	200 Ω	200 Ω	200 Ω	1000 Ω	200 Ω
Open Circuit Voltage	31.5 mV/Pascal	5.6 mV/Pascal	5.6 mV/Pascal	5.6 mV/Pascal	5.6 mV/Pascal	17.8 mV/Pascal	5.6 mV/Pascal
Power Requirements	12 - 52 VDC	12 - 52 VDC	12 - 52 VDC	12 - 52 VDC	12 - 52 VDC	5 VDC (via optional bodypack)	5 VDC (via optional bodypack)
Connector Type	Three-pin XLR	Three-pin XLR	Three-pin XLR	Three-pin XLR	Three-pin XLR	TA4F	TA4F
Mic Type	Boundary	Gooseneck	Gooseneck	Gooseneck	Gooseneck	Boundary	Gooseneck
Case Material	Steel	Steel	Steel	Steel	Steel	Steel	Steel
Finish	Non-reflective camera black	Non-reflective camera black	Non-reflective camera black	Non-reflective camera black	Non-reflective camera black	Non-reflective camera black	Non-reflective camera black



The RE Installation series is a set of sonically superior microphone solutions that are optimized for installation. Featuring EV's premium-performance condenser capsules, the affordable RE Installed Sound series lets professional sound contractors offer their customers EV quality for great sound and worry-free reliability.

RE90B — Half-cardioid Pattern Boundary Layer Microphone



A boundary microphone with "half-cardioid" pick-up pattern and built-in equalization, the RE90B is ideal for video and teleconferencing systems, boardrooms, classrooms, or houses-of-worship. Delivers every word fully and naturally.

Also available in white (RE90BW).

- **Boundary layer**
- **Half-cardioid polar pattern**
- **Ultra-thin profile (16 mm) housing**
- **Rubber non-slip bottom pad and strong steel screen**
- **Integrated pop filter**

RE90P — Cardioid Pattern Gooseneck Microphone



A podium microphone with dual-section gooseneck, the RE90P achieves sonically superior performance at a very affordable price. Featuring EV's premium performance RE90 capsules and in-line preamps, these goosenecks deliver the great sound and reliability that professional sound contractors demand.

Available with 12- or 18-inch gooseneck.

- **Podium microphone**
- **Ultra-thin dual-section gooseneck is strutted, yet flexible**
- **Uniform frequency response and polar pattern**

RE90H — Cardioid Pattern Hanging Microphone



Compact hanging-style condenser microphone. Ideal for choral, instrumental, vocal groups and live theater. Controlled cardioid polar response for distant sound pick-up without feedback. 25-foot braided and shielded cable with built-in preamp.

Also available in white (RE90HW).

- **Hanging installation microphone**
- **Internal preamp**
- **Very uniform polar pattern**
- **Integrated 25-foot shielded low-noise cable**

RE90L — Cardioid Pattern Lavalier Microphone



Omnidirectional lavalier microphone with mic pre-amp and XLR termination. One of the world's most compact and lightweight high-performance microphones. Smooth frequency response for excellent sound quality. Perfect for television production, house of worship, and business applications.

- **Ultra-miniature condenser element**
- **Internal preamp and XLR termination**
- **Omnidirectional polar pattern**
- **Perfect for television, business and house of worship applications**
- **Complete assortment of clips**

RE92 Series

It takes precision tools to meet the performance requirements of today's installed-sound professional. Electro-Voice engineers have risen to the challenge by developing the RE92 premium-grade condenser capsule, which delivers the highest possible level of acoustical performance. For superior sonic integrity and maximum durability, the RE92 Installation Series is the professional's choice.

RE92H — Cardioid Pattern Hanging Microphone with HPF



Designed specifically for applications where the condenser microphone needs to be suspended from above the sound source. The RE92H is ideal for theater, house of worship or any application where a small, high-quality mic needs to be "heard but not seen."

Also available in white (RE92HW).

- **Hanging installation microphone**
- **Wide, smooth frequency response**
- **Cardioid polar pattern**
- **In-line electronics module**
- **12 dB/octave switchable high pass filter**
- **Transformerless differential output to drive long cables**

RE92L — Cardioid Pattern Lavalier Microphone



The RE92L is a professional-quality miniature cardioid electret condenser lavalier microphone. Its excellent sound quality and small size make it the perfect choice for miking speech in house of worship, broadcast, presentation and theater applications. Terminated with three-pin XLR.

- **Wide, smooth frequency response**
- **Tight cardioid polar pattern**
- **Super-low noise condenser capsule**
- **4-foot cable terminates at in-line preamp**
- **12 dB/octave switchable high-pass filter**
- **XLR output**

	RE90B	RE90P	RE90H	RE90L	RE92H	RE92L
Element	Condenser (back-electret)	Condenser (back-electret)	Condenser (back-electret)	Condenser (back-electret)	Condenser (back-electret)	Condenser (back-electret)
Polar Pattern	Cardioid	Cardioid	Cardioid	Omni	Cardioid	Cardioid
Frequency Response	80 to 15,000 Hz	70 to 15,000 Hz	75 to 15,000 Hz	50 to 18,000 Hz	40 to 20,000 Hz	40 to 20,000 Hz
Impedance	200 Ω	200 Ω	200 Ω	100 Ω	250 Ω	250 Ω
Open Circuit Voltage	25 mV/Pascal	4.5 mV/Pascal	27 mV/Pascal	12.6 mV/Pascal	5.6 mV/Pascal	5.6 mV/Pascal
Power Requirements	9 - 52 VDC	9 - 52 VDC	9 - 52 VDC	9 - 52 VDC	24 - 52 VDC	24 - 52 VDC
Connector Type	Three-pin XLR	Three-pin XLR	Three-pin XLR	Three-pin XLR	Three-pin XLR	Three-pin XLR
Mic Type	Boundary	Gooseneck	Hanging	Lavalier	Hanging	Lavalier
Case Material	Die-cast zinc	Steel	Steel	Metal	Metal	Metal
Finish	Non-reflective black or white	Non-reflective black	Non-reflective black or white	Non-reflective black	Non-reflective black or white	Non-reflective black

649B Dynamic Lavalier Microphone



This popular omnidirectional dynamic lavalier microphone has been an industry standard for many years. Its frequency response is tailored for balanced performance in the lavalier chest position. The turned aluminum case and nested mechanical parts assure rugged durability.

- **Dynamic element.**
- **Omnidirectional polar pattern**
- **Rugged aluminum body**
- **Robust mechanical and electrical design**

785 Group Gooseneck Paging Microphone



A low-impedance gooseneck microphone for single zone paging. Designed for applications where ruggedness, dependability and durability are the main requirements. Microphone housing is constructed of die-cast zinc alloy to stand up to the toughest abuse and conditions. Features a recessed aluminum grille with a windscreen and durable satin-chrome finish.

- **Heavy duty, three-hole mounting flange**
- **Extra-strength 16-inch steel-tubing flex arm**
- **SR785LN/O includes a push button switch with normally "open" switching**
- **SR785L is the same as SR785LN/O except without normally "open" switching**
- **785L is the same as SR785LN/O except without a switch**

US690 Gooseneck Microphone



US690 12-inch flexible gooseneck microphone's neodymium magnet structure provides up to 6 dB more sensitivity than conventional designs. The US690 terminates with an XLR-type connector and plug-in mount. Its rugged design and mic element make the US690 ideal for the most demanding applications where superb sound is required.

- **12-inch gooseneck**
- **Dynamic element**
- **Cardioid polar pattern**
- **Powerful neodymium magnet structure**
- **XLR termination**

US600EL, US602FL PTT Hand Microphone



US600EL is a hand microphone built to withstand rough usage and atmospheric extremes. Designed for maximum noise rejection in high ambient areas, it allows effective use without "close talking" techniques. An excellent choice for critical communication applications.

US602FL – A hand microphone featuring clear speech transmission in high ambient noise level environments, convenient grip-to-talk activation and noise-canceling dynamic design. Perfect for police, marine and mobile paging applications.

NC450D, 450D PTT Hand Microphone



NC450D is a dynamic hand microphone with push-to-talk switch for paging. NC450D's noise-canceling design makes it particularly effective for use in noisy locations. Its excellent voice response characteristics also make it an excellent choice in quiet areas. 200 ohm impedance matches low impedance inputs.

450D – Same as NC450D except without noise-cancellation. Features a molded Cycolac® housing in pebble-grain black finish and an unterminated black neoprene coil cord relieved at the housing by spring-type strain relief.

WP300 Wall Plate Microphone



WP300S is a dynamic, omnidirectional wall plate microphone that is ideal for security monitoring, fast-food and retail outlets, warehouses, and public-usage applications. Mounts onto a standard single-gang electrical box. The front plate, finished in brushed satin-chrome, includes a double-pole, double-throw switch for push-to-talk and line-shorting capabilities.

WP300 – Same as WP300S except without the double-pole, double-throw switch.

Wired Microphone Accessories

Genuine high-quality Electro-Voice wired microphone parts for direct replacement of standard equipment or optional accessories.

Shock mount adapters

TXA	422A	DRC-1
		
The TXA is designed to enable the use of lavalier, headworn and other TA4F-terminated Electro-Voice professional microphones in a wired configuration. Using standard phantom power through the TXA ensures the same high-quality audio performance that you expect using Electro-Voice microphones over wireless systems.	Desk stand with rubber shock mount. Accepts all EV mic stand clamps.	Designed for PL35 (stock replacement). Also works well with N/D468.

