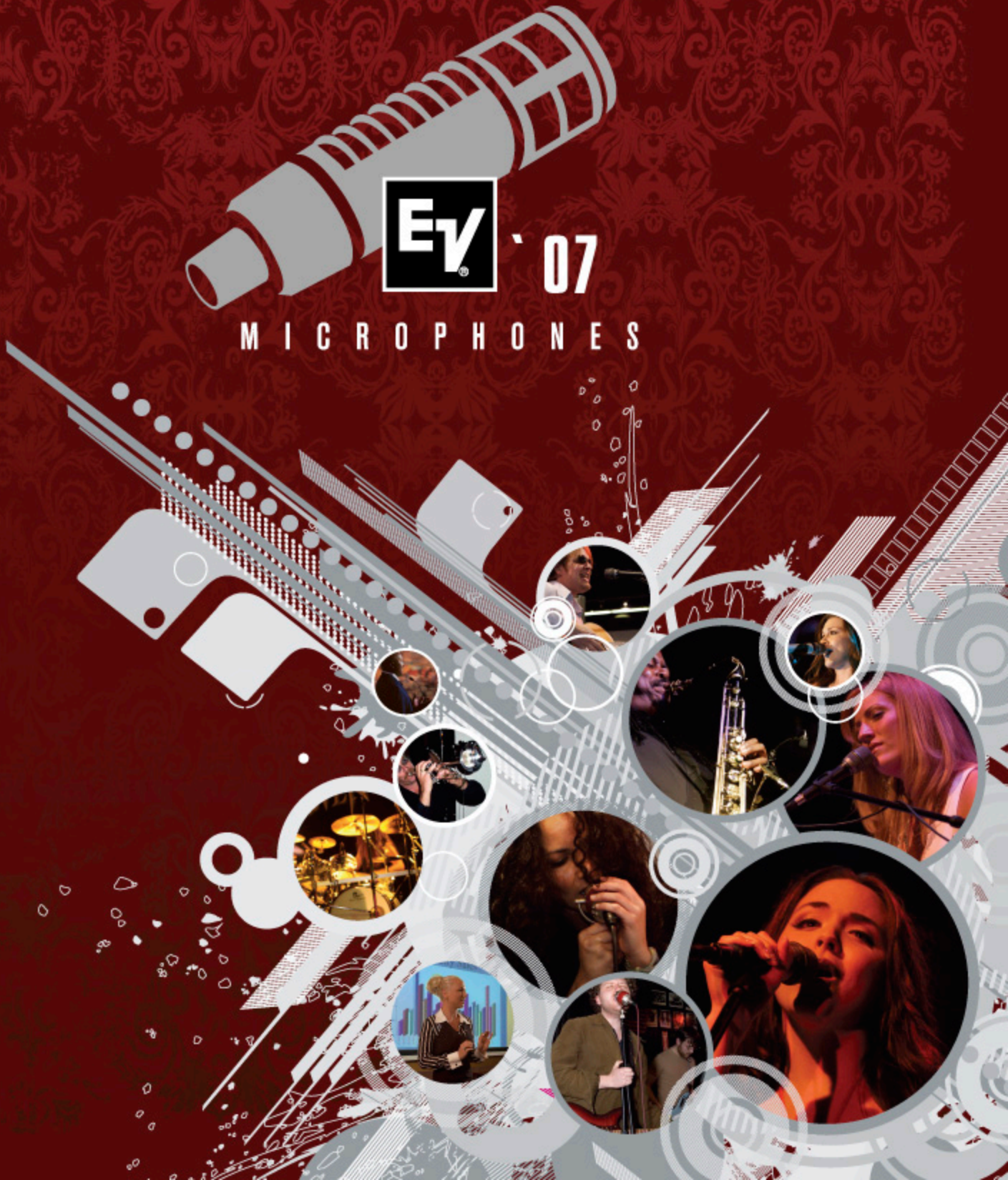
EV '07

MICROPHONES



INTRODUCTION

In 2007, Electro-Voice celebrates 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 excellence and reliability while continuously upping the ante with breakthrough technologies like Variable-D™ and noise cancellation.

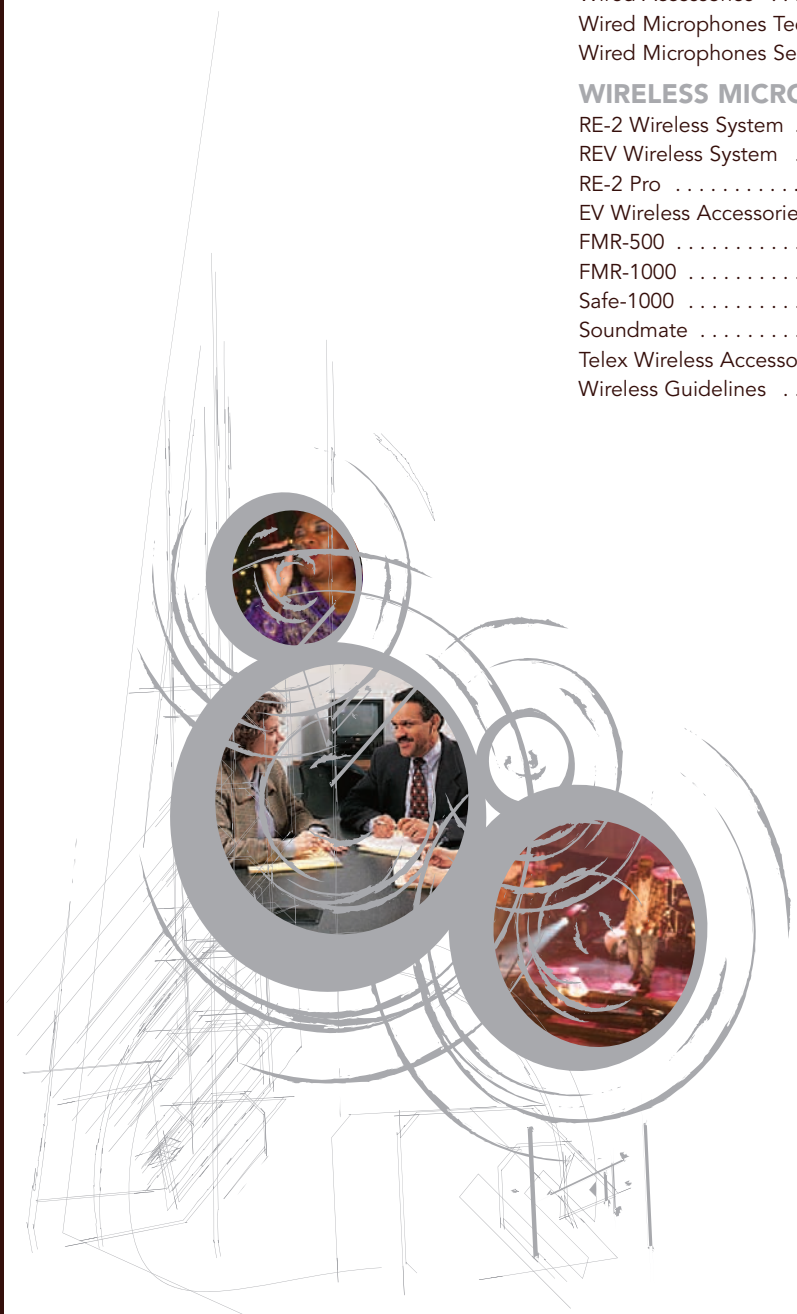
From day one, Electro-Voice built all its microphones to be bulletproof and sound beautiful. It's not unusual to see a classic Electro-Voice microphones like the 635A—the broadcast industry standard fondly known as the "Buchanan Hammer" after Electro-Voice's former home in Michigan—still going strong after 30 years on the job.

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 world tours with today's biggest artists; from Knut Rockne using his "Electric Voice" at Notre Dame to the state-of-the-art mics 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…

Electro-Voice stays true to its roots as a great American brand while advancing to new heights in the 21st Century. We were the first to offer N/DYM™ neodymium technology in microphones, and the only wireless to offer ClearScan™ for quick, automatic wireless microphone channel coordination. And that's just the beginning—our engineers are constantly working on new ways to keep your tone intact…

Our latest and greatest? REV™. Made in the USA to the industry's highest standards, the new REV intelligent wireless system places Electro-Voice in pole position, adding its unique features to our hefty portfolio of patents and award-winning wireless technologies. REV's optimized audio path was developed to provide the truest representation of a wired microphone or guitar sound possible in a wireless system. Simply put, this is the most wired-sounding wireless you've ever heard.

From soundcheck to encore, Electro-Voice microphones offer great sound, durability, ergonomics and style, whether you're outfitting a world tour, a house of worship, a professional studio or a neighborhood block party. We believe the equipment you use should withstand both the rigors of performance and the scrutiny of your listeners. At Electro-Voice, innovating new products to make you sound your best is job number one—our name says it all.



LIVE MICROPHONES
INTRODUCTION

Electro-Voice® Live Sound Microphones

Electro-Voice® has long been a leader in the design and manufacture of live sound microphones. Preferred by performers the world over since the company was founded, Electro-Voice microphones have been seen in the hands of the music industry's greatest artists. Today's endorser list is no less impressive (please see page opposite) and includes performers from virtually every musical genre. So, why have so many top-name performers chosen Electro-Voice microphones over the years? Let us explain...

Better Sound: The "Garbage In = Garbage Out" Factor

The bottom line is that no vocalist should go to a gig without his/her own mic, specifically chosen to match his/her vocal type and music style. Electro-Voice engineers have put innumerable hours into developing a number of microphones that suit various vocal types. Why? From the company's engineering department to its sales and marketing staff, Electro-Voice is comprised of real, performing musicians. They realize that the microphone is the first step in the signal path and should represent the voice or instrument as naturally as possible – because, after all, garbage in equals garbage out. The purest voices are often polluted by poor or improperly chosen equipment. Electro-Voice is dedicated to maintaining the integrity of what the vocalist or musician puts into their mics. No amount of equalization or processing can fix what starts out as garbage because of the wrong mic. And whether you're playing a coffee house "open mic" or performing in front of 40,000, you should sound your very best.

Choices – Why Settle for the Old Standard?

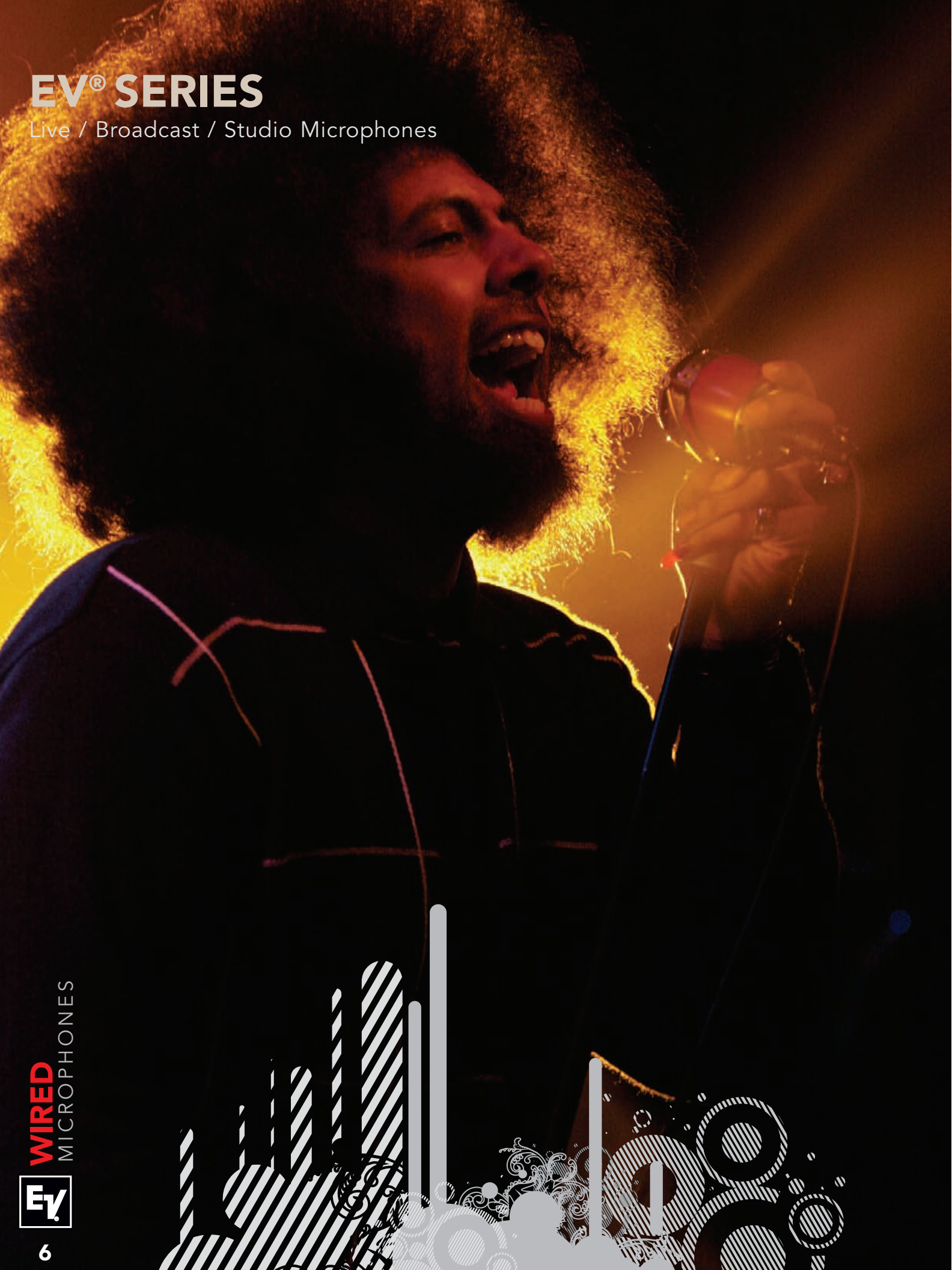
Electro-Voice® provides the performer with options for both vocal and instrument use. From lead vocals to kick drum or guitar amp, Electro-Voice has the perfect mic to suit your unique application. Why settle for the old standard?
All mics ARE NOT created the same.

ENDORSERS

a.d.n. (Latin America)
Al Davis (FOH engineer, Rev. Al Green, Lee Scratch Perry)
Albert Lee
Alexx Calise
Alison Hinds (Caribbean)
Annie Minogue Band
Arizona
Asesino
Avishai Cohen
Bill Racine (studio engineer, Mogwai, Mercury Rev, Whirlwind Heat, etc.)
Black Label Society
Blackbird McKnight (Parliament)
Blackhawk
Blasko (Ozzy Osbourne)
Blue County
Bobby Bare Jr.
Brian Herb (FOH engineer, Helmet)
Bruce Reiter (FOH engineer, Static-X, Dragonforce)
Captain Yonder
Captured by Robots!
Cesaria Evora (France)
Champtown
Chumley's Toy
Clem Burke (Blondie)
Clipp Payne (Parliament)
Courtney Pine
Craig Schumacher (studio engineer, Neko Case, Calexico, etc.)
dada
Damon Johnson (Alice Cooper)
Dan Lance (FOH engineer for John Prine, Kris Kristofferson, Leon Redbone)
Danny B. Harvey
Dave Fridmann (Grammy Award winning recording engineer, The Flaming Lips)
Dave Mustaine
Dave Wolfe Trio
David Frizzell
David Lee (Legendary Shack Shakers)
Deke Dickerson
DevilDriver
Devo
Dick Dale
Dino Cezares
DJ Ashba
Doug Short (FOH engineer, David Lee Roth, Slayer)
Dr. Dog
Duane Dungey (FOH engineer, Parliament)
Echo and the Bunnymen
Ed "Mr. Improv" Hull
Eric Gales
Eric Tavares
Fishbone
Geezer Butler (Black Sabbath)
George Clinton Parliament All-Stars
Go Fish
Gregg Rolie Band
GWAR
Hatebreed
Heaven Davis
Helen Cornelius
Hell Yeah
Henry Murphy and the Seahawks
Herman Li (Dragonforce)
Honeydogs
Hoven Droven (Sweden)
Jack Frost
James Lomenzo (Megadeth, Black Label Society)
Jamey Jasta (Hatebreed, Headbangers Ball Host)
Jeremy Smith (FOH engineer for GWAR)
Jerry Montano (Hell Yeah, Danzig)
Jim Baker (engineer for John Berry)
Jim Vilandre
Jimmy Clark
Jimmy Keegan (Spock's Beard)
Joe Bonamassa
Joe Fraulob (Danzig)
John Berry
Johnny Hawthorn Band
Johnny K (3 Doors Down, Disturbed)
Johnny Kelly (Type-O-Negative, Danzig)
Joshua Craig Podolsky
Karl Denson's Tiny Universe
Keith Capsuto
Keith Frank
Kenny Olson (Kid Rock, The Flask)
Kenny Wayne Shepherd
Keri Noble
Kerry King (Slayer)
Kreg Viesselman
Larry Russell
Lee Scratch Perry
Leroy Van Dyke
Los Lobos
LMT Connection
Lonesome Spurs
Maktub
Marcus Miller
Mark Robertson (studio engineer, East Roswell Studios)
Marthia Sides
Meldrum
Michel Montano (Caribbean)
Ministry
Moe Bandy
Mogwai
Neal McCoy
Nick Catanese
Niki Barr
Pete Anderson
Pete Shelley (Buzzcocks)
Phi/Bloch
Presidents of the United States of America
Procussions
Purple Reign
Rafael Alkins (monitor engineer, Ricky Martin)
Real Groove Band
Reamonn (Germany)
Reverse Cowgirl
Richard Buckner
Rick Ward
Robosaurus
Rockie Lynne
Rocky Holman (FOH engineer for John Mellencamp)
Rogue Wave
Rupee (Caribbean)
Sean Peel (FOH, Three Inches of Blood)
Secret Agent Bill
Skywynd
Snoop Dog
Southern Culture on the Skids
Static-X
Stereo Fallout
Steve Brown
Steve "Sonny" B. Taylor (engineer for Neal McCoy)
Steve Vai
T.M. Stevens
Terri Nunn
Terri Walker
Terry Evans
The Legendary Shack Shakers
The Black Irish
The Buzzcocks
The Honeydogs
The Lads (Australia)
The Monks
The Reverend Al Green
The Roots
Theresa Andersson
Three Days Grace
Thundherstruck
Tim Burlingame/Kathrin Shorr
Tim Lepard
Travis Larson Band
Twisted Sister
Vibro Champs
Wolf Simon
Yngwie Malmsteen
Zakk Wylde

EV® SERIES

Live / Broadcast / Studio Microphones



WIRED MICROPHONES

CARDINAL

RAVEN

The EV® Series Cardinal™ is a cardioid condenser designed to capture the detail of both voice and instrument in live sound or studio applications. Employing Class A, discrete ultra-low noise amplifier circuitry, the Cardinal's smooth and detailed performance is sure to please even the most discerning artists and engineers.

Cardinal

- Pressure gradient cardioid condenser
- 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

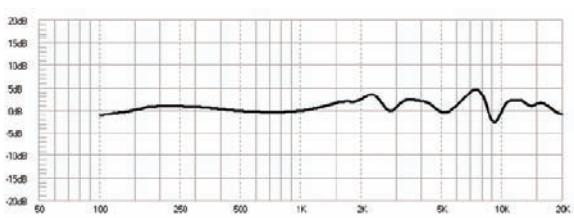
The EV® Series Raven™ is a stylish dynamic microphone designed to capture the character of live and studio vocals. It is also the perfect microphone for live and studio instruments. The Raven incorporates the collaborative design work from the top industry microphone engineers to provide unparalleled performance in a stunning package.

Raven

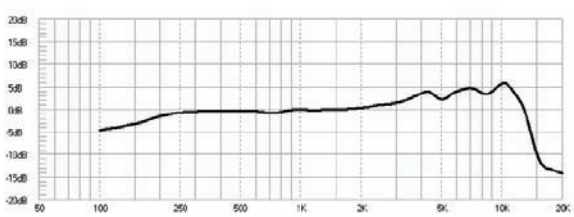
- Dynamic mic with studio detail and clarity
- Cardioid pattern with excellent off-axis rejection
- Unique double swivel-mounted design for ideal positioning
- Great for voice or instrument
- Innovative visual design

SPECS	Cardinal	Raven
Element	Condenser (self-biased)	Dynamic
Polar pattern	Cardioid	Cardioid
Frequency Response (-3 dB)	35 - 20,000 Hz	45 - 18,000 Hz
Open Circuit Voltage (at 1,000 Hz)	10mV/Pascal	3.2 mV/Pascal
Impedance, Low-Z balanced	50 ohms	400 ohms
Maximum SPL (0.5% THD)	150dB SPL(0.5% THD)	162dB SPL(1% THD)
Power requirement (Phantom power ±4V)	+48 Vdc	N/A
Included accessories	Stand adapter, cloth gig bag	Stand adapter, soft cloth bag
Connector type	3-pin XLR	3-pin XLR

FREQUENCY RESPONSE



FREQUENCY RESPONSE



RE-SERIES

Live Performance Microphones

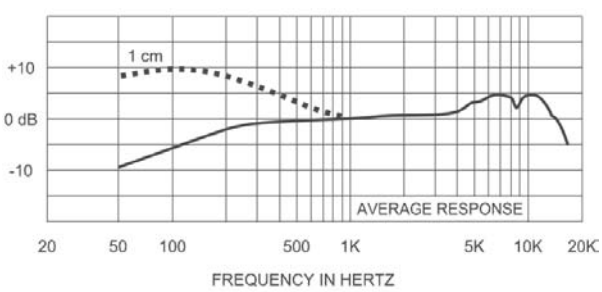
For professional concert sound or studio recording applications the RE410 provides crisp, clear top-end, sweet mid-range, and pulls the voice out-of-the-mix in a crowded spectrum. The RE410 is perfect for high-energy pop/rap/hip-hop and indie rock.

RE410

- Versatile handheld condenser microphone
- Ideal for both vocals and spoken word use
- Cardioid pattern for excellent feedback rejection and acoustic isolation
- Warm-Grip™ handle for comfortable feel and low handling noise
- High-compliance shock mount effectively eliminates handling noise
- Multistage pop filter eliminates breath pop noises

Element	Condenser (self-biased)
Polar pattern	Cardioid
Impedance, Low-Z balanced	250 ohms
Frequency Response (-3 dB)	50 - 20,000 Hz
Sensitivity, open circuit voltage, 1kHz	3.2 mV
Equivalent Noise (0 dB=20 micropascal) A-weighted	<26 dB SPL
Maximum SPL (1% distortion, 1,000 Hz)	140 dB SPL
Power requirement (Phantom power)	24 - 48 VDC
Specials	No
Case Material	Metal
Finish	Warm-Grip black handle
Included accessories	Stand adapter, soft zippered 'gig' bag
Connector type	3-pin XLR
Dimension (Length x max. Diameter)	182 x 51 mm
Weight net	260 g

FREQUENCY RESPONSE



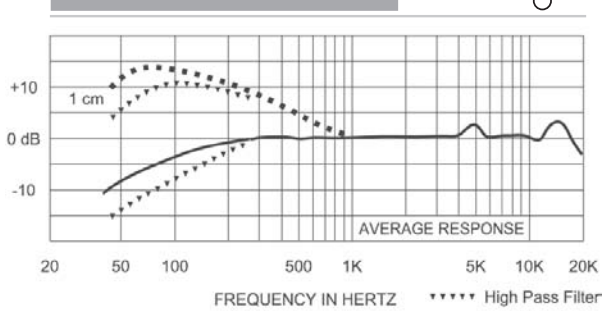
The RE510 is the first choice of microphones for smooth and accurate sound reproduction. Its unique performance make it a favorite in the professional touring business.

RE510

- Professional condenser vocal microphone
- Selectable low-end roll-off
- Supercardioid pattern
- Excellent off-axis rejection
- Wide dynamic range
- Large diameter diaphragm for clear, warm sound
- Warm grip handle for great feel and low handling noise

Element	Condenser (self-biased)
Polar pattern	Supercardioid
Impedance, Low-Z balanced	150 ohms
Frequency Response (-3 dB)	50 - 20,000 Hz
Sensitivity, open circuit voltage, 1kHz	2.5 mV
Equivalent Noise (0 dB=20 micropascal) A-weighted	18 dB SPL
Maximum SPL (1% distortion, 1,000 Hz)	140 dB SPL
Power requirement (Phantom power)	12 - 52 VDC
Specials	transformerless output device
Filters	switchable low-freq roll-off
Case Material	Metal
Finish	Warm-Grip black handle
Included accessories	Stand adapter, zippered vinyl carrying pouch
Connector type	3-pin XLR
Dimension (Length x max. Diameter)	180 x 50 mm
Weight net	215 g

FREQUENCY RESPONSE



N/DYM SERIES

Live Performance Microphones

Just listen to Static-X explain how the N/D967 performs: "The N/D967 was a real problem-solver for us. Given the volume that the band performs at and the kind of feedback rejection we were looking for, there was nothing that worked for us. We then discovered the N/D967. Wow, we were impressed. In fact, you now see these on high-volume stages around the world. This mic is a life-saver."
– Bruce Reiter, FOH engineer, Static-X/Megadeth

The N/D767a is the singer and engineer's first choice for outstanding vocal clarity in live performance applications. With low handling noise and VOB™ technology, the N/D767a sounds more like a condenser microphone allowing clarity through all frequencies, reducing boominess and P-popping associated with other dynamic mics in its class. More and more performers are switching to this rugged and sonically superior microphone.

N/D767 a

- Top-class vocal microphone
- Multi-stage shock mount for unmatched low-handling noise
- Condenser-like performance
- VOB™ technology provides tailored bass response for controlled "proximity effect"and exceptional vocal clarity
- Supercardioid pattern for superior feedback rejection and acoustic isolation
- Neodymium based magnet structure provides greater sensitivity and signal-to-noise ratio
- Warm Grip™ handle for more comfortable feel

Hundreds of performers and engineers asked us for this microphone. They said: "Give us a mic that has excellent gain-before-feedback, excellent rejection of extraneous noise like cymbals, and can really take the high-SPL world of the metal and rap stage." Our design engineers went out to countless shows and experienced first hand what our customers were talking about… They then went back into the lab. Hundreds of gallons of coffee later, the engineers emerged with a godsend: the N/D967.

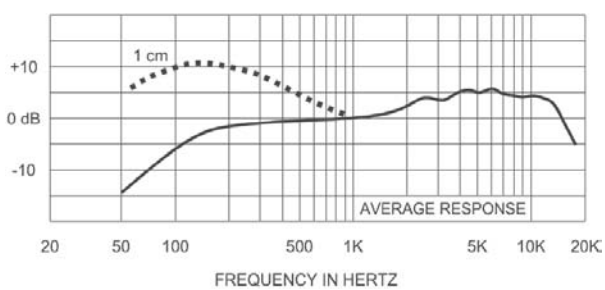
N/D967

- Highest gain-before-feedback performance vocal microphone
- Optimized response for live performance
- EV-exclusive personality switch shapes sound
- High N/DYM® sensitivity
- Unique removable front grille assembly and pop filter for easy hygienic cleaning
- Superior multistage shock mount for unmatched low handling noise
- Warm Grip™ handle for more comfortable feel

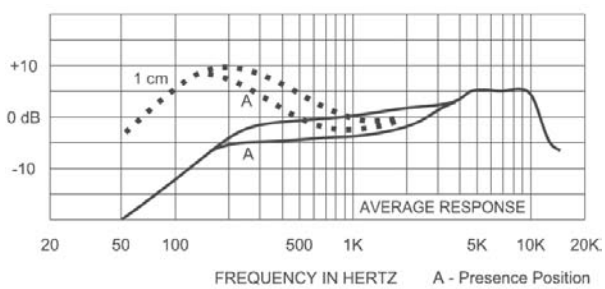
Element	Dynamic
Polar pattern	Supercardioid
Impedance, Low-Z balanced	300 ohms
Frequency Response (-3 dB), close response	35 - 22,000 Hz
Frequency Response (-3 dB), far response	70 - 22,000 Hz
Output Level(0dB = 1 m W/Pascal) at 1.000 Hz	- 51 dB
Open Circuit Voltage (at 1.000 Hz)	3.1 mV/Pascal
Equivalent Noise (0 dB=20 micropascal) A-weighted	< 17 dB SPL
Magnetic Circuit	N/DYM®
Case Material	Metal
Finish	Nonreflecting black
Included accessories	Stand adapter, soft zippered carrying pouch
Connector type	3-pin XLR
Dimension (Length x max. Diameter)	181 x 52 mm
Weight net	260 g

Element	Dynamic
Polar pattern	Supercardioid
Impedance, Low-Z balanced	150 ohms
Frequency Response (-3 dB), close response	50 - 13,000 Hz
Frequency Response (-3 dB), far response	120 - 13,000 Hz
Output Level(0dB = 1 m W/Pascal) at 1.000 Hz	- 52 dB
Open Circuit Voltage (at 1.000 Hz)	4.0 mV/Pascal
Equivalent Noise (0 dB=20 micropascal) A-weighted	< 16 dB SPL
Magnetic Circuit	N/DYM®
Case Material	Metal
Finish	Nonreflecting black
Included accessories	Stand adapter, soft zippered carrying pouch
Connector type	3-pin XLR
Dimension (Length x max. Diameter)	173 x 52 mm
Weight net	205 g

FREQUENCY RESPONSE



FREQUENCY RESPONSE



N/DYM SERIES

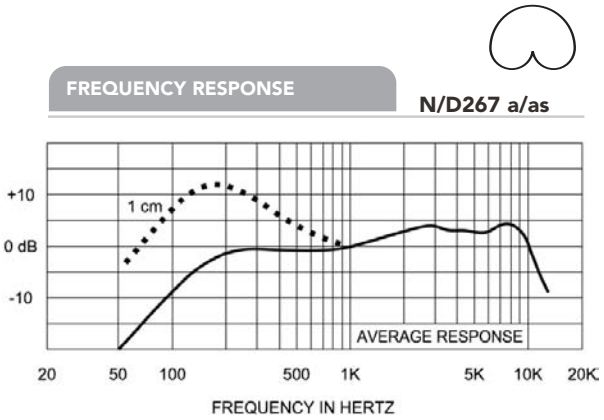
Live Performance Microphones

The N/D267a/as both incorporate EV's unique VOB™ (Vocally-Optimized Bass™) technology to provide the performer with reduced resonant distortion at low frequencies. Critical damping of the low frequency resonant peak has resulted in a microphone that replaces the "muddiness" found in competitive models with greater warmth and increased vocal clarity. The increased clarity permits greater working distances than other competitive microphones, and ensures a clean, clear, consistent sound that "punches through the mix."

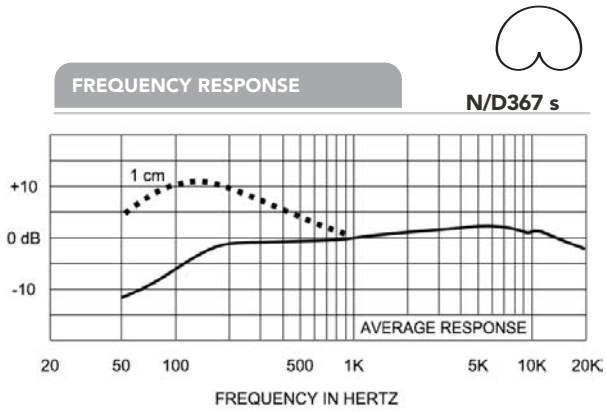
N/D267 a/as

- VOB™ technology provides tailored bass response for controlled "proximity effect" and exceptional vocal clarity
- Cardioid pattern for superior feedback rejection and acoustic isolation
- Consistent sound over greater working distances than competitive models
- Neodymium-based magnet structure provides greater sensitivity and signal-to-noise ratio
- Warm Grip™ handle for more comfortable feel and low handling noise
- On/Off switch on N/D267as

	N/D267 a/as
Element	Dynamic
Polar pattern	Cardioid
Impedance, Low-Z balanced	300 ohm
Frequency Response (-3 dB), close response	45 - 15,000 H
Frequency Response (-3 dB), far response	100 - 15,000 H
Output Level(0dB = 1 m W/Pascal) at 1.000 Hz	- 52 dB
Open Circuit Voltage (at 1.000 Hz)	2.9 mV/Pascal
Equivalent Noise (0 dB=20 micropascal) A-weighted	< 17 dB SPL
Magnetic Circuit	N/DYM
Case Material	Metal
Finish	Nonreflecting black
Included accessories	Stand adapter soft zippered carrying pouch
Connector type	3-pin XLR
Dimension (Length x max. Diameter)	181 x 52 mm
Weight net	238 g



	N/D367s
Element	Dynamic
Polar pattern	Cardioid
Impedance, Low-Z balanced	300 ohms
Frequency Response (-3 dB), close response	25 - 20,000 Hz
Frequency Response (-3 dB), far response	55 - 20,000 Hz
Output Level(0dB = 1 m W/Pascal) at 1.000 Hz	- 53 dB
Open Circuit Voltage (at 1.000 Hz)	2.2 mV/Pascal
Equivalent Noise (0 dB=20 micropascal) A-weighted	< 17 dB SPL
Magnetic Circuit	N/DYM®
Case Material	Metal
Finish	Nonreflecting black
Included accessories	Stand adapter, soft zippered carrying pouch
Connector type	3-pin XLR
Dimension (Length x max. Diameter)	181 x 52 mm
Weight net	200 g



The EV N/D367s features excellent gain-before-feedback and smooth, controlled frequency response. The controlled response of the N/D367s allows the performer or speaker to easily "work" the microphone for optimal performance. It also features a cardioid pattern for enhanced front-area sensitivity and acoustic rejection directly behind the microphone, reducing feedback under live performance conditions. Additionally, the N/D367s's polar patterns are unusually uniform with frequency, ensuring superior gain-before-feedback in live applications and superior isolation when used in the studio. Although this is a popular choice for both genders, it has become recognized as the perfect complement to a woman's voice.

N/D367 s

- Classic N/DYM® sound
- Smooth, controlled frequency response
- High N/DYM® sensitivity
- Superior multistage shock mount for unmatched low handling noise
- Warm Grip™ handle for more comfortable feel
- Noiseless on/off switch
- Also sounds great when used on a podium
- Cardioid pattern for excellent feedback rejection and acoustic isolation

N/DYM SERIES

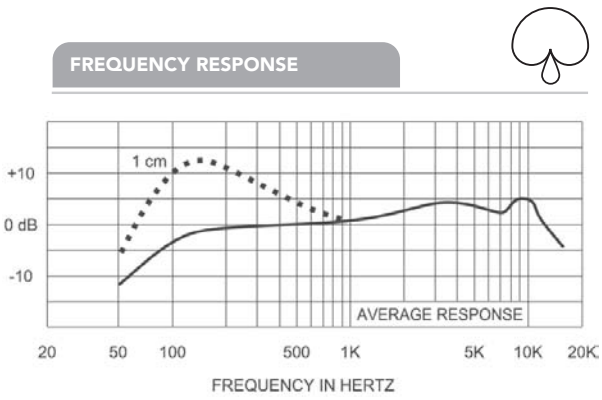
Live Performance Microphones

WIRED MICROPHONES

Designed specifically for horns, drums, acoustical and electric guitars, the N/D468 provides a smooth, natural sound, capturing the excitement of the instrument. The supercardioid pattern provides superior off-axis rejection and acoustic isolation in any application. An innovative EV design harnesses the increased power of a neodymium-based magnet design, allowing a large-diameter voice coil (up to 50% larger than other mics) for dynamic, efficient microphone performance. N/DYM® offers the power and clarity to "cut through the mix." Whatever your instrument application, the N/D468 is sure to be a top performer.

N/D468

- Designed specifically for instruments
- Supercardioid pattern for exceptional acoustic isolation and off-axis rejection
- Unique pivoting head ensures perfect placement for use on drums, horns, acoustic and electric guitar
- Accurate response, even in high sound pressure levels (SPL)
- Rugged steel construction for exceptional durability



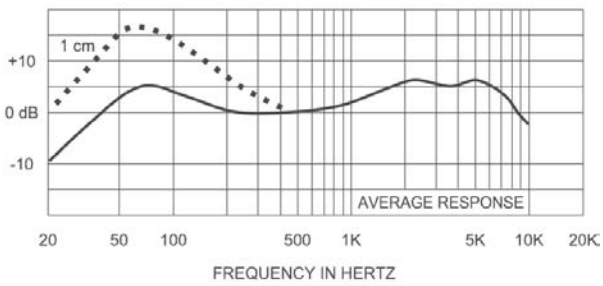
The N/D868 is truly a top performer in any application. Whether in a live sound or studio environment, the N/D868 is able to handle incredibly high sound pressure levels without distortion or overriding the mixer input. With a response specifically designed to "kick", the N/D868 can be used "as is" – no additional EQ required. Perfect for bass drum, the N/D868 has been applauded by drummers and engineers the world over.