309A	CPSM	SAPL-3
		
RE20	RE90P	PL37 (stock replacement)
RE27N/D	PC-12/XLR	RE200 (optional)
(Replacement elastic bands, PART # 71220X)	PC-18/XLR	

Stand adapters

311	320	323S	326	SAPL-1	SAPL-2
					
635A, 635AB	RE20	RE50-B	All N/Dym handhelds	All PL Series handhelds	PL33
RE16	RE27N/D	RE50N/D-B			RE20
RE200	N/D868	BK-1			RE27N/D
N/D468					N/D868

Foam windscreens

314E (black)	376 (grey) 379-1 (black) 379-2 (red)	WSPL-1 (black)	WSPL-2 (black)	WSPL-3 (black)	WSPL-4 (black)
635A	General Purpose	PL Series (vocal)	PL33	PL35	PL37
635AB	Fits most vocal	RE410	RE20		RE200
	N/Dym Series	RE510	RE27N/D		
	Cobalt Series	RE50B	N/D868		
	RE Series vocal	RE50N/D-B			

Eight Decades of Engineering Excellence.

In 1934, just six years into its existence as a pioneer in electro-acoustical solutions, Electro-Voice invented the humbucking coil for microphones – still an industry standard almost 80 years later. This invention marked the start of EV's success in building microphones, and the company continued to drive audio technology ahead, rising to the challenges of rapidly changing times.

During World War Two, EV worked with the U.S. Military on the development of the T-45 noise-canceling microphone, a helmet-attached device that raised the success rate of combat communications from 20% to 90%, saving many lives in the process. With reliability and performance proven in the most critical environments, EV microphones later accompanied U.S. astronauts on the earliest space missions and many thereafter. At the same time, EV mics continued to perform at the highest level on live stages around the world during the heyday of Jazz and the birth of Rock 'N' Roll.

EV continues to add to this long list of historic achievements in audio, setting new standards for the microphone designs of today. We were the first manufacturer to use neodymium-based magnet structures (N/DYM®) in microphones, thus achieving higher output and condenser-like qualities such as substantially-faster transient response, crystal clarity, and reliable performance. Our goals in developing microphone technologies have always been the same: providing the highest sound quality, achieving better and more comfortable handling for the user, and extending our tradition of legendary reliability and support. A host of patented technologies attest to EV's success in meeting these goals, including both Variable-D and VOB.

Variable-D™

A fundamental principal of acoustical behavior is that the volume and perceived frequency content of a sound is influenced by the distance between the source and the point of perception. When near to the source, a listener will hear a sound's full low-frequencies, defined mid-range, and articulate high end. But as distance increases, low-frequency content will fall off dramatically, with a corresponding "thinning-out" of the overall sound. Because microphones serve as the point of perception at the front-end of the audio signal chain, this phenomenon greatly influences how microphones are used and perform.

Normal directional microphones (cardioid, supercardioid and hypercardioid) generate increased bottom-end when used close-up. This is typically called the "proximity effect." While some vocalists like this effect and use it to enhance their performance, it is attainable only in close-up situations where the microphone capsule is within a couple of inches of the performer's mouth. When the distance between the microphone and the source is extended, the sound quality changes dramatically, losing a substantial amount of the low-frequency content – thus changing the tone of the performance drastically.

Electro-Voice's patented Variable-D™ eliminates this disadvantage. On the rear side of the diaphragm there is a perforated pipe (interference duct) with precise sonic slots at set distances. The duct provides maximum damping that is completely uncolored and undistorted at 180° off-axis, ensuring the same frequency response as if the source was nearly on-axis. This characteristic is particularly beneficial when the performer (announcer, vocalist or instrumentalist) moves around while addressing the microphone. And this same attribute is why radio announcers and DJ's have chosen Electro-Voice Variable-D™ microphones for decades.

An added benefit of the Variable-D™ technology's low-frequency stabilization is the resulting personality of the low-frequency content. Variable-D™ microphones produce a tight low-end that is unmatched by any other microphone technology, and this is why models such as the RE20 and RE27N/D are revered not only as the number-one announcer's mic, but also as the go-to mic for capturing kick drums, low-frequency instruments, and guitar amplifiers.

For decades, the RE16, RE20 and RE27N/D Variable-D™ microphones have been the chosen industry standard for broadcast show hosts, vocal booths, voice-over studios, and professional touring or rental companies, trusted for their unparalleled acoustical performance and robust durability.

VOB

Electro-Voice's unique VOB™ technology (Vocally-Optimized Bass™) reduces low-frequency distortion in the microphone's output. VOB™ counteracts proximity effect, sibilance and P-popping, thus assuring maximum musical clarity and vocal intelligibility. Critical damping of the low-frequency resonant peak results in a microphone that replaces the "muddiness" found in competitive models with greater warmth and increased vocal intelligibility. With a wider range of working distances than other microphones, this intelligibility ensures a clear, consistent sound that cuts through the mix.

General microphone use guidelines

1. Always point the microphone at the desired source and away from sources of unwanted sound.
2. The microphone should be located close to the sound source to minimize interference from other potential sound sources, increase gain-before-feedback, and increase the low frequency (bass) content of the signal.
3. Use the three-to-one rule when using multiple microphones: place each microphone three times farther away from other microphones as it is from the desired sound source. (If the microphone is 1 foot away from a sound source, it should be 3 feet away from the next closest microphone).
4. Minimize over-handling of the microphone (e.g. where possible put it on a stand instead of hand-held) to reduce unwanted mechanical noise.

Microphone techniques for musical instruments

Miking techniques are a matter of personal preference. Choosing the right microphone for your application is a good place to start, and the suggested mic notes in each application below indicate EV mics that are either designed for the application or have been recommended by experienced professionals for their performance as described. These are merely guidelines to assist in the choice and placement of the microphone to achieve optimal performance

Usage	Best Mic placement	Suggested EV Mic
Kick Drum	Due to the unique nature of kick drums and placement, choosing a mic that is designed for kick drum and low-frequency instruments is recommended. Miking from the front of the drum (opposite the batter head) is preferred. Front heads with hole: Place the mic inside the hole so that the capsule (mesh grille area) is just inside the interior of the drum. Aim the capsule at an angle toward the spot on the batter head where the beater makes contact for desired snap (attack of the sound). Front heads without a hole: Aim the capsule directly on-axis to the front head and within 1 inch of the head, choosing a spot that is between 2 and 8 inches towards the center from the rim. The center of the head has the floppiest tone, and the edge will have the tightest. Kick drum with no front head: This allows the widest variety of placement options, but increases off-axis bleed and eliminates the tonal advantage of the front (resonance) head. Avoid placing the mic dead-center aiming directly into the beater because of possible wind velocity distortion. Choose a spot inside the drum between 2" and 8" from the outer shell, aiming the capsule at an angle toward where the beater strikes the batter head. Placing the mic deeper or shallower inside the drum will offer tone and attack variations.	PL33, N/D868, RE20, RE27N/D and RE320
Snare Drum	Place mic 1 to 3 inches above the batter head, 0 to 2 inches in from the rim depending on the desired tone. Aim each mic at the top head angled down 45 degrees. If the drum rings, tape deadening material to the head or use damping rings. For more "snare" sound, place a second mic under the drum (aimed up at the bottom head) and reverse the phase on its input channel.	PL35, N/D468 and N/D478
Electric Guitar	Place microphone approximately 1 to 2 inches from and at a 0° angle to the speaker cone. To reduce boominess, position the microphone off-axis to the cone at 45°, or move the mic toward the center of the cone. You can expect a brighter tone at the voice coil (speaker center) and a darker tone the farther out from center you go.	PL33, PL35, N/D467, N/D478, N/D868, RE20, RE27N/D, RE320 and Raven
Tom-Toms	On double-headed toms, place mic 1 to 3 inches over the top of the drum head at a 45° angle to the drum surface and 1/2" from the drum edge. On single headed toms, use above method or place mic inside tom from underneath at a 90° angle from the center of head, 3 to 5 inches away.	PL35, N/D468; for floor tom – RE20, RE320 and N/D868
Cymbals	Place microphone 1 to 2 feet above the top of the cymbals. If using a stereo pair technique, increase the overhead distance of the drum set to 2 to 3 feet, and use the three-to-one rule as a separation concept.	PL37, RE200 and Cardinal
High-Hat	Place 5 inches above outside edge at a 45° down-angle toward the top cymbal.	PL37 and RE200
Brass	Place microphone 6 to 24 inches away, on axis with the bell of the instrument.	PL80a, N/D468, RE20, RE27N/D, RE320 and Raven
Acoustic Guitar	Place microphone 6 to 12 inches from where fingerboard joins the body and aim toward sound hole.	PL37, N/D468, N/D478, RE200, RE20 and Cardinal

Electro-Voice

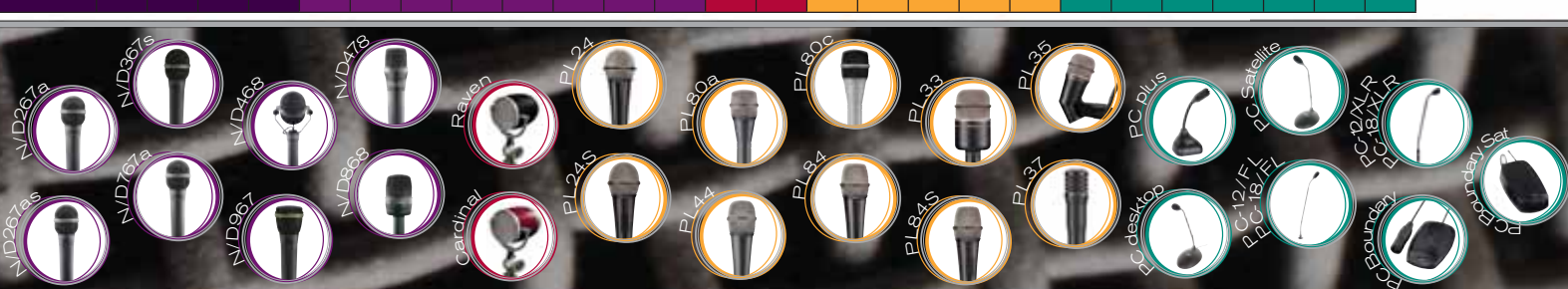
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	HM 2	HM 7	OLM 10	ULM 21	RE20	RE27	RE16	RE50B	RE50N/D-B	635A (635A/B)	635N/D-B	RE90B	RE90 H	RE90P	RE90 L	RE92 H	RE92 L	RE92 TX	RE97 TX	RE97-2 TX	RE97L TX
Dynamic					X	X	X	X	X	X	X										
Condenser	X	X	X	X								X	X	X	X	X	X	X	X	X	X
Cardioid	X			X	X	X						X	X	X		X	X	X			
Supercardioid		X					X														
Hypercardioid																					
Figure 8																					
Omni			X					X	X	X	X				X				X	X	X
Variable-D					X	X	X														
On/Off Switch																					
Stage																					
Lead Vocal, Female																					
Lead Vocal, Male																					
Backing Vocal																					
Speech																					
Kick Drum					X	X															
Snare																					
Toms					X	X															
HiHat / Overhead																					
Percussion					X	X															
Guitar Amp					X	X															
Bass Amp					X	X															
Acoustic Guitar					X	X															
Upright Bass					X	X															
Strings																					
Piano																					
Accordion					X	X															
Woodwinds					X	X	X														
Brass					X	X	X														
Studio																					
Vocals					X	X															
Kick Drum					X	X															
Snare																					
Toms					X	X															
HiHat / Overhead																					
Percussion					X	X															
Guitar Amp					X	X															
Bass Amp					X	X															
Acoustic Guitar					X		X														
Upright Bass					X	X															
Strings																					
Piano																					
Accordion					X	X															
Woodwinds					X	X															
Brass					X	X															
Broadcast																					
Speech / Announcers					X	X	X											X	X	X	X
Interview / ENG					X	X	X	X	X	X	X										
Lavalier															X		X	X			X
Headworn		X																	X	X	
Install / Contracting																					
Boardrooms / Podiums														X							
Boundary												X									
Hanging													X			X					
Lavalier			X	X											X		X	X			X
Headworn	X	X																	X	X	



Microphones

RE200	RE320	RE410	RE510	RE920 TX	N/D267a	N/D267as	N/D367s	N/D767a	N/D967	N/D468	N/D478	N/D868	Cardinal	Raven	PL44	PL80a/PL80c	PL33	PL35	PL37	PC Desktop	PC Plus	PC Satellite	PC-12/FL PC-18/FL	PC-12/XLR PC-18/XLR	PC Boundary	PC Boundary Sat
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Wireless Microphones

For over thirty years, Electro-Voice has been in the business of providing quality wireless communications for demanding professionals. We have the hands-on experience and engineering know-how to address all of your wireless needs.

Key Strengths

- ClearScan™, the original and best scanning technology on the planet
- Patented Posi-Phase® true diversity for dropout-free audio with the best range in the business
- Complete range of models and accessories to fit applications and installations of all sizes and complexity
- Superior design, construction, and warranty for maximum professional performance
- Designed and supported in the USA
- Backed by Bosch, whose Bosch Communications family of pro audio brands includes Electro-Voice microphones, DSP, amplifiers and loudspeakers, and Telex intercom systems

Why Choose EV Wireless?

Whether designing a one-channel system or a large, multiple-wireless deployment, you can trust EV to provide the product, frequency coordination, and system accessories for a turnkey installation. All EV wireless systems are designed to exacting standards in our Lincoln, Nebraska facility and built in state-of-the-art Bosch production facilities around the world. Advanced techniques are employed in the design of each wireless product, from initial computer simulation and circuit design all the way through the manufacturing line and automated testing. The individual components in every EV system are tested prior to a complete system test, ensuring reliable field performance. EV wireless microphone products are supported from the factory in Lincoln, Nebraska as well as from authorized centers in Canada, Germany, and Singapore.



Designed for the entry-level professional, the Electro-Voice R300 makes the benefits of professional wireless microphone performance accessible to a new category of users. With features like one-touch ClearScan and EZsync transmitter update, the R300 offers professional-class capabilities but is as easy to setup and use as any entry-level wireless microphone system.

R300-HD Handheld System – PL22 Dynamic Microphone



The HT-300 metal handheld transmitter is made to withstand the rigors of daily use but still be comfortable in your hand. The PL22 dynamic microphone is the perfect all-around microphone for speaking engagements, singing and emcees. The cardioid pickup pattern rejects noises from the surroundings, helps control audio feedback, and still allows an experienced vocalist to work the microphone.

- **ClearScan automatically finds the clearest channel**
- **EZsync one-step channel setup**
- **PL22 cardioid dynamic microphone element**
- **14 hour battery life from two AA alkaline**
- **Rugged metal transmitter**
- **Metal receiver chassis with optional rack mount**

R300-L Lapel System – ULM18 Directional Microphone



The R300-L system includes the metal BP-300 bodypack transmitter, which uses two AA batteries. With ClearScan and EZsync, the R300-L is the easiest wireless system you will ever use for presentations and worship services. The directional ULM18 helps to reject noise from the surroundings and control audio feedback.

- **ClearScan automatically finds the clearest channel**
- **EZsync one-step channel setup**
- **ULM18 directional lapel microphone**
- **14 hour battery life from two AA alkaline**
- **Rugged metal transmitter**
- **Metal receiver chassis with optional rack mount**

R300-E Headworn System – HM3 Omni-Directional Microphone



The R300-E system includes the metal BP-300 bodypack transmitter, which uses two AA batteries. The HM3 microphone is comfortable for extensive daily use, including long presentations. Using a headwork microphone helps to control audio feedback and provides consistent audio while the speaker moves naturally around the stage.

- **ClearScan automatically finds the clearest channel**
- **EZsync one-step channel setup**
- **HM3 omni-directional microphone**
- **14 hour battery life from two AA alkaline**
- **Rugged metal transmitter**
- **Metal receiver chassis with optional rack mount**

CONSUMER ALERT

Most users do not need a license to operate this wireless microphone system. Nevertheless, operating this microphone system without a license is subject to certain restrictions: the system may not cause harmful interference; it must operate at a low power level (not in excess of 50 milliwatts); and it has no protection from interference received from any other device. Purchasers should also be aware that the FCC is currently evaluating use of wireless microphone systems, and these rules are subject to change. For more information, call the FCC at 1-888-CALL-FCC (TTY: 1-888-TELL-FCC) or visit the FCC's wireless microphone website at www.fcc.gov/cgb/wirelessmicrophones





The R300 system is designed as an easy-to-use entry-level wireless for churches, school, presenters, DJs, and more. But the R300 also offers features normally found only in higher-priced professional systems, including a true rack-mountable metal receiver, metal bodypack and handheld transmitter, and remote-mountable antennas.

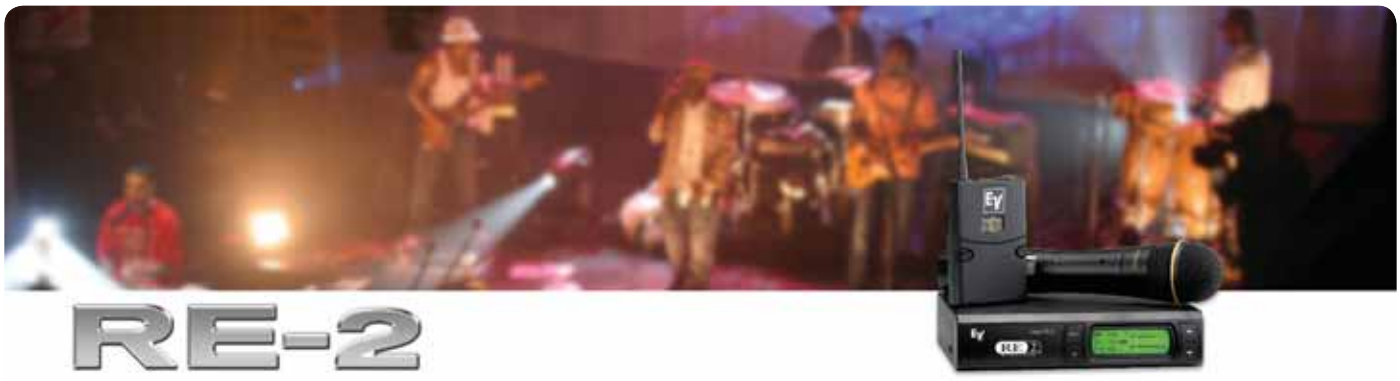
With the touch of a single button, ClearScan scans through all 32 preset channels and selects the clearest channel, which ensures noise-free operation over the longest operating range. In the increasingly cluttered world of RF, ClearScan gives you confidence that you can easily find an open frequency.

Matching the transmitter frequency to the receiver also requires just the touch of a button. The R300 uses EZsync infrared technology to automatically set the transmitter to the correct frequency and confirm operation in one step.