N/D868

- Designed specifically for kick drum applications in live or studio environments; also excellent on bass guitar, floor toms, and electric guitar cabinets
- Optimized sensitivity for the high sound pressure levels found in bass drum micing
- Extended low frequency response
- Frequency response tailored for "plug-and-play"
- Rugged steel construction for exceptional durability

	N/D468	N/D868
Element	Dynamic	Dynamic
Polar pattern	Supercardioid	Cardioid variant
Impedance, Low-Z balanced	150 ohms	150 ohms
Frequency Response (-3 dB), close response	30 - 22,000 Hz	20 - 10,000 Hz
Frequency Response (-3 dB), far response	60 - 22,000 Hz	—
Output Level(0dB = 1 m W/Pascal) at 1.000 Hz	- 51 dB	- 52 dB
Open Circuit Voltage (at 1.000 Hz)	3.1 mV/Pascal	1.0 mV/Pascal
Equivalent Noise (0 dB=20 micropascal) A-weighted	< 14 dB SPL	< 17 dB SPL
Magnetic Circuit	N/DYM®	N/DYM®
Case Material	Metal	Metal
Finish	Nonreflecting black	Nonreflecting black
Included accessories	Stand adapter, soft zippered carrying pouch	Stand adapter, soft zippered carrying pouch
Connector type	3-pin XLR	3-pin XLR
Dimension (Length x max. Diameter)	115 x 52 mm	133 x 60 mm
Weight net	190 g	295 g

FREQUENCY RESPONSE



N/DYM SERIES

Live Performance Microphones

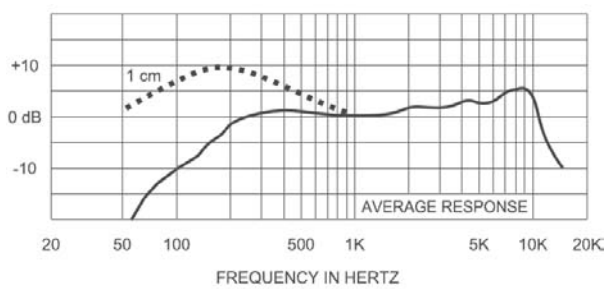
The N/D478's acoustic response presents optimal performance in both a live sound or studio environment. VOB™ technology (Vocally-Optimized Bass™) provides the instrumentalist with reduced resonant distortion at low frequencies. Critical damping of the low frequency resonant peak has resulted in a microphone that replaces the "muddiness" found in competitive models with greater warmth and increased clarity. The result is an exceptional performing instrument microphone with clean, clear, consistent sound.

N/D478

- Outstanding choice for electric guitar/bass guitar amplifier, toms, snare, cymbals, hi-hat, brass, and acoustic guitar
- VOB™ technology provides tailored bass response for controlled "proximity effect" and exceptional sound clarity
- Excellent choice for micing acoustic or electric instruments, whether in a live sound or studio environment
- Neodymium-based magnet provides greater sensitivity and signal-to-noise ratio
- Cardioid pattern for superior feedback rejection and acoustic isolation
- Warm Grip™ handle for comfortable feel and lower handling noise

	N/D478
Element	Dynamic
Polar pattern	Cardioid
Impedance, Low-Z balanced	300 ohms
Frequency Response (-3 dB), close response	45 - 15,000 Hz
Frequency Response (-3 dB), far response	100 - 15,000 Hz
Output Level(0dB = 1 m W/Pascal) at 1.000 Hz	- 52 dB
Open Circuit Voltage (at 1.000 Hz)	2.9 mV/Pascal
Equivalent Noise (0 dB=20 micropascal) A-weighted	< 17 dB SPL
Magnetic Circuit	N/DYM®
Case Material	Metal
Finish	Nonreflecting black
Included accessories	Stand adapter, soft zippered carrying pouch
Connector type	3-pin XLR
Dimension (Length x max. Diameter)	181 x 52 mm
Weight net	247 g

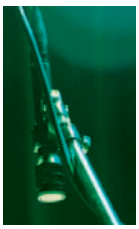
FREQUENCY RESPONSE



The Electro-Voice® RE200 is a cardioid, true condenser instrument microphone designed for the exacting acoustic reproduction of choirs, strings, percussion and brass instruments in live performance and sound recordings.

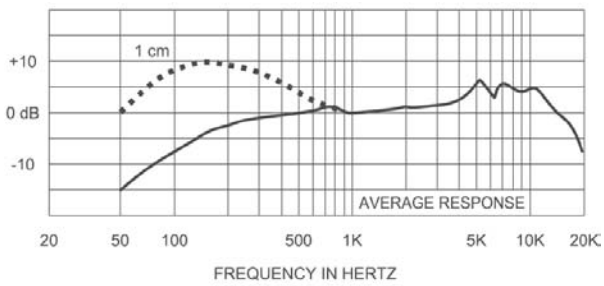
RE200

- True condenser design
- Continuous presence rise enhances sound quality
- Transformerless output
- Small, unobtrusive profile
- Includes stand clamp, windscreen and zippered vinyl pouch
- Cardioid pattern for excellent feedback rejection and acoustic isolation



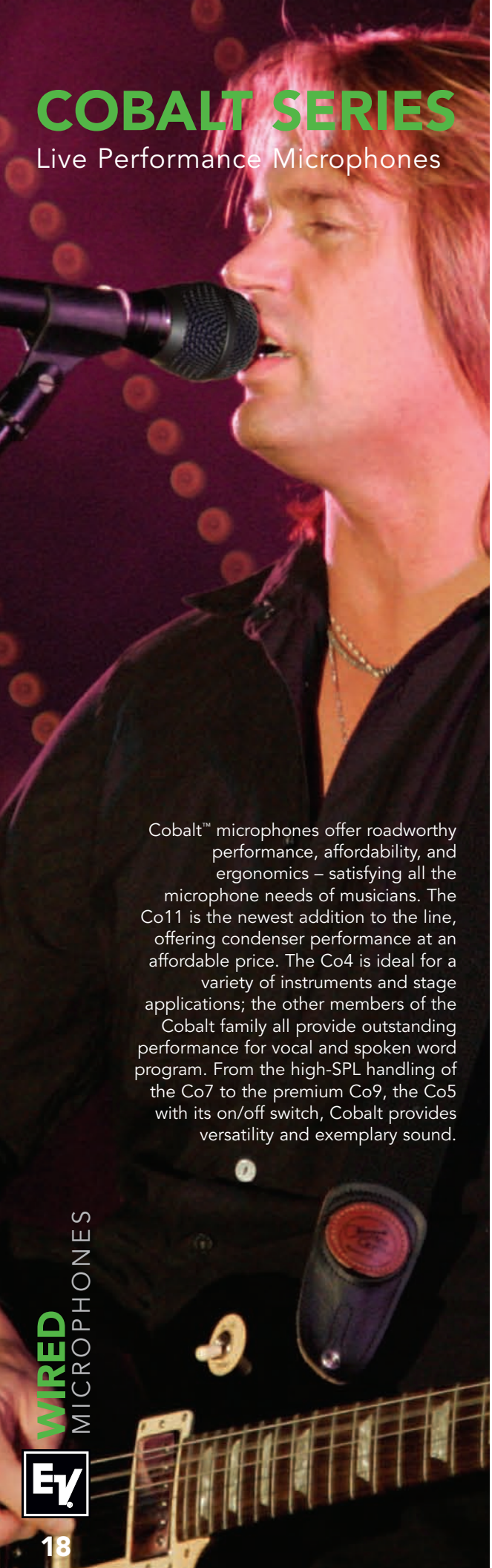
	RE200
Element	True condenser
Polar pattern	Cardioid
Impedance, Low-Z balanced	200 ohms
Frequency Response (-3 dB)	50 - 18,000 Hz
Sensitivity, open circuit voltage, 1kHz	10 mV
Equivalent Noise (0 dB=20 micropascal) A-weighted	21 dB SPL
Maximum SPL (1% distortion, 1,000 Hz)	130 dB
Power requirement (Phantom power)	12 - 52 VDC
Current Consumption	3.5 mA
Magnetic Circuit	N/A
Specials	AcoustiDYM™, transformerless output device
Filters	—
Case Material	Metal
Finish	Semi-gloss camera black
Included accessories	Stand adapter, windscreen
Connector type	3-pin XLR
Dimension (Length x max. Diameter)	137 x 28 mm
Weight net	185 g

FREQUENCY RESPONSE



COBALT SERIES

Live Performance Microphones



Cobalt™ microphones offer roadworthy performance, affordability, and ergonomics – satisfying all the microphone needs of musicians. The Co11 is the newest addition to the line, offering condenser performance at an affordable price. The Co4 is ideal for a variety of instruments and stage applications; the other members of the Cobalt family all provide outstanding performance for vocal and spoken word program. From the high-SPL handling of the Co7 to the premium Co9, the Co5 with its on/off switch, Cobalt provides versatility and exemplary sound.

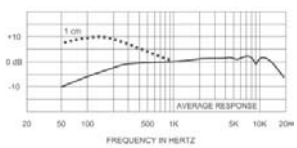
Co11 Condenser Vocal Mic

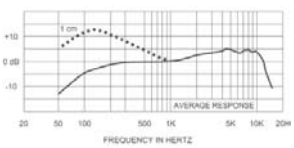
- Versatile condenser microphone, extended frequency response and wide dynamic range
- Cardioid polar pattern with excellent feedback rejection and acoustic isolation
- High compliance shock mount effectively eliminates handling noise
- Multistage pop filter eliminates breath pop noises
- Memraflex® hardened grille screen

Co9 Premium Vocal Mic

- Cardioid polar pattern with excellent feedback rejection and acoustic isolation
- Slight bass roll-off and accentuated midrange
- Includes stand adapter and zippered vinyl carrying case

SPECS	Co11	Co9
Element	Self-biased condenser	Dynamic
Polar pattern	Cardioid	Cardioid
Impedance, Low-Z balanced	Low-Z balanced (250 Ohms)	600 ohms
Frequency Response (-3 dB)	50 - 20,000 Hz	50 - 18,000 Hz
Open Circuit Voltage (at 1,000 Hz)	—	3.2 mV/Pascal
Power requirement (Phantom power)	24 to 48 Vdc	N/A
Current Consumption	N/A	N/A
Magnetic Circuit	N/A	N/DYM®
Specials	—	—
Case Material	Die cast zinc	Die cast zinc
Finish	cobalt	cobalt
Included accessories	Stand adapter, zippered vinyl carrying pouch	Stand adapter zippered vinyl carrying pouch
Connector type	3-pin XLR	3-pin XLR
Dimension (Length x max. Diameter)	170 x 53 mm	173 x 53 mm
Weight net	292 g	335 g





Co7 Crossroad Vocal Mic

- Cardioid polar pattern with excellent feedback rejection
- Excellent performance in high-SPL environments
- Low handling noise ideal in critical, acoustic settings

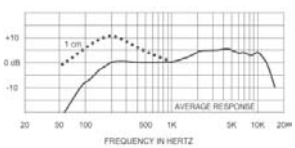
Co5 Classic Vocal Mic

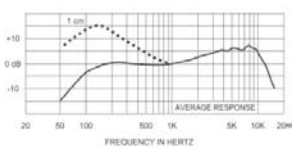
- Cardioid polar pattern with excellent feedback rejection
- Designed for the performer who prefers a careful balance of highs, midrange, and bass
- Exceptional vocal intelligibility
- Controlled proximity effect
- Features on/off switch

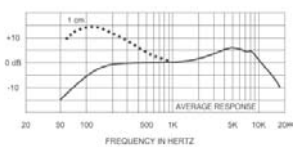
Co4 Instrument Mic

- Designed to yield outstanding performance when micing acoustic and electric instruments
- Perfect for live sound and studio applications
- Applications include electric guitar and bass guitar amplifiers, toms, snare, cymbals, high-hat, brass, and acoustic guitar

	Co7	Co5	Co4
Element	Dynamic	Dynamic	Dynamic
Polar pattern	Cardioid	Cardioid	Cardioid
Impedance, Low-Z balanced	600 ohms	600 ohms	600 ohms
Frequency Response (-3 dB)	50 - 18,000 Hz	50 - 18,000 Hz	50 - 18,000 Hz
Open Circuit Voltage (at 1,000 Hz)	3.2 mV/Pascal	2.8 mV/Pascal	2.2 mV/Pascal
Magnetic Circuit	N/DYM®	N/DYM®	N/DYM®
Specials	—	Low-noise On/off-Switch	—
Case Material	Die cast zinc	Die cast zinc	Die cast zinc
Finish	cobalt	cobalt	cobalt
Included accessories	Stand adapter, zippered vinyl carrying pouch	Stand adapter zippered vinyl carrying pouch	Stand adapter, zippered vinyl carrying pouch
Connector type	3-pin XLR	3-pin XLR	3-pin XLR
Dimension (Length x max. Diameter)	170 x 53 mm	170 x 53 mm	148 x 23 mm
Weight net	332 g	306 g	340 g







RE-SERIES

Broadcast / Studio Microphones

The RE20 and RE27N/D are the first choice of microphones for smooth and accurate sound reproduction. Their unique and famous performance makes them a favorite in the broadcast, recording studio and live sound business. RE20 and RE27N/D microphones were developed with EV's Variable-D® design to ensure true and accurate response across all frequencies without the up-close boominess associated with proximity effect. As a result, these microphones have become the industry standard for radio studios worldwide. And, when it comes to studio recording or professional concert sound applications, these mics provide you with the tools you need to get the sound you're after when recording vocals, guitars, drums, or brass.

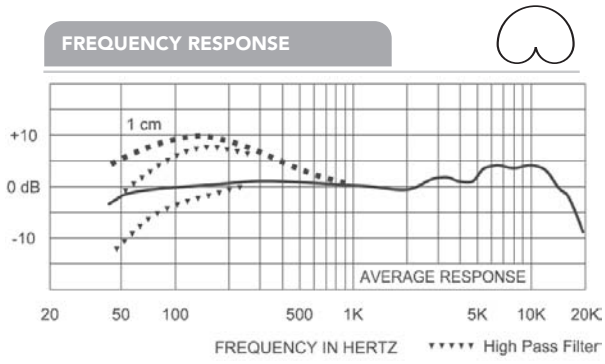
RE20

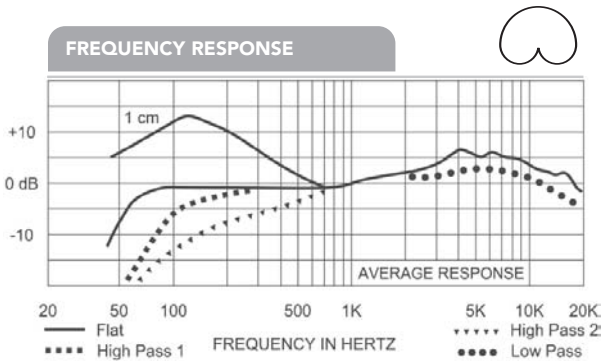
- Variable-D® for minimal proximity effect
- True cardioid with no coloration at 180-degrees off-axis
- Voice tailored frequency response
- Studio condenser-like performance
- Large diaphragm
- Humbucking coil
- Switchable EQ (down to –4.5 dB from 400 to 100 Hz)
- Integral wind and blast filter

RE27

- Variable-D® for minimal proximity effect
- N/DYM® element design brings 6 dB more sensitivity
- Ultra-flat frequency response
- Studio condenser-like performance
- Large diaphragm
- 3 selectable filters: -6 dB, 250-100 Hz / -12 dB, 1000-100 Hz/ -3 dB high frequency roll-off
- Integral wind and blast filter

	RE20	RE27
Element	Dynamic	Dynamic
Polar pattern	Cardioid	Cardioid
Impedance, Low-Z balanced	150 ohms	150 ohms
Frequency Response (-3 dB)	45 - 18,000 Hz	45-20,000 Hz
Power Level (0dB = 1 mW/Pascal) at 1.000 Hz	- 57 dB	-51 dB
Open Circuit Voltage (at 1,000 Hz)	1.5 mV/Pascal	3.1 mV/Pascal
Equivalent Noise (0 dB=20 micropascal) A-weighted	—	—
Maximum SPL (1% distortion, 1,000 Hz)	—	—
Magnetic Circuit	—	N/DYM®
Specials	Variable-D®	Variable-D®
Filters	Tilt-down EQ	3 selectable EQs
Case Material	Steel	Steel
Finish	Fawn beige	Satin nickel
Included accessories	Stand adapter, zippered vinyl carrying pouch, hard-shell case	Stand adapter, zippered vinyl carrying pouch, hard-shell case
Connector type	3-pin XLR	3-pin XLR
Dimension (Length x max. Diameter)	217 x 54 mm	217 x 54 mm
Weight net	737 g	709 g





RE-SERIES

Broadcast Microphones

You've seen Electro-Voice™ live interview microphones in the hands of reporters and news correspondents around the world – from interviews with the President of the United States to the family next door – EV's RE50 and 635A mics are famous in broadcast, television, and radio OBs (outside broadcasts). These microphones set world standards for ENG (electronic news gathering) and EFP (electronic field production). They are extremely rugged, withstand high humidity, temperature extremes and corrosive effects such as salt-air, while providing excellent sound performance, and that legendary "Buchanan Hammer" durability.

RE50B – RE50N/D B

- Extremely low handling noise via Dyna-Damp™ "mic in-a-mic" shock mount system
- Impervious to wind noise and p-pops thanks to integrated four-stage pop filter, integral wind screen and blast filter
- Withstands high humidity, temperature extremes, and corrosive salt air
- Acoustalloy® diaphragm material for very smooth response over a wide frequency range
- N/D version offers higher output thanks to N/DYM capsule design
- No muddy lows when used near lips
- Black semi-gloss

635A (beige) or 635A/B (black)

- Linear frequency response
- Completely pop-free performance
- Four-stage pop and dust filter
- Internal effective shock absorber

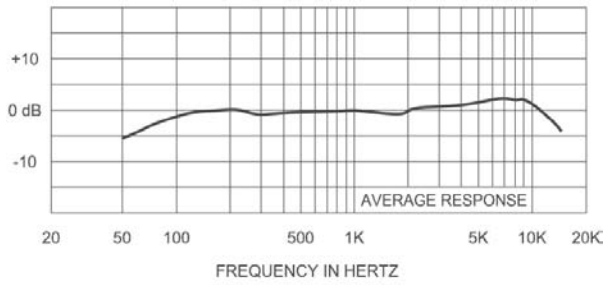
635N/D-B

- Uniform 80 – 13,000 Hz frequency response
- N/DYM® element design offers higher output
- On-camera use with 422A desk stand
- Acoustalloy® diaphragm material for very smooth response over a wide frequency range
- Integral windscreen and blast filter
- Black semi-gloss

	RE50 B / RE50 N/D B	635A (B)	635 N/D (B)
Element	Dynamic	Dynamic	Dynamic
Polar pattern	Omnidirectional	Omnidirectional	Omnidirectional
Impedance, Low-Z balanced	150 ohms	150 ohms	150 ohms
Frequency Response (-3 dB)	80 - 13,000 Hz	80 - 13,000 Hz	80 - 13,000 Hz
Power Level (0dB = 1 mW/Pascal) at 1,000 Hz	- 55 dB (-51 dB)	- 55 dB	- 51 dB
Open Circuit Voltage (at 1,000 Hz)	— (2.0 mV/Pascal)	—	2.0 mV/Pascal
Equivalent Noise (0 dB=20 micropascal) A-weighted	—	—	—
Maximum SPL (1% distortion, 1.000 Hz)	—	—	—
Power requirement (Phantom power)	N/A	N/A	N/A
Current Consumption	N/A	N/A	N/A
Magnetic Circuit	Alnico (N/DYM®)	Alnico	N/DYM®
Specials	Dyna-Damp™ (Dyna-Damp™ Memraflex)	—	Acoustalloy®
Filters	—	—	—
Case Material	Aluminum	Steel	Steel
Finish	Semi-gloss camera black	Fawn beige (A) Semi-gloss black (A/B)	Semi-gloss camera black
Included accessories	Stand adapter zippered vinyl carrying pouch hard-shell case	Stand adapter	Stand adapter
Connector type	3-pin XLR	3-pin XLR	3-pin XLR
Dimension (Length x max. Diameter)	197 x 49	151 x 36 mm	151 x 36 mm
Weight net	269 g	170 g	170 g

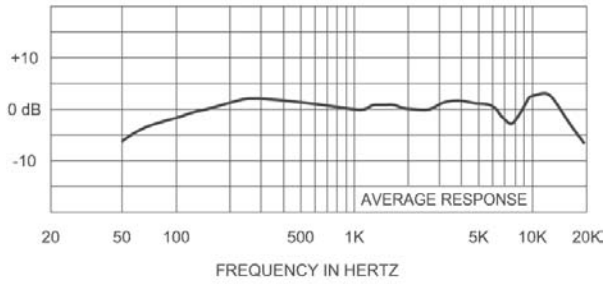
FREQUENCY RESPONSE

RE50B



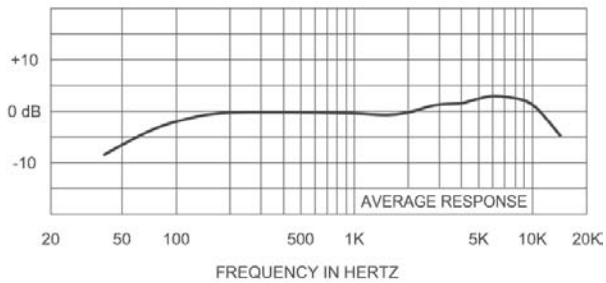
FREQUENCY RESPONSE

RE50 N/D B



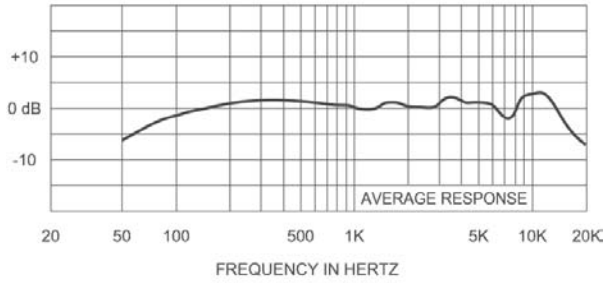
FREQUENCY RESPONSE

635A



FREQUENCY RESPONSE

635 N/D



RE-SERIES

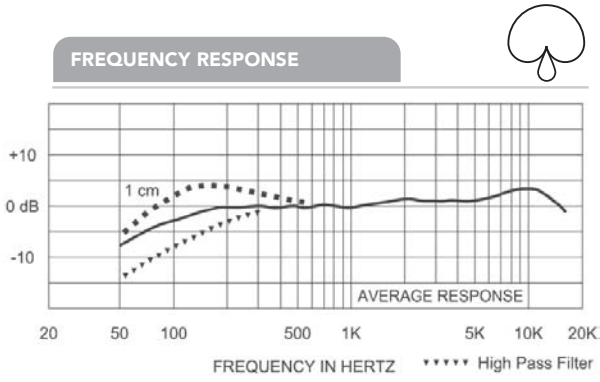
Broadcast Microphones

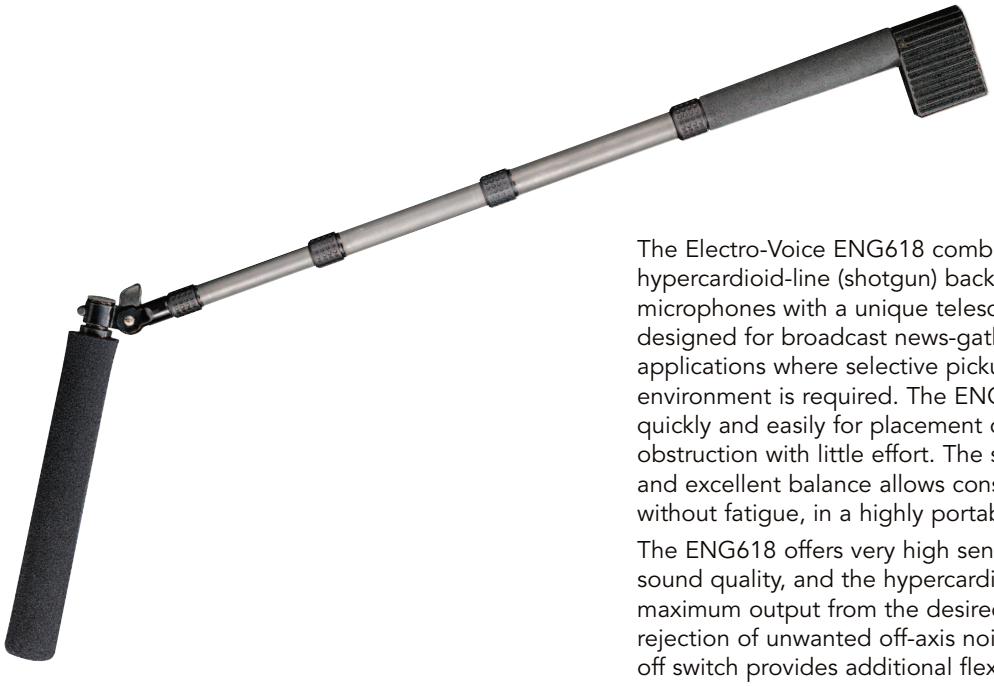
The EV® RE16 Variable-D dynamic supercardioid microphone is designed for the most exacting professional use, employing an integral blast filter to permit handheld and outdoor use without "P-popping" or excessive wind noise. In utilizing the Variable-D design, the RE16 features a directional characteristic independent of frequency. This results in a microphone that generates little off-axis coloration, while providing the greatest rejection of unwanted sounds. The supercardioid RE16 provides its greatest rejection at 150-degrees off-axis; An easily-operated "bass-tilt" switch corrects spectrum balance for boom use and other longer reach applications.

RE16

- Variable-D® dynamic microphone, supercardioid handheld
- Great for podium or handheld use
- Unique blast filter makes close-up use possible without popping
- Uniform response independent of angle
- Humbucking coil reduces electromagnetic hum pickup
- Bass roll-off switch
- Memraflex™ grill means screen keeps its shape

	RE16
Element	Dynamic
Polar pattern	Super-Cardioid
Impedance, Low-Z balanced	Low-Z (150 Ohms nominal)
Frequency Response (-3 dB)	80 - 5,000 Hz
Output Level	-56 dB
Open Circuit Voltage (at 1,000 Hz)	—
Current Consumption	N/A
Magnetic Circuit	N/A
Case Material	Steel
Finish	Fawn beige micromatte
Included accessories	Stand adapter, zippered vinyl carrying pouch
Connector type	3-pin XLR
Dimension (Length x max. Diameter)	187 x 45 mm
Weight net	227 g





The Electro-Voice ENG618 combines a highly sensitive, hypercardioid-line (shotgun) back-electret condenser microphones with a unique telescoping boom pole system designed for broadcast news-gathering and film/video applications where selective pickup in a multi-sound environment is required. The ENG618 boom pole extends quickly and easily for placement over or across any obstruction with little effort. The systems lightweight design and excellent balance allows consistent audio coverage without fatigue, in a highly portable self-contained package.

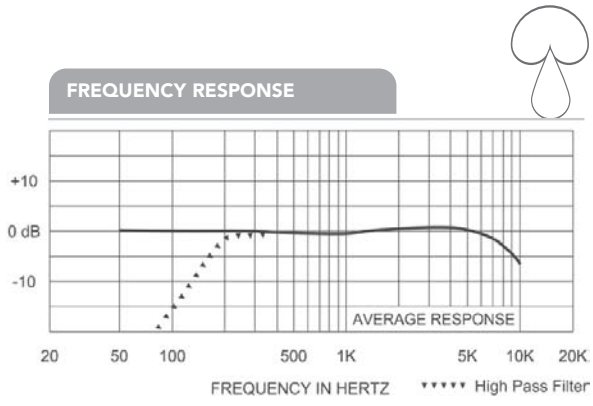
The ENG618 offers very high sensitivity, an extremely natural sound quality, and the hypercardioid-line design provides maximum output from the desired sources, and excellent rejection of unwanted off-axis noise. A 200Hz, low-end roll-off switch provides additional flexibility.

The EV ENG618 - the industry's first newsworthy, integrated boom pole/shotgun microphone.

ENG618

- Integrated Shotgun/Boom-pole Microphone and built-in headphone pre-amp
- Designed for ENG/Broadcast news gathering
- Hypercardioid-line back-electret condenser microphone
- Ultra-lightweight boom-pole extends from 18" to 6-ft. in length
- Operates from either phantom or battery power

	ENG618
Generating Element:	Condenser, back electret
Frequency Response:	50 - 8,000 Hz, 200Hz roll-off switch
Polar Pattern:	Hypercardioid-line
Sensitivity, (Open Circuit Voltage, 1KHz)	19 mV/Pascal
Power Level, 1kHz (0 dB = 1 mW/pascal)	-55 dB
Clipping Level (1% THD)	120 dB SPL
Equivalent Noise:	15 dB SPL, A-weighted
Dynamic Range:	105 dB
Output Impedance, 1 kHz:	100 ohms
Power Requirements:	12 - 52 V dc phantom supply or 9V battery
Current consumption:	2mA phantom, 20 mA battery (20 hr estimated battery life)
Dimensions:	
Length, collapsed / extended	46 cm (18 in) / 180 cm (6 ft)
Diameter:	9 cm (3.5 in)
Capsule diameter:	5.3 mm (0.21 in)



POLAR CHOICE SERIES

Installation Microphones

The World's ONLY Wired and Wireless Microphones with Selectable Polar Patterns.

PolarChoice, the first podium microphone that allows you to select the polar pattern, continues to get better.

PolarChoice is now available in seven different versions. These include the standard XLR, FL – Flange Mount, and PC Plus for conventional, mounted podium mic installations. If a free-standing podium mic is called for, the hard-wired PolarChoice Desktop and the one-of-a-kind wireless PolarChoice Satellite round out the most versatile and flexible podium microphone product line in the industry.

The latest addition to the PolarChoice family, the PolarChoice Boundary Satellite, expands PolarChoice's offerings into the boundary style.

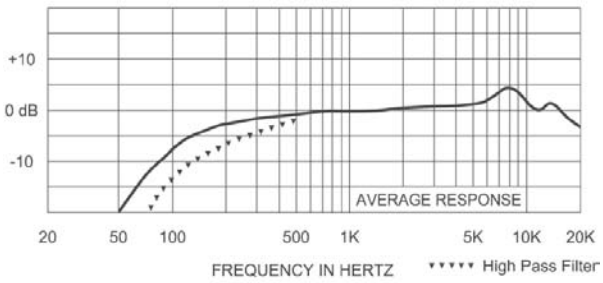
XLR **FL**

All versions of **PolarChoice** feature...

- Selectable polar patterns
- A smooth and uniform response, no matter what pattern is selected
- Exceptional sound quality
- An extended low frequency response and switchable high-pass filter
- EV's exclusive Multiport™ windscreen which virtually eliminates "P" pops

WIRED MICROPHONES

FREQUENCY RESPONSE



	PC, XLR, FL, PLUS & DESKTOP
Element type	Back electret condenser
Selectable Polar Patterns	Omni, Cardioid, Supercardioid, Hypercardioid
Impedance	200 Ohms
Frequency Response	50 Hz - 20 kHz(mic system)
Open Circuit Voltage	5,6 mV/Pascal(mic system)
Equivalent Noise	< 26 dB SPL(A-weighted, mic system)
Max. SPL	>135 dB(mic system)
Power requirement	24 to 52 Volt Phantom Power
Current Consumption	3 mA
Finish	Nonreflective Black
Included Accessories	Multiport Windscreen
Connector Type	XLR

PolarChoice Plus

The first podium microphone with the flexibility to be installed into any environment. It can be mounted via a standard 3-pin XLR connector, or permanently flush-mounted to the podium or tabletop. Available in 5", 12" and 18" gooseneck lengths.

The PolarChoice® Plus also features an easy-to-use and programmable microphone mute switch

- The switch is oriented so that anyone can use it
- Mic status LED above the mute switch so the user can see if the mic is on or off
- Configure the switch (via easy to set switches) to be either push on/off or push-to-mute

PolarChoice Desktop

For wired use. Integrated desk stand & configurable switch, with standard 10' XLR cable.

PolarChoice Satellite

For wireless applications. Integrated desk stand & configurable switch for use with EV & Telex wireless beltpacks.

Both Feature:

- Free-standing weighted base for reliable stability
- Exceptional sound quality with EV's proven PolarChoice™ design
- Easy to use, programmable on/off mic switch with mic status LED (see PC Plus for details)
- Available in three gooseneck lengths: 18", 12" or 5"

PolarChoice Boundary Satellite

The new PolarChoice™ Boundary Satellite from Electro-Voice® is the most flexible wireless boundary microphone available today. This unique product provides the perfect solution for countless applications, while meeting the critical demands of contractors, consultants and rental houses everywhere.

Features:

- Selectable polar patterns including Figure 8
- Easy to use on/off switch which is programmable and completely noiseless
- For use with EV and Telex beltpack transmitters

	PC SATELLITE & BOUNDARY SATELLITE
Element	Back electret condenser
Polar patterns – Satellite	Omni, Cardioid, Super-Card, Hyper-Card
Polar patterns – Boundary	Omni, Cardioid, Super-Card, Figure 8
Impedance, Low-Z balanced	200 ohms
Frequency Response (-3 dB)	75 - 15,000 Hz
Power Level (0dB=1 m W/Pascal) at 1,000 Hz	- 44 dB
Open Circuit Voltage (at 1,000 Hz)	5.6 mV/Pascal
Equivalent Noise (0 dB=20 micropascal) A-weighted	< 28 dB SPL
Maximum SPL (1% distortion, 1,000 Hz)	130 dB
Power requirement	5 V DC from Beltpack
Current Consumption	2.8 mA
Finish	Nonreflecting black
Connector type	TA4F

RE-SERIES

Installation Microphones

RE90P

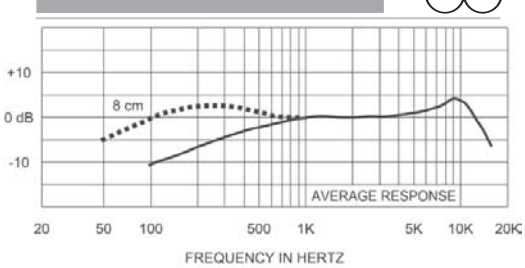
- Gooseneck podium microphone; available in 12- and 18-inch formats
- Uniform frequency response and polar pattern
- Strutted, yet flexible, ultra-thin gooseneck
- Features EV's exclusive new Multiport™ windscreen, which virtually eliminates "P" pops

RE90H

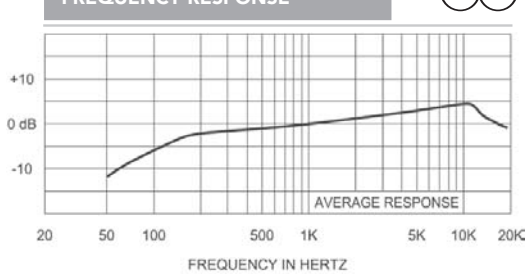
- Available in black as RE90H; in white as RE90HW
- Hanging microphone
- Internal pre-amp
- Very uniform polar pattern
- Includes installation guide

	RE90 P	RE90 H
Element	Back electret condenser	Back electret condenser
Polar pattern	Cardioid	Cardioid
Impedance, Low-Z balanced	200 ohms	200 ohms
Frequency Response (-3 dB)	70 - 15,000 Hz	75 - 15,000 Hz
Power Level (0dB=1 m W/Pascal) at 1,000 Hz	- 43 dB	- 30 dB-
Open Circuit Voltage (at 1,000 Hz)	4.5 mV/Pascal	27 mV/Pascal
Equivalent Noise (0 dB=20 micropascal) A-weighted	< 28 dB SPL	< 25 dB SPL
Maximum SPL (1% distortion, 1,000 Hz)	130 dB	120 dB
Power requirement (Phantom power)	9 - 52 VDC	9 - 52 VDC
Current Consumption	2.5 mA	2.0 mA
Specials	transformerless output device	external pre-amp
Case Material	Steel	Steel
Finish	Nonreflecting black	Low-gloss black
Included accessories	Windscreen, double-sided tape	760 cm braided cable
Connector type	3-pin XLR	3-pin XLR
Dimension	P-12: 281 x 6.4 mm P-18: 443 x 6.4 mm	37 L x 13 D mm
Weight net	P-12: 400 g P-18: 528 g	157 g

FREQUENCY RESPONSE



FREQUENCY RESPONSE

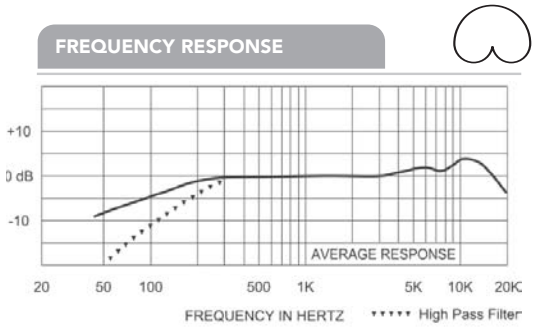


The wide frequency response of the RE92H picks up everything from the bass to the sopranos, while the cardioid pattern makes sure that nothing extraneous gets into the performance. The mic features a 25 ft. cable, and is terminated in an in-line amp module. The RE92H's XLR output provides an ultra-low noise floor, a 12 dB/octave switch-able high pass filter, and a transformer-less differential output to drive long cable runs.

RE92H

- Available in black as RE92H, in white as RE92HW
- 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

	RE92 H
Element	Back electret condenser
Polar pattern	Cardioid
Impedance, Low-Z balanced	250 ohms
Frequency Response (-3 dB)	40 - 20,000 Hz
Power Level (0dB=1 m W/Pascal) at 1,000 Hz	-
Open Circuit Voltage (at 1,000 Hz)	5.6 mV/Pascal
Equivalent Noise (0 dB=20 micropascal) A-wd	< 30 dB SPL (A-weighted)
Maximum SPL (1% distortion, 1,000 Hz)	>135 dB
Power requirement (Phantom power)	24 to 52 V Phantom Power
Current Consumption	6 mA
Special	external preamp output device
Case Material	Steel
Finish	Nonreflecting black or white
Included accessories	mounting hardware
Connector type	3-pin XLR
Dimension	10.5 mm D x 32.1 mm L (mic only)
Weight net	240 g total



RE-SERIES

Installation Microphones

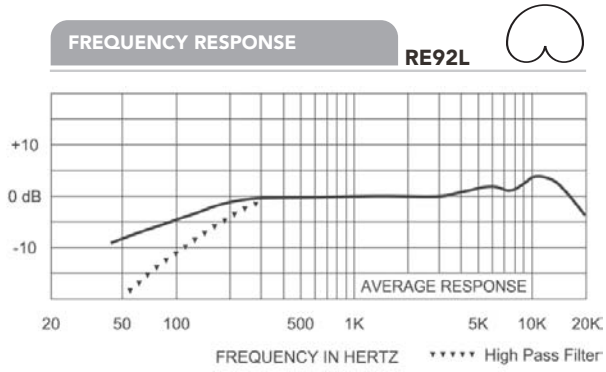
RE92L

The RE92L is based on a great-sounding new cardioid microphone element.
This capsule features a broad and smooth frequency response for a warm and natural sound, a tight cardioid polar pattern for excellent off-axis rejection, and extremely low noise to give a clean and unadulterated sound.