RE300 Receiver	
Receiver Type	Synthesized PLL
Frequency Response (RF)	A Band 618-634 MHz B Band 678-694 MHz E Band 850-865 MHz
Number of Channels	32
Modulation	+/- 40 kHz
Diversity	True Antenna
RF Sensitivity	< 1.0 uV for 12 dB SINAD
Image Rejection	> 55 dB
Squelch	Tone-code plus amplitude
Power Requirements	12-16 VDC, 500 mA max
Operating Temperature	5° to 45° C (41° to 113° F)
Dimensions	H x W x D 1.72" x 7.8" x 8.0" 43 mm x 206 mm x 210 mm

BP-300 and HT300 Transmitters	
Radiated Output	8 mW typical
Back Lit LCD Display	Channel, frequency, mute and battery level
Microphone Head	Electro-Voice PL22 cardioid dynamic
Standard Lavalier Microphone	Electro-Voice ULM18 uni-directional condenser
TA4 Connector Wiring	Pin 1: Ground; Pin 2 Mic Input; Pin 3: +5 V bias; Pin 4: N/C
Power Requirements	Two AA batteries
Battery Life (typical)	> 14 hours with AA alkaline typical
Bodypack Antenna	Flexible external quarter-wave
Handheld Antenna	Internal proprietary
Dimensions (Bodypack)	H x W x D 3.3" x 2.6" x 0.89" 84 mm x 66 mm x 23 mm
Dimensions (Handheld)	10.57" (26.7 cm) Long

Audio Parameters	
Frequency Response	80 Hz -18 kHz +/- 2 dB
Balanced Output (max @ 40 kHz deviation)	20 dBV
Unbalanced Output	Adjustable 8 mV - 0.755V RMS
Distortion	< 1.0%, 0.4% typical (ref 1 kHz, 40 kHz deviation)
Signal-to-Noise Ratio	> 100 dB A weighted
Dynamic Range	> 95 dB



Whether you're performing at the local rock club, lecturing at a corporate seminar, or speaking in a house of worship, your wireless system needs clear sound, clean channels, and easy-to-use setup and operation. The Electro-Voice RE-2 has it all, combining professional power with previously unmatched simplicity. The RE-2 takes frequency agility to a whole new level, and it ensures that your sound comes through without interference, drop-outs, or compromised audio quality. A third-generation wireless system, the RE-2 is affordable, professional, and designed for those who are serious about their sound.

RE-2 Bodypack BPU-2 Bodypack Transmitter



Made of high-impact ABS plastic, the BPU-2 is a compact bodypack transmitter for the RE-2 wireless system. A single on/off switch also functions as mute, and the TA4 microphone connector is compatible with any EV lavalier or headworn mic.

- **Unique "smart" battery with low battery LED**
- **LCD Displays Group and Channel, Frequency, or Battery Level**
- **One On/Off button that also acts as a mute**
- **On/Off button can be disabled**
- **Cell phone style belt-clip**
- **Optional pouches and fixed clip available**
- **A wide selection of lapel and headworn microphone accessories available**

RE-2 Handheld HTU2 Handheld Transmitter



The HTU2 handheld transmitter is a rugged, high-impact, ABS plastic handheld available with EV N/D267a, N/D767a, RE410, or RE510 microphone elements. One-button on/off/mute, coupled with the smart battery feature, makes the HTU2 easy to use, and easy to maintain.

- **Available with four different microphone elements**
- **N/DYM 267a Dynamic element**
- **N/DYM® 767a Dynamic premium vocal microphone**
- **RE410 cardioid condenser**
- **RE510 supercardioid condenser**
- **On/Off acts as mute and can be disabled.**
- **Internal 1/2-wave antenna**

RE-2 Receiver UHF Wireless Microphone Receiver



The RE-2 is a completely programmable, frequency-agile wireless system with one-touch Auto-ClearScan, Posi-phase™ diversity, and advanced audio circuits for the best possible sound. Operating over 28MHz (six TV channels), it includes XLR mic/line level output, backlit LCD display, and a unique mode that is optimized for guitar.

- **One touch Auto-ClearScan™**
- **28 MHz operating bandwidth, programmable in 25kHz steps**
- **Backlit LCD displays the Group, Channel, Frequency, transmitter battery level, diversity operation, and RF and audio signal level meters**
- **Outputs: 1/4-inch line-level, balanced XLR mic/line**
- **Fourth generation Posi-phase™ diversity**
- **Advanced audio circuits with unique "Guitar" setting**
- **Detachable 1/4-wave antennas**

CONSUMER ALERT

Most users do not need a license to operate this wireless microphone system. Nevertheless, operating this microphone system without a license is subject to certain restrictions: the system may not cause harmful interference; it must operate at a low power level (not in excess of 50 milliwatts); and it has no protection from interference received from any other device. Purchasers should also be aware that the FCC is currently evaluating use of wireless microphone systems, and these rules are subject to change. For more information, call the FCC at 1-888-CALL-FCC (TTY: 1-888-TELL-FCC) or visit the FCC's wireless microphone website at www.fcc.gov/cgb/wirelessmicrophones

Audio Parameters	
Frequency Response	50-15 kHz +/- 2 dB
Balanced Output (max @ 40 kHz deviation) Mic position Line position	 -10 dBV Adjustable 10 mV - 2V RMS
Unbalanced Output	Adjustable 10 mV - 1V RMS
Distortion	< 1.0%, 0.5% typical (ref 1 kHz, 40 kHz deviation)
Signal-to-Noise Ratio	> 100 dB A weighted
Dynamic Range	> 100 dB

RE-2 Receiver	
Receiver Type	Synthesized PLL
Frequency Response (RF)	A Band 648-676MHz (TV Channels 43-48) G Band 614-642 MHz (TV Channels 38-42)
Number of Channels	1112 possible channels, Programmable in 25 kHz steps
Modulation	+/- 40 kHz
Diversity	Digital Posi-Phase True Diversity
RF Sensitivity	< 1.0 uV for 12 dB SINAD
Image Rejection	> 60 dB
Squelch	Tone-code plus amplitude
Ultimate Quieting	> 100 dB
FCC Certification	Approved under Part 15
Power Requirements	12 V AC/DC 300 mA
Antennas	Detachable quarter-wave
Dimensions	H x W x D 1.72" x 7.5" x 5.9" 43.69 cm x 190.5 mm x 150 mm

Microphone Head Options	
767a	N/D767a Supercardioid N/DYM Dynamic
267a	N/D267a Versatile Cardioid Dynamic
RE410	RE410 Classic Cardioid Condenser
RE510	RE510 Classic Supercardioid Condenser

Transmitters, Bodypack (BPU-2) and Handheld (HTU-2)	
Radiated Output	30 mW typical
TA4 Connector Wiring	Pin 1: Ground; Pin 2 Mic Input; Pin 3: +5 V bias; Pin 4: +5 V bias through a 3 kW resistor
Audio Gain Adjustment	40 dB (handheld 26 dB)
Power Requirements	9 Volt Alkaline Battery
Battery Life (typical)	> 8 hours with 9 Volt alkaline typical
Bodypack Antenna	Flexible external quarter-wave
Handheld Antenna	Internal 1/2 wave
Dimensions (Handheld)	9.4" (240 cm) Long
Dimensions (Bodypack)	H x W x D 3.8" x 2.6" x 0.92" 96.5 mm x 66 mm x 23.4 mm

RE-2 Systems

RE-2 UHF systems provide groups of up to 10 simultaneous, harmonized channels per frequency band. Besides individual components, following complete sets, including transmitter and receiver are available:

RE2-N2	Receiver + N/D267a handheld transmitter
RE2-N7	Receiver + N/D767a handheld transmitter
RE2-410	Receiver + RE410 handheld transmitter
RE2-510	Receiver + RE510 handheld transmitter
RE2-G	Receiver + bodypack transmitter + MAC-G3 guitar cord
RE2-BP	Receiver + bodypack transmitter
RE2-L10	Receiver + bodypack transmitter + OLM10 lavalier mic
RE2-L21	Receiver + bodypack transmitter + ULM21 lavalier mic
RE2-E	Receiver + bodypack transmitter + RE97 headworn mic (beige or brown)
RE2 COMBO	Receiver + N/D267a handheld + bodypack transmitter + ULM21 lavalier mic



When applications like rentals, small tours, referee systems, or tough environments call for a wireless microphone system with a mix of REV and RE-2 features, the answer is RE-2 PRO. Bringing sophisticated professional features to an affordable price point, the RE-2 is a completely programmable, frequency-agile system with one-touch Auto-ClearScan. Incorporating advanced features from REV transmitter platforms, the RE-2 Pro allows more systems in one location, longer range, and more microphone head choices. With a price point between the REV and RE-2 systems, the RE-2 PRO offers an exceptional value in professional wireless.

RE-2 PRO Bodypack WTU-2 Bodypack Transmitter



The WTU-2 is a compact metal bodypack for the RE-2 system. Automatically compatible with the Telex RSB-2 mute switch for football applications, the WTU-2 features selectable RF output power and rechargeable AA battery operation with optional BH-200 charger.

- **Cast magnesium construction**
- **Flat steel beltclip**
- **Two AA batteries with NiMH rechargeable option**
- **Exclusive EV Guitar optimization mode**
- **5mW or 50mW transmit power**
- **Compatible with RSB-2 referee mute switch**
- **TA4 connector for all EV mic options**
- **“Blackberry Proof”**

RE-2 PRO Handheld PHTU2 Handheld Transmitter



The PHTU-2 offers a high-impact, ABS plastic handle, and interchangeable RC2 microphone heads. Available with N/D767a, PL80a, N/D967, RE410, and RE510 microphone elements, the PHTU-2 delivers the best sound for any application.

- **ABS Resin body with interchangeable microphone heads**
- **User accessible on/off/mute switch**
- **Defeatable on/off switch**
- **8 hour operation on one 9V battery**
- **Shure microphone compatibility**
- **PL80a and N/D967 microphones not available on HTU-2**

RE-2 PRO Receiver RE-2 Professional Receiver with rack mount hardware



The RE-2 is a completely programmable, frequency-agile wireless system with one-touch Auto-ClearScan, Posi-phase™ diversity, and advanced audio circuits for the best possible sound. Operating over 28MHz (six TV channels), it includes XLR mic/line level output, backlit LCD display, and a unique mode that is optimized for guitar. The RE-2 PRO receiver includes all of the rack-mount hardware needed.

- **Rack-mount unit with front-mount antenna cables**
- **One touch Auto-ClearScan**
- **28 MHz operating bandwidth, programmable in 25kHz steps**
- **Backlit LCD displays the Group, Channel, Frequency, transmitter battery level, diversity operation, and RF and Audio signal level meters**
- **Outputs: 1/4-inch line-level, balanced XLR mic/line**
- **Fourth generation Posi-phase™ diversity**
- **Advanced audio circuits with unique “Guitar” setting**
- **Detachable 1/4-wave antennas**

CONSUMER ALERT

Most users do not need a license to operate this wireless microphone system. Nevertheless, operating this microphone system without a license is subject to certain restrictions: the system may not cause harmful interference; it must operate at a low power level (not in excess of 50 milliwatts); and it has no protection from interference received from any other device. Purchasers should also be aware that the FCC is currently evaluating use of wireless microphone systems, and these rules are subject to change. For more information, call the FCC at 1-888-CALL-FCC (TTY: 1-888-TELL-FCC) or visit the FCC’s wireless microphone website at www.fcc.gov/cgb/wirelessmicrophones

Audio Parameters	
Frequency Response	50-15 kHz +/- 2 dB
Balanced Output (max @ 40 kHz deviation) Mic position Line position	 -10 dBV Adjustable 10 mV - 2V RMS
Unbalanced Output	Adjustable 10 mV - 1V RMS
Distortion	< 1.0%, 0.5% typical (ref 1 kHz, 40 kHz deviation)
Signal-to-Noise Ratio	> 100 dB A weighted
Dynamic Range	> 100 dB

Microphone Head Options	
767a	N/D767a Supercardioid N/DYM Dynamic
967	N/D967 Versatile Supercardioid Dynamic
PL80a	PL80a Supercardioid Dynamic
RE410	RE410 Classic Cardioid Condenser
RE510	RE510 Classic Supercardioid Condenser

RE-2 PRO Receiver	
Receiver Type	Synthesized PLL
Frequency Response (RF)	A Band 648-676MHz (TV Channels 43-48) G Band 614-642 MHz (TV Channels 38-42)
Number of Channels	1112 possible channels, programmable in 25 kHz steps
Modulation	+/- 40 kHz
Diversity	Digital Posi-Phase True Diversity
RF Sensitivity	< 1.0 uV for 12 dB SINAD
Image Rejection	> 60 dB
Squelch	Tone-code plus amplitude
Ultimate Quieting	> 100 dB
FCC Certification	Approved under Part 15
Power Requirements	12 V AC/DC 300 mA
Antennas	Detachable quarter-wave
Dimensions	H x W x D 1.72" x 7.5" x 5.9" 43.69 cm x 190.5 mm x 150 mm

Bodypack (WTU-2)	
Controls	Power, Menu Set, Up and Down
Indicators	Red LED low battery indicator
Backlit LCD Display	Battery level, Channel / Group, or Frequency
Battery Life	8 hours with two AA alkaline typical
Battery Recharge	Optional BH-200 with NiMH AA
Antenna	External quarter-wave detachable
Connector	TA4F input for microphone, Pin 1: ground, Pin 2: Mic input, Pin 3: +5 Bias, Pin 4: +5V through 3k ohm
RF Output Selectable	5 mW or 50 mW typical
Case Material	Cast Magnesium
Dimensions	H x W x D 3.37" x 2.6" x 0.75" 85 mm x 66 mm x 19 mm

Handheld (PHTU-2)	
Controls	Power on/off, Set, Up and Down
LCD Display	Battery level, Channel / Group, or Frequency
Battery Life	8 hours with 9V alkaline typical
Antenna	Internal 1/2 wave
RF Output	30 mW typical
Case Material	High-impact ABS and Aluminum
DImensions	Length x Diameter 9.75" x 2.04" 24.8 cm x 52 mm

BH-200 Two Bay Battery Charger



The BH-200 recharges Nickel Metal Hydride (NiMH) AA batteries in REV-WT and WTU-2 bodypack transmitters. 2500 mAH batteries will last over 10 hours and recharge in 10 hours. The BH-200 helps to reduce waste and the cost of running wireless microphones all day, everyday.

- **LED indicator show charging status**
- **Two drop-in bays for REV-WT or WTU-2 transmitters**
- **10-hour recharge time**
- **Transmitters can be left in charger indefinitely**
- **Takes standard NiMH AA batteries**
- **Safeguards against wrong or improperly inserted batteries**



REV is the best-sounding, most roadworthy professional wireless system in the industry. Combining frequency agility and advanced signal processing with exceptional ease of use, REV features an optimized analog audio path that delivers the truest representation of a wired microphone sound in a wireless system. Two handheld options are available: a stylish, compact metal handle for concert and broadcast, and a user-friendly presentation handle for rental houses, corporate, and institutional applications. With IRIS-Net enabled remote monitoring and control over CAN-bus, REV provides a powerful, full-featured solution to all your wireless microphone needs.

REV-H — REV Concert Handheld Transmitter



The REV-H is a metal transmitter with interchangeable mic heads and a back-lit LCD display. All controls are inside the battery compartment, out of harm's way. With the EV 767a, 967, PL80a, RE410, or RE510 head, the REV-H makes a world-class vocal microphone.

- **Aluminum construction**
- **Back lit LCD display**
- **10 hour operation on two AA batteries**
- **Takes N/D 767, N/D 967, PL80a, RE410, or RE510 microphone head**
- **Shure mic-head compatibility**
- **5 mW or 50 mW transmit power**

REV-PH — REV Presentation Handheld Transmitter



Designed for use with the compact RC2 series of interchangeable microphone elements, the REV-PH is a rugged presentation handheld with a user-accessible on/off/mute switch. The REV-PH is perfect for applications that require the user to mute the microphone or turn it on or off.

- **ABS Resin body with interchangeable microphone heads**
- **User accessible on/off/mute switch**
- **8 hour operation on one 9V battery**
- **Shure mic-head compatibility**
- **5 mW or 50 mW transmit power**

REV-WT — REV Bodypack Transmitter



The REV-WT is a cast magnesium bodypack transmitter that uses two AA batteries, and can be used with the optional BH-200 charger. Unique features include programmable on/off switch, RSB-2 referee mute switch compatibility, and exclusive REV Guitar mode.

- **Cast magnesium construction**
- **Flat steel beltclip**
- **Two AA batteries with NiMH rechargeable option**
- **EV-exclusive Guitar optimization mode**
- **5 mW or 50 mW transmit power**
- **Compatible with RSB-2 referee mute switch**
- **TA4 connector for all EV mic options**
- **“Blackberry Proof”**

REV Receivers — REV-S Single and REV-D Dual Receivers





REV receivers offer the most “wired-sounding” audio on the market. Built in a full rack-width chassis, they include a universal power supply, headphone monitoring, and full front-panel controls, as well as CAN-bus connections on the back for monitoring and control via IRIS-Net PC software.

The REV-S is designed for one-channel applications or larger installations that require an odd number of receivers. The REV-Dual includes two world class UHF receiving channels.

- **Full 19-inch rack width for one or two units**
- **Ground-independent half-wave antennas**
- **Antenna pass-through connections to drive 6 channels (3 REV-D) with just two antennas**
- **IEC connection universal switching power supply**
- **Headphone jack for direct monitoring**
- **PC monitor and control via Iris-Net**
- **CAN-bus pass-through connectors**
- **Front-panel access for all settings and switches**

REV-H and REV-PH Concert Handheld	
Controls	Buttons for Power on/off, set, up and down
Displays	Backlit LCD display showing: battery level, channel/group or frequency
Battery Life (REV-H) (REV-PH)	10 hours with 2 AA alkaline typical 8 hours with 9V alkaline typical
Antenna (REV-H) (REV-PH)	Internal proprietary Internal 1/2 wave
Microphone Elements	EV N/D767a or N/D967 Dynamic EV RE510 or RE410 Condenser PL80a Supercardioid
Case Material (REV-H) (REV-PH)	Machined aluminum High-impact ABS
RF Output	Normal: 5 mW typical High: 50 mW typical
Dimensions	Length x Max Diameter 9.75" x 2.04" 24.8 cm x 52 mm

REV-WT Bodypack Transmitter	
Controls	Buttons for Power on/off, Menu Set, Up and Down
Indicators	Red LED low battery indicator
Backlit LCD Display	Battery level, channel/group or frequency
Battery Life	8 hours with 2 AA alkaline typical
Battery Recharge	Optional BH-200 with NiMH AA
Antenna	External quarter-wave detachable
Connector	TA4F input for microphone, Pin 1: ground, Pin 2: Mic input, Pin 3: +5 bias, Pin 4: +5 V through 3k ohm
RF Output Selectable	5 mW or 50 mW typical
Case Material	Cast Magnesium
Dimensions	H x W x D 3.37" x 2.6" x 0.75" 85 mm x 66 mm x 19 mm

REV-S Single and REV-D Dual Receivers	
Front Panel Controls	Buttons for On/Off, Menu, Set, Up and Down 1/4" headset jack with selector and volume
Indicators LCD	Group, channel, diversity, label, and set-up
Backlit Display	Menu-driven dot matrix
Back Panel Connectors	1/4" unbalanced adjustable line level output XLR balanced Mic / Line level output RJ-45 CAN interface (x2, parallel)
Antennas	Detachable 1/2 wave
RF Specifications	C1 Band 614-638 MHz (TV Channels 37-41) C2 Band 650-674 MHz (TV Channels 44-47) C3 Band 674-698 MHz (TV Channels 48-51)
Number of Channels	950 possible (programmable in 25 kHz steps)
Diversity	DSP Posi-Phase True Diversity
Squelch	Tone-code plus adjustable amplitude
Receiver Type	Synthesized PLL agile UHF
RF Sensitivity	< 0.8 uV for 12 dB SINAD
Audio Specifications	100-15 kHz +/- 2 dB microphone 30-15 kHz +/- 2 dB Instrument
Audio Output Level	Balanced line level 10 mV - 1 V RMS adjustable
Unbalanced Output Adjustable	8 mV to 0.755 V RMS (100 k ohm load)
Distortion	Less than 0.5% (@ 1 kHz, 40 kHz deviation)
Signal to Noise Ratio	> 110 dB (A)
Dynamic Range	> 100 dB
REV-D Antenna Output	TNC
Powered Antenna Output	12 Vdc, 15 mA
Internal Switching Power Supply	Universal cord, 90-240 VAC, 50-60 Hz
CAN Bus Monitoring and Control	IRIS Net
Dimensions	H x W x D 1.72 x16 x 12 in 43.7 mm x 406.4 mm x 304.8 mm