The RE92L is the hardwired counterpart of the TX version and is intended for spoken word applications. The RE92L features the same wide and smooth frequency response, well-controlled cardioid polar-pattern, while its 4-ft. cable is terminated into an in-line amplifier with XLR output. The amp features a 12 dB/octave switch-able high-pass filter for rolling off low frequency noise, and its transformer-less differential output easily drives longer cable runs.

Accessories include:

- Two-stage mic wind-screen
- Both single and dual mic tie clips
- Amp housing belt clip
- Zippered gig-bag.

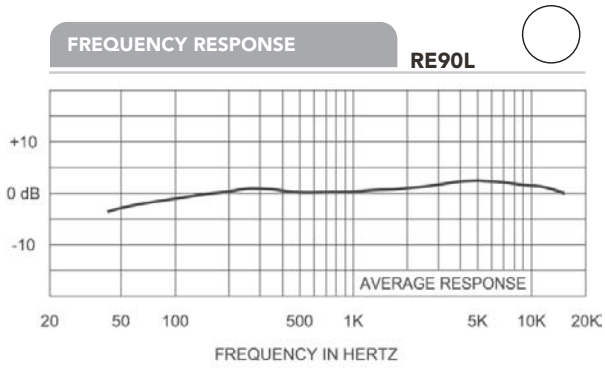


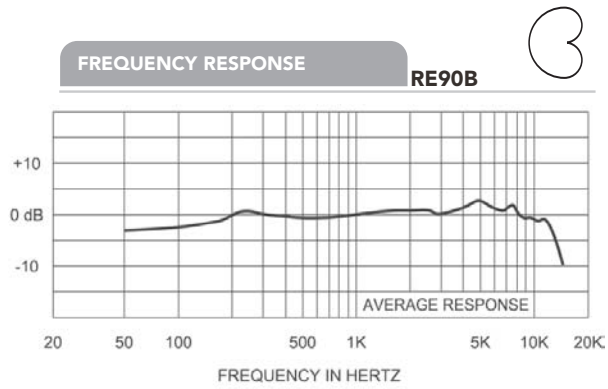
RE90B

- Boundary layer
- Available in black as RE90B, in white as RE90BW
- Ultra-thin profile (16 mm) housing with rubber non-slip bottom pad and strong steel screen
- Internal terminal block for disconnecting cable to insert thru holes
- Integrated pop filter
- Ideal working angle 60-degrees off-axis

RE90L

- Ultra-miniature condenser lavalier microphone for inconspicuous attachment
- Internal preamp and XLR termination
- Omnidirectional polar pattern provides clean sound and uniform response
- Complete assortment of clips
- Perfect for television, business and worship applications





	Boundary Satelite	RE90 B	RE90 L	RE92 L
Element	Dual condenser, Back electret	Back electret condenser	Back electret condenser	Back electret condenser
Polar pattern	Omnidirectional Cardioid, Supercardioid	(Half-) Cardioid	Omnidirectional	Cardioid
Impedance, Low-Z balanced	1 kHz, 1000 ohms	200 ohms	100 ohms	250 ohms
Frequency Response (-3 dB)	50 - 20,000 Hz	80 - 15,000 Hz	50 - 18,000 Hz	40 - 20,000 Hz
Power Level (0dB=1 m W/Pascal) at 1,000 Hz	—	- 33 dB	- 34 dB	- 34 dB
Open Circuit Voltage (at 1,000 Hz)	17.8 mV/Pascal	25 mV/Pascal	12.6 mV/Pascal	5,6 mV/Pascal
Equivalent Noise (0 dB=20 micropascal) A-weighted	< 26 dB SPL	< 25 dB SPL	< 29 dB SPL	< 30 dB SPL
Maximum SPL (1% distortion, 1,000 Hz)	130 dB	127 dB	130 dB	>135 dB
Power requirement (Phantom power)	5 VDC	9 - 52 VDC	9 - 52 VDC	24 to 52 V Phantom Power
Current Consumption	< 1.5 mA	2.5 mA	1.0 mA	6 mA
Specials		transformerless output device	external pre-amp	external preamp
Case Material	—	Heavy-duty zinc diecast	Polycarbonate resin	—
Finish	Nonreflecting black	Nonreflecting black or white	Nonreflecting black	Nonreflective black or white
Included accessories	—	—	Gig bag, tape	mounting hardware
Connector type	TA4F	3-pin XLR	3-pin XLR	3-pin XLR
Dimension	141 L x 81 W x 50 H mm	128 L x 94 W x 16 H mm	6 L x 5 D mm	10.5 mm D x 24.1 mm L
Weight net	128 g	358 g	34 g	160 g total

GENERAL PURPOSE

Microphones

649B

The 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. The 649B is also used in industrial applications.

785 Family Gooseneck Paging Mics

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 windscreen and a durable satin-chrome finish. All units include a heavy-duty, 3-hole mounting flange and an extra-strength 16-inch flex arm of steel tubing. SR785LN/O includes a push button switch with normally "open" switching. SR785L – Same as SR785LN/O except without normally "open" switching; 785L – Same as SR785LN/O except without a switch.

US690 Gooseneck Mic

A 12-inch flexible gooseneck microphone. Features N/DYM® magnet structures that provide up to 6 dB more sensitivity than conventional designs. A dynamic cardioid, the US690 terminates with an XLR-type connector and plug-in mount. Rugged design and mic element make the US690 ideal for the most demanding applications where good sound is required.

US600EL PTT Hand Mic

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

A dynamic paging hand microphone. NC450D's noise-canceling design makes it particularly effective for use in noisy locations and excellent voice response characteristics make it a good choice in quiet areas as well. Output impedance is 200 ohms for matching low impedance input circuits. A push-to-talk switch is located on the molded ABS microphone housing. A soft rubber lip guard assure user of correct microphone-to-mouth positioning. 450D – Same as NC450D except without noise-cancellation. Molded Cycolac® housing in pebble-grain black finish and unterminated black neoprene coil cord relieved at the housing by spring-type strain relief.

WP300 & WP300S Wall Plate Mics

A dynamic, omnidirectional wall plate microphone. Ideal fro security monitoring, fast-food and retail outlets, warehouses and public usage applications. WP-300S mounts on standard electrical, single-gang wall boxes. The housing of each unit is an aluminum assembly on a steel outlet plate with a brushed, satin-chrome finish. The assembly is complete with rubber shock mount. Includes a double-pole, double-throw switch for push-to-talk and line shorting capabilities. WP300 – Same as WP-300S except without the double-pole, double-throw switch.

ACCESSORIES

TxA	The Electro-Voice® model TXA is a microphone accessory designed to enable the use of lavalier, head-worn, and other TA4F-terminated Electro-Voice professional microphones in a wired configuration. Powering microphones using standard phantom power through the TXA ensures the same high quality audio performance that you expect using Electro-Voice microphones over wireless systems. See page 48 & 49 for all EV lavalier and headworn mics which can be worn with the TXA.
422A	Desk stand with rubber shock mount – accepts mic stand clamps, black
309A	Suspension shock mount for RE20, RE27, black
323S	Mic stand clip for 1.0 inch diameter microphones (RE50, BK-1), black
311	Mic stand clamp for all EV 3/4-inch diameter microphones (635A, RE16, RE200, N/D468), black
MSA-COI	Stand clamp for Cobalt® Co4 instrument microphone, black
320	Stand clamp for RE20, RE27, N/D868
376/379	Windscreen pop filter, 376 – gray, 379 – 1 black, 379 – 2 red
CPSM	Shock mount for RE90P and PolarChoice™ gooseneck mics, black
368	Drum mic mounting clamp (N/D468, N/D478), black
314E	(not shown) Windscreen pop filter for user with 635 series mics, gray
326	326 Mic stand clamp for all NDYM and Cobalt handheld microphones

TECHNICAL INFO

In 1934, Electro-Voice® invented the hum-bucking coil for microphones, which is still an industry standard almost 70 years later. The invention was the beginning of EV's success in building microphones, but not the end. Electro-Voice continues to set new standards for microphone design today. Electro-Voice was the first manufacturer to use neodymium-based magnet structures (N/DYM®) in its microphones, thus achieving higher output and condenser-like qualities such as crystal clarity and reliable performance. Electro-Voice's 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 continuing the company's tradition of legendary reliability and warranty support. EV's long list of patents attest to its success in meeting these goals.

Variable-D®

Normal microphones generate increased bottom end when used close up. This is typically called the "proximity effect". While some lead vocalists like this effect and use it to enhance their performance, it is attainable only in close-up situations. When the distance between the microphone and the source is extended, the sound quality changes dramatically. 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.

Variable-D® designed microphones can be used very close to other sound sources with no loss in clarity or definition. This makes them the preferred choice for tight vocals and challenging instruments such as brass. Variable-D® microphones like the RE20 and RE27 are favorites with broadcast show hosts, vocal booths, voice-over studios, and professional touring or rental companies.

VOB™

Electro-Voice's unique VOB™ technology (Vocally-Optimized Bass™) reduces low-frequency distortion in the microphone's output. 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 clean, clear, consistent sound that "cuts through the mix".

VOB™ counteracts proximity effect, sibilance, and P-popping, thus assuring maximum vocal intelligibility and musical clarity.

GUIDELINES

Microphone Techniques

General Microphone Use Guidelines

1. Always point the microphone at the desired source and away from the sources of any unwanted sound.
2. The microphone should be located close to the sound source to minimize interference from other potential sound sources.
3. Use the 3-to-1 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 the sound sources, it should be 3 feet away from the next closest microphone).
4. Minimize over-handling of the microphone to reduce unwanted mechanical noise.
5. Positioning the microphone close to the sound source will increase gain-before feedback and will also increase the bass tone of the signal.

Microphone Techniques for Musical Instruments

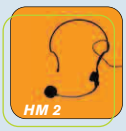
Miking techniques are a matter of personal preference. These are merely guidelines to assist in the placement of the microphone to achieve optimal performance.

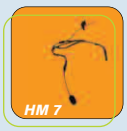
Usage	Best Mic Placement & Suggested EV Mic Usage
SNARE DRUM	Place mic 1-3" above the heads, 1-2" in from the rim. aim each mic at the top head angled down 45 degrees. If the drum rings, tape deadening material to the head or use damping rings. for more "snare" sound, place a second mic under the drum aimed up a the bottom head. Suggested mics: N/D478, N/D468, Co4.
ELECTRIC GUITAR	Place microphone approximately 1-2" from and at a 90 degree angle to the speaker cone. To reduce boominess, move the bass microphone off axis to the cone from 90 degrees to 45 degrees, or move mic from center of cone to the edge. Suggested Guitar Amplifier Mics: RE20, N/D868, N/D468, Co4, Raven
TOM-TOMS	On double-headed toms, place mic 1-3" over the top of the drum head at a 45-degree 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-degree angle from the center of head, 3-5" away. Suggested mics: N/D468, for floor tom – RE20, N/D868
CYMBALS	Place microphone one to two feet above the top of cymbals. Suggest mcs: RE200, Cardinal
HIGH-HAT	Place 5" above outside edge at a 45-degree down angle. Suggested mics: RE200
BRASS	6-24" away, and on axis with the bell of the instrument. Suggested mics: RE20, Co4, N/D468, Raven
ACOUSTIC GUITAR	Place mic 6-12" from where finger board joins the body. Suggested mics: N/D468, N/D478, Co4, RE20, RE200, Cardinal

EV MICROPHONE

Application Table

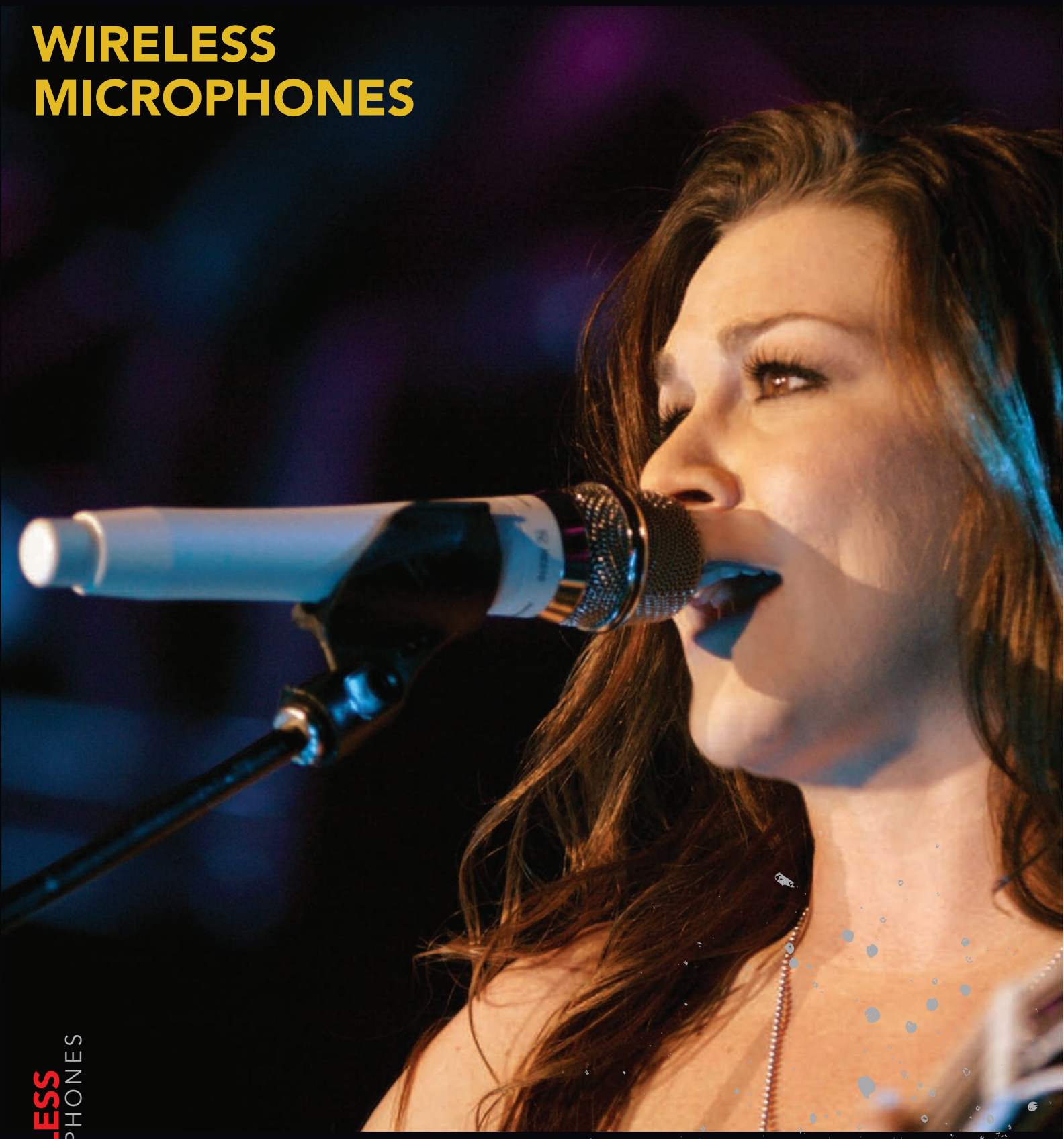
	HM 2	HM 7	ENG 618	OLM 10	ULM 21	RE 20	RE 27	RE 16	RE 50B/NDB	RE 635A	RE 97TX	RE 92TX	RE 90TX	RE 92L/H	RE 90L/H	RE 90P	RE 90B
Dynamic						X	X	X	X	X							
Condenser	X	X	X	X	X						X	X	X	X	X	X	X
Supercardioid		X						X									
Cardioid	X				X	X	X					X		X	X	X	X(half)
Omni				X					X	X	X		X				
Shotgun			X														
Stage																	
Lead Vox, female																	
Lead Vox, male																	
Backing Vox																	
Speech																	
Kickdrum						X											
Snare						X											
Toms																	
HiHat /Overhead																	
Percussion																	
Guitar Amp						X											
Bass Amp						X											
Acoustic Guitar						X											
Upright Bass						X											
Strings																	
Piano																	
Accordion						X											
Woodwinds						X											
Brass						X											
Studio																	
Boardrooms / Podiums	X	X						X						X(H-Version)	X(H-Version)	X(H-Version)	
Boundary																	X
Speech / Broadcast	X	X	X			X	X				X	X	X				
Interview			X			X	X	X	X								
Speech Lav. / Head Set	X	X		X	X						X	X	X	X(L-Version)	X(L-Version)	X(L-Version)	
Vocals																	
Kickdrum						X	X										
Snare						X	X										
Toms																	
HiHat /Overhead																	
Percussion																	
Guitar Amp							X										
Bass Amp						X	X										
Acoustic Guitar							X										
Upright Bass						X	X										
Strings																	
Piano																	
Accordion						X	X										
Woodwinds						X	X										
Brass						X	X										





RE 200	RE 920	RE 510	RE 410	N/D 967	N/D 767A	N/D 367S	N/D 267A(S)	N/D 868	N/D 478	N/D 468	Cardinal	Raven	Cobalt Co11	Cobalt Co09	Cobalt Co07	Cobalt Co05	Cobalt Co04	Polarchoice
				x	x	x	x	x	x	x		x		x	x	x	x	
x	x	x	x								x		x					x
		x		x	x	x			x	x			x	x	x	x	x	x
x	x		x				x	x			x	x						x
																		x
		x	x	x	x	x					x	x	x					
		x	x	x	x		x				x	x	x	x	x			
		x	x	x	x	x	x				x	x	x	x	x	x		
					x				x		x		x	x	x	x		
								x										
									x	x		x					x	
									x	x		x					x	
x		x							x		x		x					
x									x	x	x		x	x			x	
										x		x			x	x	x	
								x										
x		x	x								x		x					
								x										
x		x	x								x		x					
x		x	x								x							
x		x	x						x		x							
	x	x								x	x	x		x			x	
	x	x								x	x	x						
																		x
											x							x
											x							
												x						
												x						
x											x							
											x							
												x						
x											x							
											x							
x											x							
											x							
x											x							
x											x							
	x										x	x						
	x										x	x						

WIRELESS MICROPHONES



INTRODUCTION

Key Strengths

- Designed, built and supported in the USA
- Part of Bosch Communications Systems Solutions – EV Speakers & Amps, KT Processing, Midas Mixing, Telex Intercom
- 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 variety of models and accessories to fit almost any application or size of install
- Designed and built for maximum professional performance
- Superior design, construction and warranty

Why Choose a Telex/EV Wireless?

All EV and Telex wireless systems are designed and built to exacting standards in our Lincoln, Nebraska facility. That's right – made here in the U.S. State-of-the-art manufacturing techniques are employed in each wireless product, from the initial CAD design to the advanced auto-inserted surface mount printed circuit board assembly. Every Telex/EV system is tested as individual components and as a complete system to ensure reliable field performance.

Telex/EV wireless microphone products are supported from the factory in Lincoln, Nebraska as well as authorized centers in Canada, Germany, Singapore, and Hong Kong.

Telex/EV has been in the business of providing quality wireless communications for demanding professional events for almost thirty years. We have the experience and talent to solve any wireless need. When you are designing large multiple wireless installations, you can look to Telex/EV to provide the important frequency coordination, and system accessories for a turnkey installation.

RE-2

UHF Wireless Microphone System

Whether you're broadcasting from the local rock club, lecturing at a corporate seminar, or speaking in a house of worship, the Electro-Voice® RE-2™ brings ease-of-use, clear sound, and clean channels to wireless.

Where does the performing musician, corporate speaker, or religious leader for professional sound? To Electro-Voice®, a company that has over 25 years of experience in wireless innovations. The RE-2 wireless system takes frequency agility to a whole new level – professional power with previously unmatched simplicity. You can also be assured that there will be no interference, drop-outs, or compromised audio quality. Simply press the one-touch Auto-ClearScan™ button and the receiver finds the clearest channels in seconds. That's it. You do your job as a professional performer, without the hassle and headache associated with many other wireless systems.

RE-2 UHF systems provide groups of up to 10 simultaneous, harmonized channels per frequency bands. 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 + ULM21lavalier mic
RE2-E	Receiver + bodypack transmitter + RE97 headworn mic (beige or brown)
RE2 Combo	Receiver + N/D267a handheld + bodypack transmitter + ULM21 lavalier mic

RE-2 Receiver

- One touch Auto-ClearScan™
- Programmable in 25kHz steps across 28 MHz operating bandwidth
- Backlit LCD displays the Group, Channel, Frequency, transmitter battery level, diversity operation, and RF and Audio signal level meters
- Balanced XLR audio output for Microphone or Line level signals and a 1/4-inch line level jack
- Fourth generation Posi-phase™ diversity and advanced audio circuits
- Unique "Guitar" setting
- Detachable 1/4-wave antennas

RE-2 UHF Transmitter

- Unique "smart" battery
- LCD Displays Group and Channel, Frequency, or Battery Level
- Low battery LED
- One On/Off button that also acts as a mute
- On/Off button can be disabled

RE-2 UHF Handheld

- Available with four different microphone elements
- N/DYM 267a Dynamic element
- N/DYM® 767a Dynamic premium vocal microphone with VOB™ (Vocal-Optimized Bass™)
- RE410 cardioid condenser
- RE510 supercardioid condenser
- Internal 1/2-wave antenna

RE-2 UHF Bodypack

- Cell phone style beltclip
- Optional pouches and fixed clip available
- A wide selection of lapel and headworn microphone accessories available

RE-2 Receiver

Receiver Type	Synthesized PLL
Frequency Range (RF)	A Band 648 – 676 MHz (TV Channels 43 - 48) B Band 696 – 724 MHz (TV Channels 51 - 56)
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 1/4 wave
Dimensions	1.72" H x 7.50" W x 5.9" D 43.69 cm H x 190.50 mm W x 150 mm D

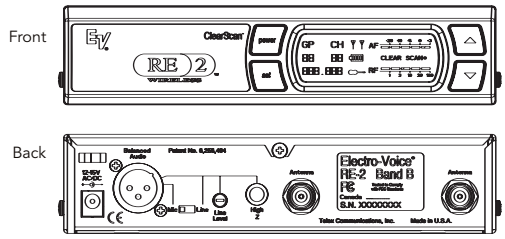
Audio Parameters

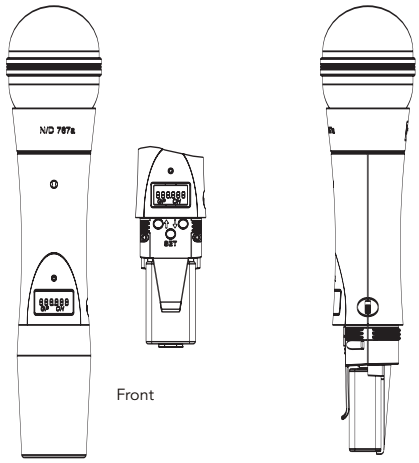
Frequency Response	50 – 15 kHz +/- 2 dB
Balanced Output (max @ 40 kHz deviation)	
Mic Position	-10 dBV
Line Position	Adjustable 10 mV-2V RMS
Unbalanced Output	Adjustable 10 mV-1V RMS
Distortion	<1.0%, 0.5% typical (ref 1 kHz, 40 kHz deviat)
Signal-to-Noise Ratio	>100 dB A Weighted
Dynamic Range	>100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

Transmitters, Bodypack (BPU-2), Handheld (HTU-2)

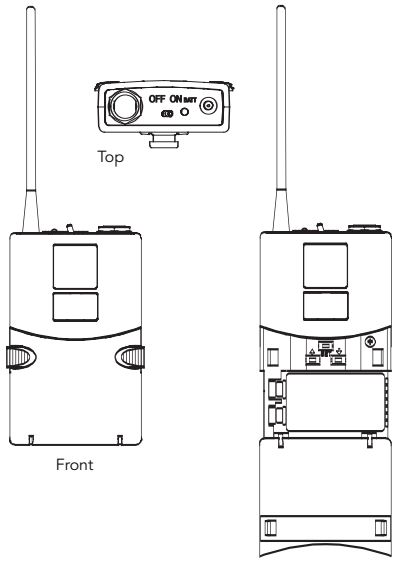
Radiated Output	30 mW typical
Microphone Head Electro-Voice 767a	N/D 767a Supercardioid N/DYM Dynamic
Microphone Head Electro-Voice 267a	N/D 267a Versatile Cardioid Dynamic
Microphone Head Electro-Voice RE 410	RE 410 Classic Cardioid condenser
Standard Lavalier Microphone	EV RE 90Tx MicroMini™ Omni-Directional Condenser
TA4 Connector Wiring	Pin 1: Ground; Pin 2 Mic Input; Pin 3: +5V bias; Pin 4: +5V bias through a 3kW 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 1/4 wave
Handheld Antenna	Internal 1/2 wave
Dimensions (Handheld)	9.4 in. (24.0 cm) Long
Dimensions (Bodypack)	3.8 in. H x 2.6 in. W x 0.92 in. D 96.5 mm H x 66 mm W x 23.4 mm D

RECEIVER





HANDHELD



REV

Professional Wireless Microphones

Electro-Voice® has been at the forefront of wireless microphone technology since the '80s. In the '90s EV invented the first scanning wireless, EV® NRU, and in 2002 EV reinvented wireless with the professional RE-1, currently on tour with Zakk Wylde, Gretchen Wilson, the Reverend Al Green, Parliment, Static-X, and Megadeth, to name just a few. Now Electro-Voice establishes a whole new paradigm in professional wireless with the REV.

REV concert handheld

- A rugged, fully machined aluminum handle about the size and shape of a wired microphone encourages proper microphone technique for better performances.
- Interchangeable microphone RC2 head allows a choice of elements to fit the vocalist's style and environment. Microphone choices include: — N/DYM® 767a, N/DYM 967, RE-410, RE-510
- Backlit LCD display controlled by three buttons mounted out of harm's way inside the battery compartment. Battery level gauge always visible on the LCD display..
- RF transmit power (5 or 50mW) and audio gain are controlled from the LCD screen controls, no tools required.
- Two AA batteries power the REV-H for over ten hours of continuous use.

REV-BP Bodypack Transmitter

- Cast magnesium case is extremely light and durable with a cell phone style beltclip or flat metal clip for comfortable wearing options.
- Backlit LCD display and three control buttons mounted inside the battery housing make programming a channel or frequency is quick and easy.
- Software controlled Guitar mode switches in a 20dB pad, moves the low end response down to 30Hz and changes the audio circuit to optimized guitar mode.
- One on/off switch that also acts as a mute, great for pauses in presentations and worship services but it can be disabled to prevent accidental turnoffs during a performance.
- Unique Smart-Battery circuit means there is no way to put the 9V battery in wrong.
- Battery level gauge always visible on the LCD display. Low battery LED will light when the battery needs a replacement.
- RF transmit power (5 or 50mW) and audio gain are controlled from the LCD screen controls, no tools required.

REV-PH Presentation Handheld

- A tough high impact ABS shell using the new RC2 interchangeable microphone elements provides an excellent alternative handheld for rental houses and other users at a lower price point.
- Accessible on/off switch that also acts as a mute, great for pauses in presentations and worship services.
- On/off button can be disabled to prevent accidental turnoffs during a performance.
- One 9V battery powers the REV-PH for over eight hours of continuous use and the Smart-Battery™ feature means there is no way to put the battery in wrong.

REV Single & Dual Receiver

Optimized analog audio path developed to provide the truest representation of a wired microphone sound possible in a wireless system.

- REV-Link™ PC software for remote monitoring, control and programming over a CAN bus connection through a UCC-1 converter or Netmax N8000.
- Factory set channel groups allow up to 16 systems to operate simultaneously in one frequency band. For groups up to 44 systems, EV can help with the coordination and custom groups are easily programmed.
- Advanced ClearScan™, automatic group and channel selections for quick, simple setup.
- Backlit LCD Display shows the Sound Engineer the Group/Channel, transmitter battery status, diversity operation, RF and Audio level meters, and space for a custom name
- REV-D Dual Receiver includes antenna pass through jacks so up to six receivers can be connected to just two antennas. All required cables are included.
- Specially designed "Sound Check" mode provides the ability for one person to walk test the microphone in the performance space with tangible results.
- Patented DSP Posi-Phase™ Diversity System for maximum range and audio quality.
- Guitar mode matches the optimized instrument audio with the REV-BP bodypack.
- Internal universal switching power supply, headset monitoring jack, and DC power on antenna input jacks for optional RF amplifier
- Integrated rack mount ears and front mount antenna cables included.
- Three-Year Limited Warranty.

REV-S SINGLE AND REV-D DUAL RECEIVERS

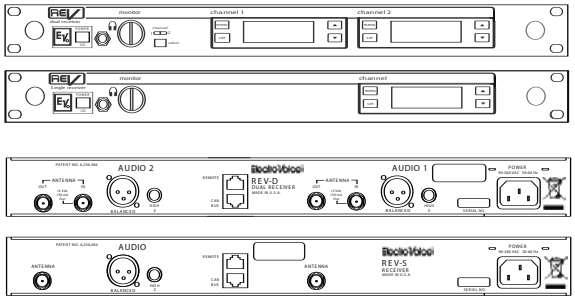
Front Panel Controls :	On/Off, Menu, Set, Up, Down Buttons 1/4" Headset Jack with Selector and Volume
Indicators LCD:	Group, Channel, Diversity, Label, Set-up
Backlit Display:	Menu-driven dot matrix
Back Panel Connectors:	1/4" unbalanced adjustable line level output
XLR balanced mic/line level output	RJ-45 CAN interface (x2, parallel)
Antennas:	Detachable 1/2 wave
RF Specifications	Frequency Range: 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) C5 Band 722 – 746 MHz (TV Channels 56-59)
Number of Channels:	950 possible (programmable in 25kHz steps)
Diversity:	DSP PosiPhase™ True Diversity
Squelch:	Tone Code plus Adjustable Amplitude
Receiver Type:	Synthesized PLL Agile UHF
RF Sensitivity:	<0.8uV for 12 dB SINAD
Audio Specifications	Frequency Response: 100 – 15 kHz +/- 2 dB Microphone 30 – 15 kHz +/- 2 dB Instrument
Audio Output Level:	Balanced Line Level 10mV – 1V RMS Adjustable
Unbalanced Output Adjustable	8 mV to 0.755V RMS (100k ohm load)
Distortion:	Less than 0.5% (@ 1kHz, 40 kHz deviation)
Signal to Noise Ratio:	> 110 dB (A)
Dynamic Range:	>100 dB
REV-D Antenna Output:	TNC
Powered Antenna Inputs:	12Vdc,15mA
Internal Switching Power Supply:	Universal Cord, 90–240 VAC, 50–60 Hz
CAN Bus Monitoring & Control:	REV-Link Software
Size:	1.72" H x 16" W x 12" D 43.7 mm H x 406.4 mm W x 304.8 mm D

REV-H CONCERT HANDHELD

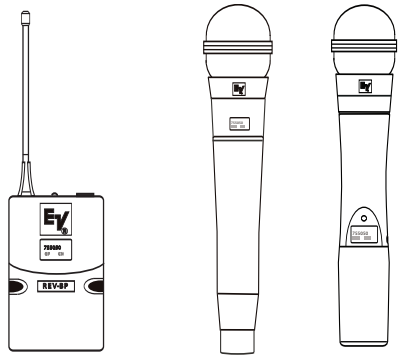
Controls:	Power On/Off, Set, Up, Down Buttons
Displays:	Backlit LCD display showing: Battery Level, Channel/Group or Frequency
Battery Life:	10 hours with two AA alkaline typical
Antenna:	Internal Proprietary
Microphone Elements:	EV N/D 767a or N/D 967 Dynamic EV RE510 or RE410 Condenser
Case Material:	Machined Aluminum
RF Output:	Normal: 5 mW typical High: 50 mW typical
Size:	24.8cm (9.75 in.) x 52mm (2.04 in.) (Length x max diameter):

REV-BP BODYPACK TRANSMITTER

Controls:	Power On/Off, Set, Up, Down Buttons
Indicators:	Red LED Low Battery Indicator, Back lit
LCD display showing:	Battery Level, Channel/Group, or Frequency
Battery Life:	8 hours with 9V alkaline typical
Antenna:	External 1/4 wave detachable
Connector:	TA4F input for microphone Pin 1 ground, Pin 2 Mic input Pin 3 +5V Bias, Pin 4 +5V through 3k ohm
RF Output:	Normal: 5 mW typical High: 50 mW typical
Case Material:	Cast Magnesium
Size:	3.75 in. H x 2.6 in. W x 0.9 in. D 94 mm H x 66 mm W x 23 mm D



REV Front and Rear Panel



REV BodyPack REV-H REV-PH

RE-V ACCESSORIES AND PARTS

	Model #
Omnidirectional MicroMini™ Lapel Mic:	RE90TX
Unidirectional MicroMini™ Lapel Mic:	RE92TX
Lightweight omni headworn Mic:	RE97TX
Headworn Cardioid Condenser Mic:	HM7
1/2 Wave Rx Antenna (C3 and C5 Bands):	FA-1
1/2 Wave Rx Antenna (C1 and C2 Bands):	CLA-3
1/2 Wave Antenna Bracket:	AB-2
UHF Antenna Amplifier (520 - 806 MHz):	UAA-500
Antenna /Pwr Distribution (600-780 MHz):	APD4+
Termination Plug For APD4+:	TP-2
Directional Rx Antenna (450-900 MHz):	LPA-500
Low Loss Coaxial Antenna Cable 25 – 100ft:	CXU-XXX
Bodypack Pouch:	WP-1000
Guitar Cord:	MAC-G2
767a Dynamic Head:	RC2-767
967 Dynamic Head:	RC2-967
RE410 Condenser Head:	RC2-410
RE510 Condenser Head:	RC2-510
Mic Stand Adapter:	MSA-REV

RE-2 PRO SERIES

Professional Wireless Microphones

RE 2 WIRELESS

When applications like rentals, on location broadcasts, or tough environments call for a wireless microphone with a mix of RE-1 and RE-2 features, the answer is RE-2 PRO. The advanced features of the RE-1 transmitter platforms allow more systems in one location, longer range, more microphone head choices, and high quality materials like the cast magnesium bodypack. Match the RE-2 transmitter and receiver and the RE-2 PRO system offers professional wireless at a price point between the RE-1 and RE-2.

RE-2 Pro Receiver

- All of the great RF and Audio features of the RE-2 receiver plus all of the rack hardware to install it including front mount antenna cables.

RE-2 Pro Handheld Transmitter

- All of the great features of the RE-2 handheld plus Normal/High transmit power, detachable microphone heads, and a choice of 767a, 967, RE410 or RE510 mic heads.

RE-2 Pro Bodypack Transmitter

All of the great features of the RE-2 transmitter plus a cast magnesium metal housing, detachable antenna and Normal/High transmit power.

Transmitters, Bodypack (BPU2PRO) and handheld (HTU2PRO) Additional Features

Radiated Output	Normal 5 mW / High 50 mW typical
Interchangeable Microphone Heads	767a Supercardioid N/DYM Dynamic 967 Supercardioid N/DYM Dynamic RE 410 Cardioid Condenser RE 510 Supercardioid Condenser
Bodypack Antenna	Detachable Flexible external 1/4 wave
Handheld Antenna	Internal 1/2 wave
Dimensions, Handheld (L) mm	268 mm long
Dimensions, Bodypack (H x W x D), mm	96.5 x 66,0 x 23.4 mm, Cast Magnesium

EV ACCESSORIES

Wireless Microphones

Use any EV lapel or headworn mic wired with a TXA.
See page 34.

OLM 10

- Lavalier mic
- Includes accessories (shown)

ULM 21

- Lavalier mic
- Includes accessories (shown)

RE 90 TX

- Lavalier mic
- Top-class
- Ultra-miniature
- Includes accessories (shown)

RE92 TX

- Lavalier mic
- High-Performance
- Includes accessories (shown)

HM 2

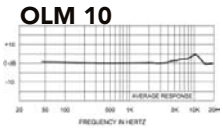
- Headset mic
- Includes accessories (shown)

HM 7

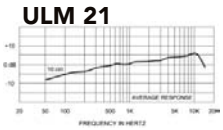
- Headset mic
- Top-class
- Super light weight and comfortable
- Includes accessories (shown)

SPECS	OLM 10	ULM 21	RE 90 TX	RE92 TX	HM 2	HM 7
Element	Back electret condenser	Back electret condenser	Back electret condenser	Back electret condenser	Back electret condenser	Back electret condenser
Polar pattern	Omnidirectional	Cardioid	Omnidirectional	Cardioid	Cardioid	Supercardioid
Frequency Response (-3 dB)	t.b.a.	80 – 16.000 Hz	50 - 18.000 Hz	40 – 20.000 Hz	30 - 18.000 Hz (12mm)	100 - 15.000 Hz
Output Level (0dB = 1mW/Pascal) 1.000 Hz)	---	---	---	---	---	---
Open Circuit Voltage (at 1.000 Hz)	t.b.a.	2.5 mV/Pascal	12.6 mV/Pascal	5.6 mV/Pascal	4.0 mV/Pascal	7.0 mV/Pascal
Maximum SPL (THD)	t.b.a.	120 dB (1% THD).	130 dB (1% THD)	135 dB (1% THD)	120 dB (1% THD)	120 dB (3% THD)
Power requirement (Phantom power)	from Bodypack	from Bodypack	from Bodypack	from Bodypack	from Bodypack	from Bodypack
Current Consumption	t.b.a.	t.b.a.	---	t.b.a.	max. 0.5 mA @ 9 VDC	---
Specials	---	---	Sub-miniature	replaceable element	---	Ultra-lightweight
Case Material (Capsule enclosure)	Plastic	Plastic	Polycarbonate resin	Metal	Plastic	Plastic
Finish	All Nonreflecting black					
Included accessories	approx. 180 cm permanently attached cable, windscreen, universal tie clip	approx. 180 cm permanently attached cable, windscreen, universal tie clip	approx. 180 cm permanently attached cable, windscreen, universal tie clip,	approx. 180 cm detachable cable, windscreen, tie tac universal tie clip	approx. 120 cm permanently attached cable, windscreen, cable clip	approx. 120 cm permanently attached cable, windscreen, cable clip
Optional Accessories	---	---	---	---	---	---
Connector type	4-pin TA4F	4-pin TA4F	4-pin TA4F	4-pin TA4F	4-pin TA4F	4-pin TA4F
Dimension (Length x Diameter)	t.b.a.	0.71 x 0.29 in.	0.25 x 0.19 in.	0.948 x 0.412 in.	---	---
Weight net	t.b.a.	23g	14 g	25g	25 g	70 g

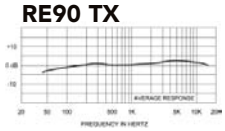
SPECS	RE920 TX	RE97 TX
Element	Back electret condenser	Back electret condenser
Polar pattern	Cardioid	Omnidirectional
Frequency Response (-3 dB)	80 – 18kHz.	40 – 20kHz
Open Circuit Voltage (at 1.000 Hz)	1.3mV/Pascal	5.6 mV/Pascal
Maximum SPL (THD)	>148 dB	135 dB (1% THD)
Power requirement (Phantom power)	from Bodypack	from Bodypack
Current Consumption	<500uA	<500uA
Specials	---	---
Case Material (Capsule enclosure)	Metal	Plastic
Finish		
Included accessories	Two Stage Windscreen Gig Bag Shock Mount Clip	Two Stage Windscreen Tie Clip Gig Bag
Optional Accessories	---	---
Connector type	4-pin TA4F	4-pin TA4F
Dimension (Length x Diameter)	0.412 x 6.2 in. (mounted)	---
Weight net	54g (1.9 oz.)	5.7g (0.2 oz.)