REV Accessories and Parts

Model #	Description
RE90TX	Omnidirectional MicroMini lapel mic
RE92TX	Unidirectional MicroMini lapel mic
RE97TX	Lightweight omni headworn mic
HM7	Headworn cardioid condenser mic
FA-XX	1/2 wave Rx antenna
AB-2	1/2 wave antenna bracket
UAA-500	UHF antenna amplifier (520-806 MHz)
APD4+	Antenna / Power distribution (600-780 MHz)
TP-2	Termination plug for APD4+
LPA-500	Directional Rx antenna (450-900 MHz)

Model #	Description
CXU-XXX	Low loss coaxial antenna cable 25-100 ft
WP-WT	Bodypack pouch for REV-WT
MAC-G2	Guitar cord
RC2-767	767a dynamic head
RC2-967	967 dynamic head
RC2-PL80a	PL80a dynamic head
RC2-410	RE410 condenser head
RC2-510	RE510 condenser head
MSA-REV	Mic stand adapter

CONSUMER ALERT

Most users do not need a license to operate this wireless microphone system. Nevertheless, operating this microphone system without a license is subject to certain restrictions: the system may not cause harmful interference; it must operate at a low power level (not in excess of 50 milliwatts); and it has no protection from interference received from any other device. Purchasers should also be aware that the FCC is currently evaluating use of wireless microphone systems, and these rules are subject to change. For more information, call the FCC at 1-888-CALL-FCC (TTY: 1-888-TELL-FCC) or visit the FCC's wireless microphone website at www.fcc.gov/cgb/wirelessmicrophones

Wireless Antenna Accessories

Genuine Electro-Voice antenna accessories integrate seamlessly with your wireless microphone system to extend its reach, providing a full range of options for remote mounting, amplifying, distributing, and combining antenna signals.

APD4+ UHF Antenna / Power Distribution System



The APD4+ is a UHF antenna/power distribution system for use with RE-2 and REV receivers, providing power and RF signals for 4 units.

- **Provides diversity antenna distribution to four single receivers**
- **Provides power distribution for four RE-2 receivers**
- **Universal power supply with IEC power cord**
- **Phantom power on antenna inputs for UAA-500 amplifier**
- **Can be cascaded to provide antennas for up to 16 receivers (requires 5 APD4+)**

LPA-500 Directional Log Periodic Antenna



The LPA-500 is a passive directional log periodic antenna that is used to extend the range of coverage in given direction. It comes with mounting hardware and 10-foot coax cable.

- **5dB gain on axis compared to an omni-directional antenna**
- **Mounting hardware for microphone stands, truss, walls, and other surfaces**
- **Includes 10 foot coax cable for remote mounting**
- **Standard EV TNC connector for use with CXU-XX cables**

FA-XX Flexible 1/2 Wave UHF Antenna



The FA-XX is a family of ground independent half-wave omni-directional antennas. These antennas can be remote mounted using the AB-2 bracket or attached directly to a receiver or an APD4+.

- **Half-wave omni-directional antenna for excellent coverage**
- **Can be remote mounted using the AB-2 bracket**
- **Frequency tuned for best reception:**
  FA-GW, Green/White, Freq.: 610-710 MHz
  FA-BW, Blue/White, Freq.: 710-880 MHz

UAA-500 Antenna Signal Amplifier



The UAA-500 is a broadband UHF amplifier with selectable 3dB and 10dB amplification settings. Antenna signal amplifiers are used to make up for losses in the cable run, they do not extend the operating range of the wireless microphone.

- **3 or 10dB selectable gain**
- **Green LED to indicate power**
- **Requires phantom power from APD4+ or REV receiver**
- **Wideband 500 – 900 MHz operating range**
- **Cast aluminum case with mounting tabs**

APS-1 Passive Antenna Splitter / Combiner



The APS-1 is a passive device that splits one transmit signal into two, or combines two receive signals into one. A combiner can be used to locate antennas in multiple rooms for increased coverage.

- **Combines two antenna signals into one**
- **Operating range 100MHz to 900MHz**
- **Low signal loss of -3.4dB**
- **High signal isolation of 23dB**
- **EV standard TNC connections**

CXU-XXX Low-Loss Coaxial Cable



The CXU is a family of low-loss coaxial cables for longer antenna cable runs. Pre-cut in lengths of 25 ft (8 m), 50 ft (16 m), 75 ft (23 m), and 100 ft (30.6 m). "XXX" designates length in feet.

- **Less than 3.5 dB loss per 100 feet at UHF frequencies**
- **Terminated on both ends with TNC connectors**
- **Pre cut in 25, 50, 75 and 100 foot lengths.**
- **Easily connected with AB-2 bracket for other lengths**

AB-2 Universal Mounting Bracket



The AB-2 is a universal mounting bracket for use with FA-XX and CLA-X ground-independent half-wave antennas. Includes 10-foot coax cable.

- **Mounts antenna on wall or other structure**
- **Can be used to mount a half-wave antenna on microphone stand**
- **Includes a 10ft coax cable**
- **Includes male-to-male TNC adapter for use with CXU-X or other longer coax cables**

BPA Quarter-wave Flex Bodypack Antenna



The BPA is a direct replacement for the quarter-wave flex antenna that is included with the REV-WT, WTU-2, and older CSB-1000, WT-1000, and REV-BP bodypacks.

- **Flexible for durability but stands out from the body for efficient radiation**
- **Replacement for standard antenna that ships with bodypacks**
- **Frequency tuned for efficient radiation**
- **Threaded connector for REV-WT and WTU-2 bodypacks**

AN-Sflex Quarter-wave Super Flex Bodypack Antenna



Quarter-wave super flex antenna for REV-WT, WTU-2, and older CSB-1000, WT-1000, and REV-BP bodypacks.

- **Extreme flexibility for use under costumes**
- **Smaller than BPA for discrete mounting**
- **Frequency tuned for efficient radiation**
- **Threaded connector for REV-WT and WTU-2 bodypacks**

TP-2 50 Ω TNC Termination Plug



50 Ω TNC termination plug for use with APD4+ antenna distributor. All unused outputs of the APD4+ must be terminated to prevent reflections and range problems.

- **TNC threaded connection**
- **50 Ω termination for APD4+**

Microphones

Electro-Voice microphones for wireless combine EV-quality sound and durability with the freedom of movement that comes from wireless miking. These versatile performers are available in a variety of configurations, including lavalier and headworn, and can be used with any EV bodypack transmitter. Add a TXA adapter (page 23) to use any of these models in XLR wired applications as well.

OLM10 Omni-Directional Lavalier Microphone



The OLM10 is a rugged lavalier microphone that picks up sound from all directions. The small size and wide pick up pattern make this an ideal microphone for beginners and soft speakers.

- **Back-electret omni-directional microphone**
- **Clothing clip included for easy mounting**
- **Integrated 6-foot (180cm) cable**
- **TA4F connector is compatible with all EV bodypack transmitters**
- **Use with TXA for wired XLR applications**

ULM21 Cardioid Lavalier Microphone



The ULM21 is a rugged lavalier microphone with a directional pickup pattern. The small size and pickup pattern helps reduce feedback and improve sound quality.

- **Back-electret cardioid microphone**
- **Clothing clip attaches at microphone body to maintain cardioid pattern**
- **Integrated 6-foot (180cm) cable**
- **TA4F connector is compatible with all EV bodypack transmitters**
- **Use with TXA for wired XLR applications**

RE90TX Omni-Directional Lavalier Microphone



The RE90Tx is a lightweight high-performance omni-directional lavalier microphone. Terminated with a TA4F connector for any EV wireless system, the RE90Tx is perfect for broadcast, house of worship, and business applications.

- **Ultra-miniature lavalier (Diameter 0.2")**
- **Back-electret condenser element**
- **Omnidirectional polar pattern**
- **Integrated 6-foot (180cm) cable**
- **TA4F connector is compatible with all EV bodypack transmitters**
- **Use with TXA for wired XLR applications**

RE92Tx Directional Lavalier Microphone



The RE92Tx is a miniature professional-quality electret condenser lavalier microphone with a cardioid pickup pattern. Designed for speech, it is an excellent choice for use in presentations, houses-of-worship, broadcast, or theater applications.

- **Back-electret condenser element**
- **Cardioid polar pattern**
- **Integrated 6-foot (180cm) cable**
- **TA4F connector is compatible with all EV bodypack transmitters**
- **Use with TXA for wired XLR applications**

RE920Tx Horn and Instrument Microphone



The RE920Tx is a cardioid condenser microphone designed for wireless use with musical instruments via its specially designed instrument-mount clip assembly. Terminated in a TA4F connector for use with EV and Telex bodypack transmitters, it can also be used hard-wired with the additional TXA XLR preamp.