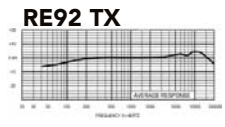
OLM 10



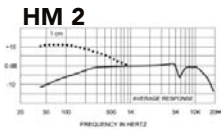
ULM 21



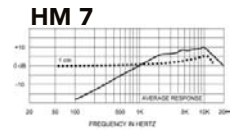
RE90 TX



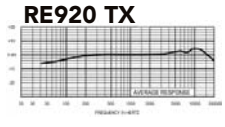
RE92 TX



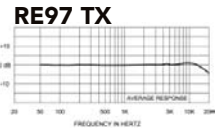
HM 2



HM 7



RE920 TX



RE97 TX

RE97 TX Mini Mic

- Extremely lightweight earworn microphone
- Almost invisible
- Available in beige, brown and black
- Wear on left or right ear
- Omnidirectional for smooth, natural sound

RE97-2 TX

- Two sided band for stability
- Same mic element as RE97
- Available in beige, black and brown
- Can be worn on left or right side

RE920 TX

- Unidirectional horn mic
- High SPL handling
- Custom clip for mounting

EV ACCESSORIES

Wireless Microphones

EV Wireless Accessories - Antennas etc.

APD-4+	UHF Antenna/power distribution system (provides power and RF signals for 4 units) for use with RE-2, RE-1, and REV
RM-S	Rack-mount kit - works with RE-2 Receivers
RM-D	Rack-mount kit - double (for two receivers) works with RE-2
UAA-500	Wideband RF Antenna Amplifier for use with REV, APD-4+, and CDR-1000
AB-2	Universal mounting bracket for 1/2-wave antennas, with 10-foot coax cable
LPA-500	Directional log periodic antenna with mounting hardware and 10-foot coax
FA-500	1/2-wave UHF antenna
TP-2	50 ohm TNC termination plug for use with APD-4+
CXU-X	Low-loss coax cable (X designates length, 25ft = 8 m, 50ft = 16 m)

RC967	NDYM 967 Dynamic Microphone Element for RE-1/RE2PRO
RC410	RE410 Condenser Microphone Element for RE-1/RE2PRO
RC767a	NDYM 767a Dynamic Microphone Element for RE-1/RE2PRO
RC510	RE510 Condenser Microphone Element for RE-1/RE2PRO
AN-Flex	Replacement Antenna for RE-1/RE2PRO bodypack transmitter
AN-Sflex	Optional super flexible antenna for RE-1/RE2PRO bodypack transmitter
MSA	Microphone Stand Clip for RE-2 (use MSA-1000 for RE-1/RE2PRO)
BC-1000	Swivel Beltclip and mounting stud for RE-1/RE2PRO
BC2-Clip	(not shown) Swivel Replacement beltclip and mounting stud for RE-2 Bodypack
WP-1000	Leather bodypack pouch for use with WT-1000
HHCK	Handheld Color Kit for RE-1/RE-2/REV-PH handheld transmitters, 6 colors
379-1	Windsceen for all handheld microphone elements
MAC-2	XLR to TA4F adapter cord
MAC-G3	TA4 to 1/4" plug George L's Guitar cord for RE-2, straight plug only.
MAC-G2	TA4 to 1/4" plug George L's® Guitar Cord for RE-1, REV, also includes right angle plug
RC2	RC2-767 NDYM 767a Dynamic Microphone Element for REV-H and PH RC2-967 NDYM 967 Dyanmic Microphone Element for REV-H and PH RC2-410 RE410 Cardioid Condenser Mic Element for REV-H and PH RC2-510 RE510 Supercardioid Condenser Mic Element for REV-H and PH

TELEX FMR-500

Power, Performance, Flexibility

WIRELESS MICROPHONES

The FMR-500 brings professional features and performance to the small- and medium-sized wireless microphone installs that are so popular today. One touch Auto ClearScan™ selects the clearest channel in the clearest group of compatible channels in just seconds with the push of just one button.

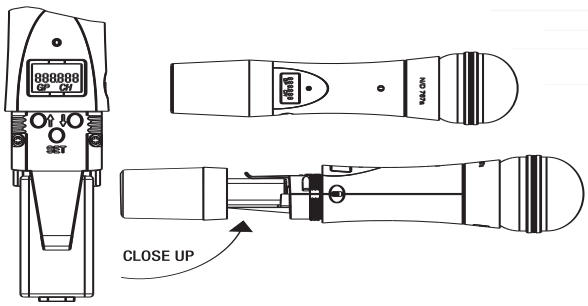
The new HT-500 programmable handheld microphone transmitter is the smallest Telex has ever built. It features an LCD display and has a screw-on battery cover that also hides a controls. Choose the EV® N/D767a dynamic microphone or the EV RE410 condenser microphone for high quality vocal performance.

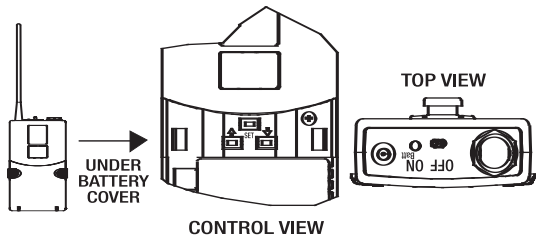
The WT-500 bodypack transmitter features a cell phone style beltclip, dual latching battery door, and a TA4 connector with a wide variety of lapel and headworn microphone options. The combination of sound and RF features are hard to beat at twice the price.

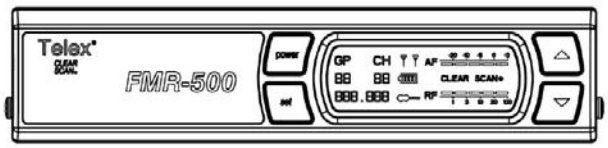
ADVANCED ClearScan™

FMR-500

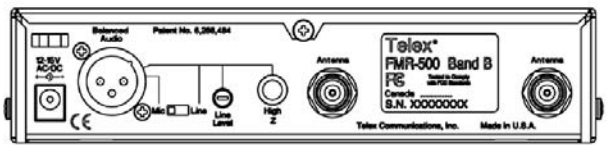
- Up to 10 systems can operate simultaneously from the preset groups of channels in one operating band. Groups of 20 coordinated channels between the three bands are also present.
- Advanced ClearScan™ and one touch Auto ClearScan automatic group and channel selections for quick and easy system setup.
- Completely programmable in 25kHz steps across 28MHz for 1112 possible frequencies.
- Backlit receiver LCD display shows the Group/Channel, Frequency, transmitter battery status, diversity operation, and RF and Audio level meters.
- Balanced XLR audio output for Microphone or Line level signals and a 1/4-inch line level jack to match any application.
- Fourth generation Posi-Phase™ diversity and advanced audio circuits provide maximum range and professional sound quality.
- Includes single and dual rack mount hardware with front antenna cables.
- "Smart" battery circuit means there is no way to put the battery in wrong.
- Tone Code plus Amplitude squelch with one button on/off.
- Three year warranty.







FRONT PANEL



REAR PANEL

WT-500 BODYPACK TRANSMITTER

- Features 1112 selectable channels, on/off, battery low led indicator and TA-4M mic connector, Mic/Guitar Software switch.
- Operates on a single 9V battery.

HT-500D HANDHELD TRANSMITTER

- Features 1112 selectable channels, on/off switch, and the EV NDYM 767a dynamic mic element with VOB.
- Operates on a single 9V battery.

HT-500C HANDHELD TRANSMITTER

- Features 1112 selectable channels, on/off switch, and the EV RE410 condenser mic element.
- Operates on a single 9V battery.

SPECS	FMR-500 RECEIVER
Receiver Type	Synthesized PLL
Frequency Range (RF)	A Band 648 – 676 MHz B Band 696 – 724 MHz G Band 614-642 MHz
Number of Channels	1112 possible frequencies Programmable in 25 kHz steps
Modulation	+/- 40 kHz
Diversity	Digital Posi-Phase™ True Diversity
RF Sensitivity	< 1.0 mV for 12 dB SINAD
Image Rejection	> 60dB
Squelch	Tone Code plus Amplitude
Ultimate Quieting	> 100dB
FCC Certification	Approved under Part 15
Power Requirements	12 V AC/DC 300mA
Operating Temperature	-7° to 49° C (20° to 120° F)
Dimensions	1.72" H x 7.5" W x 5.9" D 43.69mm H x 190.50mm W x 150mm D
Audio Parameters	
Frequency Response	50 – 15kHz +/- 2dB
Balanced Output	(max @ 40kHz deviation)
Mic Position	-10dBV
Line Position adjustable	10mV - 2V RMS
Unbalanced Output	adjustable 10mV - 1V RMS
Distortion	<1.0%, 0.5% typical (ref 1kHz, 40kHz deviation)
Signal-to-Noise	Ratio >100dB A Weighted
Dynamic Range	>100dB

SPECS	FMR-500 TRANSMITTER
Radiated Output	30 mW typical
Microphone Head ElectroVoice767a	N/D 767a supercardioid N/DYM Dynamic
Microphone Head ElectroVoice RE410	RE410 cardioid condenser
Standard Lavalier Microphone	ELM-22S MicroMini™ Omni-Directional Condenser
TA4 Connector Wiring	Pin 1: Ground; Pin 2 Mic Input; Pin 3: +5V bias; Pin 4: +5V bias through a 3k Ohm resistor
Audio Gain Adjustment	40 dB (26dB HT500)
Power Requirements	9 Volt Alkaline Battery
Battery Life (Typical)	> 8 hours with 9-Volt Alkaline Typical
Bodypack Antenna	Flexible external 1/4 wave
Handheld Antenna	Internal 1/2 wave
Dimensions (Handheld)	9.4 in. (24.0cm) Long
Dimensions (Bodypack)	3.8 in. H x 2.38 in. W x 0.92 in. D 96.5 mm H x 60.5 mm W x 23.4 mm D

TELEX FMR-1000

Wireless Microphone System

The FMR-1000 UHF wireless microphone system is a breakthrough frequency-agile system that mixes the power of full programmable channels with the simplicity of Advanced ClearScan™.

With a push of two buttons, Advanced ClearScan™ finds the clearest group of channels and you can set up 16 system installations in minutes with confidence you have the clearest channels in the clearest group. A unique sound check screen allows one person to "walk test" a transmitter with tangible results. For clear vocals, the HT-1000 handheld microphone features a choice between two Electro-Voice® microphone elements, the N/DYM® 767a dynamic with VOB™ (Vocally-Optimized Bass™) technology and the new RE510 professional condenser element.

System Features

- Up to 16 systems can operate simultaneously from the preset channels. For groups of up to 44 systems, Telex can help you with the coordination and channel selection.
- Advanced ClearScan™, automatic group and channel selections, for quick and simple system setup.
- Over 950 possible channels.
- Front panel parametric equalizer with Level, Q, and frequency controls for sound shaping without a mixing board.
- Backlit LCD display shows the Group/Channel, transmitter battery status, diversity operation, RF and Audio level meters, and space for a custom label.
- Cast magnesium bodypack transmitter, and over molded Warm-Grip™ handheld transmitter with detachable microphone elements.
- Unique battery circuit means there is no way to put the battery in wrong.
- Patented DSP Posi-Phase™ Diversity System
- Three Year Warranty
- Includes single and dual rackmount hardware with front antenna cables

FMR-1000 L

BODYPACK SYSTEM

- FMR-1000 950 channel UHF receiver
- WT-1000 bodypack transmitter
- ELM-22 micromini omni lav mic
- Rack mount hardware for single/dual mount
- Two 1/4-wave antennas
- In-line power supply

FMR-1000WT

BODYPACK SYSTEM

Same as above without microphone

FMR-1000HD

HANDHELD SYSTEM

- FMR-1000 950 channel UHF receiver
- HT-1007 EV 767a NDYM handheld transmitter
- Rack mount hardware for single/dual mount
- Two 1/4-wave antennas
- In-line power supply

FMR-1000HL

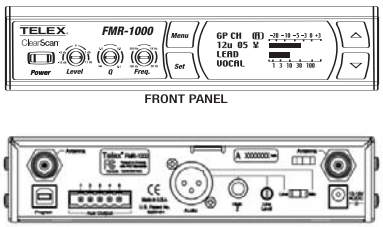
COMBO SYSTEM

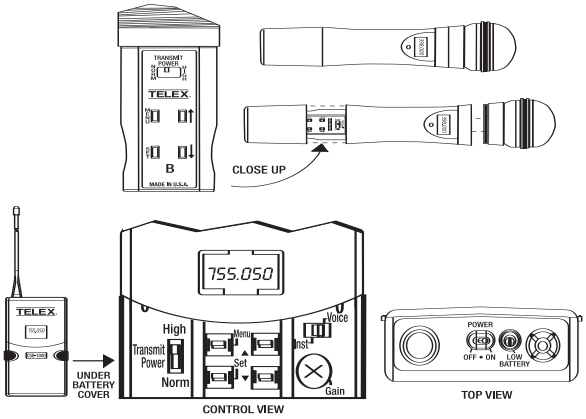
- FMR-1000 950 channel UHF receiver
- HT-1007 EV 767a NDYM handheld transmitter
- WT-1000 bodypack transmitter
- ELM-22 Omni Lapel microphone
- Rack mount hardware for single/dual mount
- Two 1/4-wave antennas
- In-line power supply

FMR-1000

SYNTHESIZED WIRELESS MIC RECEIVER

- Posi-Phase™ Diversity
- Adjustable amplitude squelch
- 950 selectable channels
- Balanced XLR output
- 1/4" adjustable line output
- Rack mount hardware
- Two 1/4-wave antennas and in-line power supply





SPECS	FMR-1000
Receiver	
Controls	
Front Panel:	On/Off, menu, set, up, down buttons, parametric EQ (level -12 dB to + 12 dB, Q 3.0 - 0.1, frequency 100 - 2 kHz)
Rear Panel:	1/4 inch output level, XLR Line Level
Indicators	
LCD Backlit Display:	Group, channel, diversity, label, squelch, set-up screen,transmitter battery level, audio signal amplitude, RF signal strength.
Connectors	
Back Panel:	1/4 inch unbalanced adjustable output
	XLR balanced output
	USB programming port
	5 pin strip connector
	Pin 1: Transmitter "On" TTL signal
	Pin 2: Battery low TTL signal
	Pin 3: Logic ground
	Pin 4: Unbalanced line level audio output
	Pin 5: Audio common (ground)
Antennas	Detachable 1/4-wave
RF Specifications	
Frequency Range:	A Band 680 – 704 MHz (TV Channels 49, 50, 51, 52) B Band 722 – 746 MHz (TV Channels 56, 57, 58, 59)
Number of Channels:	950 possible (programmable in 25kHz steps)
Diversity:	DSP PosiPhase true diversity
Receiver Type:	synthesized PLL agile UHF
RF Sensitivity:	<0.8uV for 12 dB SINAD
Agency Approvals:	FCC, IC
Audio Specifications	
Frequency Response:	100 – 15 kHz +/- 2 dB microphone 30 – 15 kHz +/- 2 dB instrument
Audio Output Level:	
Line Level	8 mV - 0.775V RMS into a 100 k ohm load
Balanced Mic	-20 dBV max (@40kHz deviation)
Balanced Line	10mV – 1V RMS
Distortion:	Less that 0.5% (@1kHz, 40kHz deviation)
Signal to Noise Ratio:	>110 dB (A)
Dynamic Range:	>100 dB
General Specifications	
Power Supply:	External 12 VAC 750mA in-line with cord
Size:	1.72" H x 7.50" W x 8.38" D 43.69mm H x 190.50mm W x 212.85mm D

SPECS	HT-1000
Transmitter	
Controls	
	Power on/off
	Audio gain adjustment with 26 dB range
	Transmit power switch
	Menu, set, up, down buttons
Displays	
	LCD display (channel and group, frequency, battery level), red LED battery low indicator
Battery Life	8 hours with 9V alkaline (typical)
Antenna	Internal 1/2- wave
Microphone Elements	EV N/D 767a Dynamic or RE 510 Condenser
RF Output	
Normal	5 mW (typical)
High	50 mW (typical)
HP Special Order	10 mW and 100mW (typical)

SPECS	WT-1000
Handheld Transmitter	
Controls	
	Power on/off switch
	Audio gain adjustment with 40 dB range
	Transmit power switch
	Microphone/Instrument switch (0, -20 dB)
	Menu, set, up, down buttons
Indicators	
	Red LED low battery indicator
	LCD display (channel/group, frequency, battery level)
Battery Life	8 hours with 9V alkaline (typical)
Antenna	External 1/4-wave detachable
Connector	
	TA4M input for microphone Pin 1 ground, pin 2 mic input Pin 3 +5V bias, pin 4 +5V through 3k ohm
RF Output	
Normal	5 mW (typical)
High	50 mW (typical)
HP Special Order	10 mW and 100mW (typical)
Case Material	Cast magnesium
Size	4.4 in. x 2.6 in. x .9 in. 111 mm x 66 mm x 23 mm

TELEX SAFE 1000

Secure Audio Frequency Encryption

Now Telex, creators of the first secure wireless microphone, offers freedom and security with the new SAFE-1000™ second generation encrypted wireless microphone system. The SAFE-1000 (Secure Audio Frequency Encryption) system brings airtight security to wireless transmissions of confidential information. Each and every matched SAFE-1000 comes with its own unique security code. not even another SAFE-1000 receiver can intercept your transmission.

The SAFE-1000 offers powerful features like Advanced ClearScan™ automatic channel selections, 950 possible channels, and factory preset groups and channels that allow up to 16 simultaneous systems in one band. These tools make setting up 10 systems quick and easy.