- **Unidirectional horn/drum mic**
- **Back-electret condenser element**
- **Wired with TA4F connector**
- **Smooth audio response and high SPL handling**
- **Custom clip for securely mounting on a variety of instruments**
- **Use with TXA preamp for XLR wired applications**

RE97Tx — Micro-Headworn Condenser Microphone



The RE97Tx is an ultra-low profile, omnidirectional, back-electret condenser, headworn microphone designed for use with standard EV and Telex belt packs. The RE97Tx is intended for spoken-word use such as houses-of-worship, corporate AV, theaters, fixed install, and other applications where a full-range, natural, well-balanced sound is required. The RE97Tx microphone is available in beige, brown, and black.

- **Ultra-low profile for inconspicuous use**
- **Lightweight, durable**
- **Interchangeable for left or right ear**
- **Omni-directional polar pattern provides clean sound and uniform response**
- **Use with TXA preamp for XLR wired applications**

RE97-2Tx — Two Sided Micro-Headworn Condenser Microphone



The RE97-2Tx is an Ultra-low profile, omnidirectional, back-electret condensor headworn microphone ideal for applications where a full - range, natural, well balanced sound is required. The RE97 microphone element provides a clean and accurate sonic quality and uniform output. This has a two ear hook design with a band behind the head for comfort and stability. The band is fully adjustable and the hooks fold flat for storage and the boom can be on the left of right side.

- **Two ear wearing style for stability**
- **Lightweight, durable**
- **Interchangeable for left or right side microphone boom**
- **Omni-directional polar pattern for clean sound**
- **Moisture resistant**
- **TA4F connector is compatible with all EV bodypack transmitters**
- **Use with TXA for wired XLR applications**

RE97LTx — Micro-Lavalier Condenser Microphone



The RE97LTx is a micro-lavalier (black and beige) omni-directional, condenser microphone designed for applications that demand a high quality microphone element that is practically invisible when worn by the speaker or performer. The RE97LTx is intended for spoken-word use in theatrical performance, fixed installations, corporate AV presentations, houses of worship, or any venue.

- **Ultra-Miniature Size for Inconspicuous Use**
- **Omni-directional Polar Pattern to Provide Clean Sound and Uniform Response**
- **Available in black and beige**
- **Superior Sound Quality**
- **TA4F connector is compatible with all EV bodypack transmitters**
- **Use with TXA for wired XLR applications**

HM2 — Headworn Condenser Microphone



The Electro-Voice HM2 headworn microphone is the ideal microphone for anyone who requires high-quality vocals in a hands-free application. The HM2 is perfect for use by lead vocalists, singing instrumentalists, dancers, aerobic instructors and other presenters.

- **Lightweight – 0.9 oz (25 gm), less cable**
- **Behind-the-head headband is comfortable and stays in place**
- **Cardioid pattern for good gain-before-feedback**
- **Frequency response and proximity effect equivalent to handheld vocal mics**
- **TA4F connector is compatible with all EV bodypack transmitters**

HM7 — Headworn Condenser Microphone



The HM7 headworn microphone is the ideal microphone for singers and entertainers that really need to move during a performance. The HM7 has a supercardioid microphone that offers concert-grade vocal performance and stage-noise rejection. The rugged headband makes for a comfortable fit and the flexible boom ensures precise microphone placement.

- **Supercardioid pickup pattern ensures good gain before feedback**
- **Behind-the-head headband is comfortable and stays in place**
- **Frequency response and proximity effect equivalent to premium handheld vocal mics**
- **TA4F connector is compatible with all EV bodypack transmitters**
- **Use with TXA for wired XLR applications**

Microphone Heads for REV-H, REV-PH and PHTU-2 — RC2-XXX

- **RC2-767 – Supercardioid dynamic N/D767a**
- **RC2-967 – Supercardioid dynamic N/D967**
- **RC2-PL80a – Supercardioid dynamic PL80a**
- **RC2-410 – Cardioid condenser RE410**
- **RC2-510 – Supercardioid condenser RE510**

The RC2 line of interchangeable heads for REV and RE-2PRO wireless systems includes EV's top dynamic and condenser capsules for vocals. Dynamic vocal microphones available are the N/D767a, N/D967, and the PL80a. Premium RE410 and RE510 concert condenser microphones complete the series.



Kits, Accessories, and Cables

With a selection of mounting brackets, cables, and other accessories, Electro-Voice helps you tailor your EV wireless microphone systems to the specific requirements of each and every situation.

RM-D — Dual Rackmount Kit



This kit for rack-mounting two receivers works with RE-2 systems as well as with FMR-500, SAFE-1000, and other older half-rack receivers. Includes all required screws and hardware.

- **Mounts two RE-2 receivers side-by-side in one 19" rack space**
- **Includes knock-outs for FMCK front mount antenna cables**
- **Includes screws, hardware and installation instructions**
- **Powder coated steel construction**

RM-S — Single Rackmount Kit



A single rackmount kit for RE-2 systems as well as for FMR-500, SAFE-1000, and other older half-rack receivers. Includes all required screws and hardware.

- **Mounts one RE-2 receiver in one 19" rack space**
- **Includes knock outs for front mount antenna cables, (RMS-TNC includes cables)**
- **Includes screws, hardware and installation instructions**
- **Powder coated steel construction**

FMCK — Front Mount Antenna Kit



The FMCK includes four front-mount antenna cables with female TNC connectors on one end and a bulkhead male TNC on the other end. The male connectors mount in the provided knockouts of the RM-S and RM-D rack mount kits. The four included cables are enough for two receivers.

- **Female TNC end connects to any EV/Telex receiver**
- **Male TNC connector mounts in the rack mount knockouts**
- **Four cables included in each kit, enough for two receivers**

RSB-2 — Referee Mute Switch



The RSB-2 toggle mute switch is the football standard for referee wireless systems. The RSB-2 plugs in between the lavalier or headworn microphone and the bodypack transmitter to provide a noiseless mute. The REV-WT and WTU-2 bodypacks automatically recognize the RSB-2 but older transmitters require a special referee version.

- **TA4 in and out connectors for any EV/Telex lavalier microphone and bodypack transmitter**
- **Belt clip for wearing on right or left side**
- **Positive toggle switch is large and easy to use without looking**
- **Noiseless mute, no clicks or pops**

WP-WT — Leather Pouch for REV-WT



The WP-WT is a leather pouch for REV-WT and WTU-2 bodypack transmitter. A clear window in the front allows the LCD screen to show through and the snapping top strap secures the bodypack. An integrated leather covered metal beltclip on the back of the WP-WT secures the unit to a belt, costume, or guitar strap.

- **Elastic top band for a snug, secure fit**
- **Clear window over LCD screen**
- **Top strap snaps to secure bodypack**
- **Integrated leather-covered clip mounts to belt, costume, or guitar strap**

MAC-2 XLR to TA4 Adapter Cord



The MAC-2 cord allows any dynamic handheld microphone be used with any EV or Telex wireless bodypack transmitter.

- **TA4 connector for any EV or Telex bodypack**
- **4 ft cord to XLR**
- **Works with dynamic microphones only**

MAC-G2 George L Guitar Cable



No-solder George L™ guitar cable for the REV-WT, WTU-2, CSB-1000, WT-1000, and REV-BP. The MAC-G2 includes a straight-in and a right-angle quarter-inch connector so you can use whichever is best for your guitar.

- **No-solder, low noise cable and connectors for great sound and easy repairs**
- **Includes right-angle and straight-in quarter-inch connector**
- **TA4 connector for any EV or Telex bodypack transmitter**

MAC-G3 RE-2 Guitar Cord featuring George L Cable



The MAC-G3 uses low noise George L guitar cord for the BPU-2 and WT-500 bodypack transmitters. Using the MAC-G3 with the EV RE-2 exclusive guitar optimization gives you one of the most “wired-sounding” wireless rigs of all time.

- **Low noise cable for great sound**
- **Built in signal pad to work with BPU-2/WT-500 bodypack transmitters**
- **TA4 connector for any EV or Telex bodypack transmitter**

WP-1000 Leather Pouch for BPU-2



The WP-1000 is a leather pouch for CSB-1000, BPU-2, WT-500, WT-1000, and REV-BP bodypack transmitter. A clear window in the front allows the LCD screen to show through and the snapping top strap covers and protects the on/off button. An integrated leather covered metal beltclip on the back of the WP-1000 secures the unit to a belt, costume, or guitar strap.

- **Fits BPU-2, WT-500, REV-BP, CSB-1000, and WT-1000 bodypacks**
- **Elastic sides for a snug, secure fit**
- **Clear window over LCD screen**
- **Top strap snaps to secure bodypack and it covers the on/off switch**
- **Integrated leather-covered clip mounts to belt, costume, or guitar strap**

BC-1000 **Beltclip with Tab and Screw**	**BP2-Clip-Swivel** **Beltclip with Tab and Screw**	**BP2-Clip** **Flat Beltclip for BPU-2**	**MSSA** **Custom Stand Adapter**	**MSA-REV** **Custom Stand Adapter**	**HHCK** **Handheld Color Kit**
		The BP2-Clip is a flat beltclip for the BPU-2, and the WT-500 transmitter. The BP2-Clip offers an alternative mounting style to the standard swivel clip.			
The BC-1000 is a cell phone style swiveling beltclip with tab and screw for the REV-WT, WTU-2, CSB-1000, WT-1000, or the REV-BP transmitter. The mounting tab also allows these transmitters to work with the PC and Boundary Satellite wireless accessory microphones.	The BP2-Clip-Swivel is a cell phone style swiveling beltclip with tab and screw for the BPU-2, and the WT-500 transmitter. The mounting tab also allows these transmitters to work with the PC and Boundary Satellite wireless accessory microphones.		The MSSA is a custom fit stand adapter for the RE-2/FMR-500, PHTU-2 and REV-PH handheld transmitters.	The MSA-REV is a custom fit stand adapter for the RE-H handheld transmitters.	The HHCK includes six Different-color caps for the HTU-2, HT-500, PHTU-2, and REV-PH handheld transmitters. The color caps help the sound engineering identify from a distance which channel is in use.

Choose your wireless system wisely!

Wireless systems are not all created equal. In fact, only a very few of the wireless microphone products on the market today are actually designed and built by the people who sell them, and many of the most popular systems are built by microphone companies that only recently began to manufacture wireless devices.

Electro-Voice and Telex are unique in the world of wireless. EV has been leading the way in microphone technology for over 80 years, and Telex practically invented professional wireless microphone systems three decades ago. When Telex and Electro-Voice came together in the late 1990's, these two great heritages were combined into a one-of-a-kind microphone company. All EV wireless products are the result of this vast experience and technological know-how.

As wireless products become more widely used, more and more problems are being encountered in installation and performance. Wherever possible, we build features into our new products to take care of problems before they start. But wireless problems are often unique to the situation and require a trained professional with considerable RF experience to solve. EV maintains a staff of highly trained RF engineers and designers to help our dealers and customers get systems working in the most critical and demanding applications. The key for the dealer is the knowledge that their sales are backed by a large company with plenty of talent and experience in wireless installations.

Important wireless terminology

A wireless system at its most basic includes a transmitter—handheld or bodypack—and a receiver. As in any other technical business, however, beneath that apparent simplicity the world of wireless comes with its own set of concepts and technical jargon. To avoid being misled by overzealous marketing materials, it's very important to understand the basics of this language and to dispel any myths or preconceived notions that create an inaccurate picture of how things work. In the following sections we'll go through the more common technical terms and try to give you an objective outlook.

What is diversity?

The term "diversity" is derived from the word "diverse", which means varied or unlike. In the world of RF, this translates into two or more unlike sources of the signal energy that is received at the receiver. Referred to as "diversity reception," this approach is used to minimize the effects of multi-path delays that can create drop-outs of the radio signal. By combining or selecting two or more antenna sources for the same signal, diversity reception produces a constantly usable signal. While this always requires more than one antenna, each in a different physical location, it does not necessarily require multiple receivers.

There are many types of diversity circuits used in wireless microphones on the market today, including twin-receiver "switching" diversity, antenna diversity, switching antenna diversity, and the EV-patented Posi-Phase auto-diversity. Each of these methods may be effective, depending on the particular implementation of the circuitry by the manufacturer, provided that other critical areas of the receiver circuitry are not compromised.

As long as two sources of signal are unlike or varied from each other, they qualify as diverse. You may hear a lot of hype about some systems claiming "true" diversity, but in reality all diversity systems use different sources of received energy from two or more antennas, and by definition any receiver using two or more varied signal inputs has diversity. Major manufacturers may differ in their particular implementation of the diversity circuitry, but from an engineering standpoint the term 'true diversity' is meaningless.

What is patented Posi-Phase diversity?

Posi-Phase diversity uses two antennas that are spaced apart and connected to a single high-quality receiver. The antenna signals are connected internally to microprocessor circuits that monitor the phase relationship between the two antennas. Both antennas are active at all times, which greatly increases the signal strength under normal conditions. In the event of a signal interruption from phase cancellation, either partial (multipath) or total (dropout), the logic circuitry adjusts the phase of the secondary antenna to a positive condition relative to the primary antenna. Occurring in a fraction of a second, this process continually adjusts the phase of the second antenna for the optimum signal. A similar patented technique is used in cellular telephones to ensure reliable operation.

Telex Posi-Phase diversity is more effective and less costly to produce than switching diversity because only one high-quality receiver is required. That allows us to devote a greater portion of our resources to important aspects of receiver design such as filtering, IF circuitry, squelch, and audio circuitry. By concentrating on these critical areas, we're able to achieve superior overall receiver performance compared to switching diversity. This superior performance is easily verified by a simple shoot-out involving range and audio-quality tests. In any given environment, EV systems will typically go nearly twice as far as competitive models in a similar price range.

What is Phase Cancellation?

Phase cancellation and multipath dropouts result from the fact that it takes longer for the reflections of a given radio signal to reach the receiver's antenna than it does for the same signal to reach that antenna directly. Because of this delay, when the direct and reflected signals are combined in the receiver they are slightly out of phase. This phase difference causes the two signals to interfere with each other, resulting in diminished signal quality. Depending on the distance and geometry, the signals may temporarily be 180 degrees out of phase, thereby canceling each other completely, which is referred to as a dropout.

A very common example of this phenomenon has occurred to most people at one time or another when listening to FM radio in their car. As you pull up to a stop light, you'll sometimes notice that the sound becomes fuzzy and fades away as you roll slowly forward. Pull up just a few feet farther and the station comes back. The difference in reception illustrates how slight changes in position can impact phase coherence, resulting in signal cancellation.

Because multipath problems are related to the geometry of the set up, it is possible to walk-test your transmitters using tools like the Sound Check Screen in REV receivers. If you find potential dropouts, you can then correct them by adjusting antenna placement. Unfortunately, any change to the scenery, arena, or even number of people in the performance area can affect reflections and reception.

What is a squelch circuit?

Good receiver design begins with the RF and IF filtering, but another important part of the receiver circuitry is the squelch system (RF detection circuitry). This circuitry acts as a "gate" that is closed to audio signals unless the presence of an RF signal is detected at the receiver. Simple gate-squelch circuits, which are the kind most commonly used in competing wireless receivers, keep the audio path closed (or grounded to be very quiet) when the RF signal is below a set threshold. As soon as the detected RF energy reaches that threshold, the audio path is opened to audio signal. The problem with this approach is that simple gate-squelch circuits can't tell the difference between wanted RF signal and unwanted signal—distortion, hiss, and harmonics from sources such as lighting dimmers, CD or DVD players, computers, digital effects devices, and electric motors. Since extraneous RF energy will open the squelch gate just as easily as desired signal, users often "crank up" the squelch level (raise the threshold). That limits sensitivity to noise, but it also reduces the range and performance of the system.

What is a combination squelch circuit?

Advanced products like the FMR-1000, RE-1, and ENG-100 use a combination of tone-code and amplitude squelch to provide maximum protection against errant signals. In this case, the tone squelch works as described in the previous section and when the tone is present the amplitude squelch remains active. In the unlikely event that random noise fools the tone detector, the signal at the intended frequency must still be high enough to register on the amplitude squelch. The use of backup amplitude squelch also reduces the chances that an errant signal will cause audio noise while the transmitter is turned off.

Wireless “gain” settings

Almost every wireless microphone system has a deviation control adjustment on the transmitter that is labeled, confusingly, as “Gain.” Unfortunately, marking this adjustment as a “gain” setting encourages end-users to try to use it to set their overall audio level, which is not what the control is designed to do. (Audio levels are controlled at the mixing board, which is why wired microphones do not have a level control either.)

Found only on wireless microphone transmitters, the deviation setting is used to maximize signal-to-noise ratio and dynamic range. In a wireless microphone system, audio information is transmitted as changes in the carrier frequency (frequency modulation, or FM). The greater the changes in frequency (deviation), the better the signal-to-noise ratio will be. So, if the system’s maximum deviation is +/-40 kHz, we want deviation to approach 40 kHz when the input into the microphone is at its loudest. If the “gain” is set so that the maximum signal results in more than 40 kHz deviation, signal peaks will be clipped or distorted. If, on the other hand, the deviation is set too low, we are not taking the fullest possible advantage of the system’s signal-to-noise performance.

How to properly set the wireless “gain”

1) Disconnect the audio output of the wireless receiver from the input to the mixing console, or mute the PA system.
2) If the source is a microphone, sing or scream into the microphone as loudly as it will ever be used in performance in this setting. If the source is a guitar, turn the volume knobs on the guitar to full and play the loudest passage of the performance.
3) While the singer is singing or guitarist is playing, adjust the gain on the transmitter until the audio meter peaks in the usable range (strong signal but no clipping).
4) Connect the audio output of the wireless receiver to the mixing console inputs (or unmute the console) and use the mixing board or amplifier to set the appropriate audio levels for the PA. For a guitar/instrument wireless system, use the receiver output level adjustment to match the “wired” instrument output level.

What other considerations should I think about?

When selecting a wireless system, consider the long-term use for the system and always purchase a complete solution. For example, if you intend to eventually add more systems, make sure you select a system that will allow for the total number of future systems you may need. Also, don’t forget to consider what microphones are compatible with the system and at the availability of accessories such as antenna combiners, antenna amplifiers, antennas, and low -loss coaxial cable. Electro-Voice has a complete line of wireless accessories for UHF systems. These accessories allow the system to be tailored for the individual application and allow the user to get the most from their investment.

Wireless Microphone Antenna Guide

ANTENNA TYPES

Most products ship with 1/4-inch wave antennas to be mounted directly on the receiver or the rack mount hardware. These antennas are not ground independent, meaning that they cannot be mounted remotely at the end of a run of coaxial cable. For remote mounting, use 1/4-inch wave or directional Log Periodic antennas such as the FA-GW, CLA series, or the LPA500.

REMOTE MOUNTING

Antennas should be mounted with a direct line-of-sight to the performance area. Whenever possible, that also means above the cast and crew, so one of the best places for mounting antennas is ten feet in the air at the side of the stage. All coaxial cable has signal loss, so keep the cable runs to minimum and use low-loss cables to keep the maximum performance range. The CXU cables from EV are very low-loss cables that will help maintain range.

ANTENNA DISTRIBUTION

When racking multiple receivers together, it is best to use an antenna distribution system like the APD4+. The APD4+ provides power and antenna connectors for four half-rack receivers and can be cascaded to run antennas for up to 16 systems from 2 antennas (using five APD4+ units). With the REV-D receiver’s antenna pass-through feature, one APD4+ can supply antennas for 24 channels of REV wireless. To prevent loss of range, the input of each additional splitter must be connected to the output of the original APD4+ (the one that is connected directly to the antennas).













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