When confidentiality is priority one, the SAFE system represents a breakthrough in security for wireless microphones. Based on technology adapted from Telex's intercom used by the National Football League, the SAFE-1000 system is ideal for the transmission of restricted or classified information over a wireless system. A scanner cannot intercept encrypted conversation when you're on a SAFE-1000 system, unlike other brands of wireless microphones.

SAFE-1000 L

BODYPACK SYSTEM

- SAFE-1000 950 channel UHF receiver
- SAFE-WT bodypack transmitter
- ELM-22 micromini omni lav mic
- Rack mount hardware for single/dual mount
- 2 1/4-wave antennas
- In-line power supply

SAFE-1000 H/L

COMBO SYSTEM

- SAFE-1000 950 channel UHF receiver
- SAFE-HD EV 767a NDYM handheld transmitter
- SAFE-WT bodypack transmitter
- ELM-22 omni Lapel microphone
- Rack mount hardware for single/dual mount
- 2 1/4 wave antennas
- In-line power supply

SAFE-1000 HD

ENCRYPTED HANDHELD SYSTEM

- SAFE-1000 950 channel UHF receiver
- SAFE-HD EV 767a NDYM handheld transmitter
- Rack mount hardware for single/dual mount
- 2 1/4 wave antennas
- In-line power supply

SAFE-1000 WT

BODYPACK SYSTEM

same as SAFE-1000 L with no mic

SAFE-WT

UHF ENCRYPTED WIRELESS
BODYPACK TRANSMITTER

- 950 selectable channels
- On/off switch
- Metal housing
- Tx power switch
- Battery low LED indicator
- TA-4M mic connector
- Operates on a single 9V battery

SAFE-HD

UHF ENCRYPTED WIRELESS
HANDHELD TRANSMITTER

- 950 selectable channels
- On/off switch
- Tx power switch
- Battery low led indicator
- EV N/D767a dynamic mic element
- Operates on a single 9V battery

SPECS	SAFE 1000
Receiver	
Controls	
Front Panel:	On/Off, menu, set, up, down buttons
Rear Panel:	1/4 inch output level
Indicators	
LCD Backlit Display:	Group, channel, diversity, label, squelch, set-up screen, audio signal amplitude, RF signal strength.
Connectors	
Back Panel:	1/4 inch unbalanced adjustable output XLR balanced output
Antennas:	Detachable 1/4 wave
RF Specifications	
Frequency Range:	G Band 614 – 638 MHz (TV Channels 38, 39, 40, 41) F Band 650 – 674 MHz (TV Channels 44, 45, 46, 47) A Band 680 – 704 MHz (TV Channels 49, 50, 51, 52) B Band 722 – 746 MHz (TV Channels 56, 57, 58, 59)
Number of Channels:	950 possible (programmable in 25kHz steps)
Diversity:	DSP PosiPhase true diversity
Receiver Type:	synthesized PLL agile UHF
Modulation Type:	NFSK
Squelch:	Digital plus Amplitude
FCC: A	approved under Part 15
Audio Specifications	
Frequency Response:	100 – 7000 Hz +/- 2 dB
Encryption:	32 Bit (16 imbedded, 16 user assigned)
Audio Output Level:	
	Line Level 8 mV - 0.775V RMS into a 100 k ohm load Balanced -10 dBV max
Distortion:	Less that 1.0% (@1kHz)
Signal to Noise Ratio:	> 90 dB
Dynamic Range:	>90 dB
General Specifications	
Power Supply:	External 12 VAC 750mA in-line with cord
Size: 1.72" H x 7.50" W x 8.38" D	43.69mm H x 190.50mm W x 212.85mm D

SPECS	SAFE HT
Handheld Transmitter	
Controls	Power on/off Audio gain adjustment with 26 dB range Transmit power switch Menu, set, up, down buttons
Displays	LCD display (channel and group, frequency, battery level), red LED battery low indicator
Battery Life	7 hours with 9V alkaline (typical)
Antenna	Internal 1/2 wave
Microphone Elements **EV N/D 767**	a Dynamic or RE 510 Condenser (Available separately)
RF Output	
Normal	5 mW (typical)
High	50 mW (typical)
Size	10.5 in. long (26.8 cm)

SPECS	SAFE WT
Backpack Transmitter	
Controls	Power on/off switch Audio gain adjustment with 40 dB range Transmit power switch Menu, set, up, down buttons
Indicators	
	Red LED low battery indicator LCD display (channel/group, frequency, battery level)
Battery Life	7 hours with 9V alkaline (typical)
Antenna	External 1/4 wave detachable
Connector	
	TA4M input for microphone Pin 1 ground, pin 2 mic input Pin 3 +5V bias, pin 4 +5V through 3k ohm
RF Output	
Normal	5 mW (typical)
High	50 mW (typical)
Case Material	Cast magnesium
Size	3.75 in. x 2.6 in. x .9 in. 96 mm x 66 mm x 23 mm

TELEX SOUNDMATE

Professional Listening Systems

SoundMate™

Telex SoundMate™ personal listening systems help overcome background noise and poor building acoustics that can make listening difficult for the hearing impaired listener. A Telex base station, portable belt pack transmitter, your choice of receivers, and a wide assortment of accessories allow you to meet the needs of individuals who require hearing assistance.

ST-300 Transmitter

The ST-300 Base Transmitter features 17 user selectable frequencies digitally controlled from the front panel control buttons, a headphone jack with adjustable level for input signal monitoring, and a backlit LCD display that shows Channel, Frequency and Audio Input Level.

On the back of the unit is a balanced XLR-3F as well as an unbalanced 1/4-inch input. Front panel controls and LCD display allow the user to select mic, line, and 70-volt input options, attenuate the input levels and change hi/low RF transmit power. A new feature called Enhanced Dynamic Range (E.D.R.) works with the SR-400 receiver to provide clearer, more dynamic audio.

SR-50 Receiver

The SR-50 single channel receiver provides clear reception and the simplicity of a fixed channel. This economical receiver operates on one of 17 fixed narrow-band frequencies in the 72-76 MHz band. An ergonomic, raised volume control knob makes level adjustments easily accessible by feel. A recessed headphone jack provides extra protection for earphone connections. Two AA batteries give up to 30 hours of continuous battery life.

PST-170 Transmitter

The PST-170 belt pack transmitter may be set to any one of the 17 channels displayed on the backlit LCD and operates on frequencies in the 72-76 MHz band. It is lightweight, battery operated and includes a small lapel microphone for convenient portable use.

The PST-170 has two audio input jacks. The auxiliary input is designed to allow audio devices such as teachers' aides or take players. The second jack is normally used for microphone and is locate don the top panel. The PST-170 is also compatible with the E.D.R. feature of the SR 400.

SR-400 Receiver

The SR-400 17 channel receiver is the perfect solution to multiple transmitter hearing assistance systems. The SR-400 features and advanced digital PLL synthesizer to tune all 17 narrow-band frequencies offered in the 72-76 MHz band and a backlit LCD display. The receiver also includes a special high frequency contour filter and boost switch to increase the intelligibility of the audio signal, and E.D.R. for increased dynamic range. Additional features include a battery saving automatic power shut-off when the earphone is unplugged.

SM-2 System

SM-2 SYSTEM Includes:

(1) ST-300 base transmitter,
(4) SR-50 receivers
(4) SEB-1 earbuds
(1) SoundMate™ wall plaque.
(SM case sold separately).

SMP-2 System

(1) PST-170 portable belt pack transmitter
(6) SR-50 single channel receivers
(6) HED-2 collapsible headphones
(14) AA Alkaline batteries
(1) Deluxe system carrying case
(1) HM-2 head worn microphone
User manual for SR-50 and PST-170

SPECS	ST-300
17-channel Transmitter	
RF Frequency Range	72 to 76 MHz
Modulation:	FM ±25 KHz deviation
Signal-To-Noise Ratio	58 dB (77 dB with E.D.R.)
Maximum Deviation	±25 KHz
Maximum Rated Power	50 mW
Audio Input	Balanced XLR-3F plus unbalanced 1/4"
Antenna	1/4" wave omnidirectional whip
Audio Controls	Audio input level, monitor jack volume, E.D.R.
Power Requirements	15-24 Vdc or 13 Vac; 115Vac 60 Hz @ 300 mA plug-in wallpack power supply
Dimensions	H 1-3/4" (4.5 cm) x W 7-1/2" (19.2 cm) x D 5.9" (15 cm)
FCC ID	B5DM522
Backlit LCD Display	Ch., Freq, Audio Meter, Input setup, RF level, and E.D.R.
RF Power Switch	80K µV/m @ 3 m in hi 25K µV/m @ 3 m in low

SPECS	PST-170
17-channel Transmitter	
Audio Input Characteristics	Mic TA4M connector, 7.75 mV RMS input for ±25 KHz deviation. Impedance, 10K Ohms, nominal. Aux. Input, Female 1/8". 100 mV Unbalanced, 10K Ohms, nominal
Antenna	Permanently attached trailing wire
Modulation:	FM ±25 KHz deviation
Frequency Response (System)	100 Hz to 10,000 Hz
Automatic Gain Control Range	30 dB
System Signal-To-Noise	58 dB (77 dB with E.D.R.)
Pre-emphasis	100 µ seconds
Maximum RF Power	80K µV/m @ 3 m
Power Requirements	(2) AA batteries, Alkaline or NICAD 8 hours Alkaline, 4 hours NICAD
FCC ID	B5DM521

SPECS	SR-400
17-channel Receiver	
Power Requirements	(2) AA batteries, Alkaline or NICAD 30 hours Alkaline, 10 hours NICAD
Audio Frequency Response	<3 dB Variation (100 Hz-10 KHz)
Modulation:	FM ±25 KHz deviation
Sensitivity	0.5 µV typical, 1.0 µV maximum,12 dB SINAD
Image Rejection	>65 dB
Signal-To-Noise Ratio	>77 dB with E.D.R.
Distortion	<2% T.H.D.
Audio Output @ 10% distortion	into 8 Ohms: 2.0V / 15mW 3.0V / 80mV into 32 Ohms: 2.0V / 10mW 3.0V / 50mW
Antenna Type	1/4-wave omnidirectional, in earphone cord
Audio Controls	Volume, On/Off, High frequency boost control, E.D.R.
Earphone Connector Type	3.5 mini stereo or mono
Dimensions	H 4" (101 mm) x W 2-3/4" (70 mm) x D 1" (25 mm)
Visual Indicators	Backlit LCD Channel, Hi Freq, E.D.R.
External Jack	Audio Output/Charger

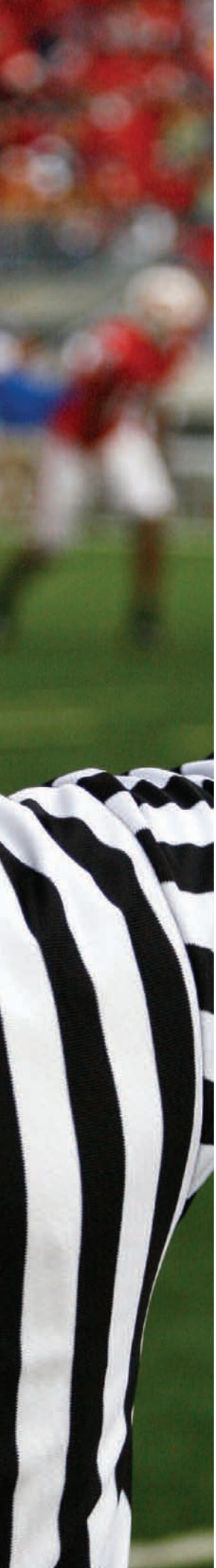
SPECS	SR-50
Receiver	
Power Requirements	(2) AA batteries, Alkaline or NICAD 30 hours Alkaline, 10 hours NICAD
Audio Frequency Response	<3 dB Variation (100 Hz-10 KHz)
Sensitivity	0.5 µV typical, 1.0 µV maximum, 12 dB SINAD
Signal-To-Noise @ 1 mV Input	>60 dB
Distortion	<2% T.H.D.
Audio Output @ 10% distortion	into 8 Ohms: 2.0V / 15mW 3.0V / 80mV into 32 Ohms: 2.0V / 10mW 3.0V / 50mW
Controls	Volume/On/Off Switch
Dimensions	H 4" (101 mm) x W 2-3/4" (70 mm) x D 1" (25 mm)
Visual Indicators	Backlit On/Tuning indicator
External Jack	3.5mm Audio Output/Charger
FCC ID	B5DE401

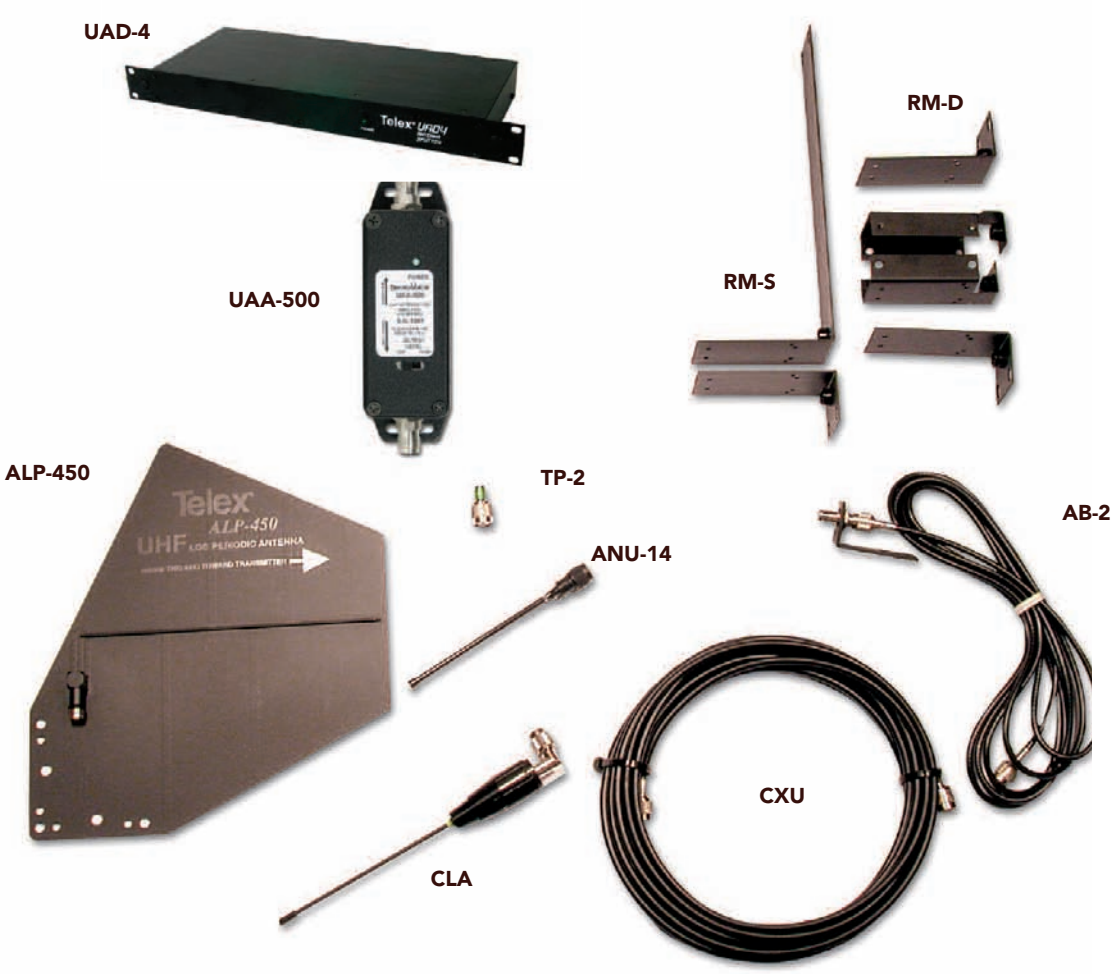
TELEX ACCESSORIES

Wireless

TELEX Wireless Microphones Accessories

MAC-2	XLR to TA4F adapter cord
RSB-2	Referee mic switch box (TA4F) (For WT-1000 and BPU2-PRO Only)
	Note: bodypack transmitters must be modified for use with RSB switch box
PH23	Headworn unidirectional mic with TA4F
PH21	Headworn unidirectional mic with TA4F
SCHS-745/746	Special Projects headworn mics with TA4F (746 is water-resistant/for aerobics use)
ELM-22S	Premium omnidirectional lapel mic with TA4F
ELM-33S	Premium unidirectional lapel mic with TA4F
WP-23	Aerobics sports pouch for use with bodypack transmitter
WP-1000	Leather bodypack pouch for use with WT-1000





TELEX Wireless Accessories - Antennas, Coax & Hardware

UAD-4	UHF narrowband (600-780 MHz) antenna splitter/combiner, provides RF and power for 4 receivers
RM-D	Rack-mount kit - double (for two receivers) works with FMR-1000, FMR-500, FMR-70 and SAFE-1000 receivers
RM-S	Rack-mount kit - single (for one receiver) works with FMR-1000, FMR-500, FMR-70 and SAFE-1000 receivers
ALP-450	Directional log periodic UHF antenna (450 - 900 MHz) with mounting hardware & 10-foot coax
TP-2	50 ohm TNC termination plug for use with UAD-4, AD-450
UAA-500	Wideband RF Antenna Amplifier for use with UAD-4.
ANU-14	1/4-wave UHF antenna for use with FMR-1000, FMR-500, and SAFE-1000
CLA-X	1/2-wave UHF antenna (X denotes frequency band)
CXU-X	Low-loss coax cable (X designates length, 25, 50, 75 or 100) for use with remote mount antennas
AB-2	Universal mounting bracket for 1/2-wave antennas, with 10-foot coax cable

WIRELESS GUIDELINES

Information

Choose the wireless system wisely!

It's important to note that all wireless systems are not created equal. Only a very few of the products on the market today are actually designed and built by the people selling them. Many of the most popular systems are built by microphone companies that only recently began to manufacture wireless devices. Telex/EV is unique in the world of wireless. Electro-Voice has been leading the way in microphone technology for 75 years and Telex practically invented professional wireless microphones 30 years ago. All Telex and EV wireless products are the result of this vast experience and technological know-how.

As more and more wireless products get into the market, more problems in installation and performance are being encountered. Often times these problems are unique to the situation and require a trained professional with considerable RF experience to solve. Telex maintains a staff of highly trained RF engineers and designers to help our dealers and customers get systems to work in the most critical and demanding applications. Wherever possible, we build features into our new products to take care of problems before they start. The key for the selling dealer is that they have a large company with plenty of experience and talent backing-up their wireless installations.

Important Wireless Terminology

Like any other technical business, the wireless world is filled with technical jargon and concepts all its own. It is very important that you understand the basics of this language, or overzealous marketing materials can easily mislead you.

The Basics

A wireless system at its most basic includes a transmitter, handheld or bodypack, and a receiver. There are many ways to get the signal from point A to point B and it is important to dispel any myths or preconceived notions that may have been picked up from various marketing materials. We will go through the more common technical terms and try to give you and objective outlook.

What is Diversity?

Diversity reception is a method of minimizing the effects of multi-path delays that create drop outs of the radio signal. This is done by combining or selecting two or more antenna sources for the same signal in order to produce a constantly usable signal. This always requires more than one antenna in different physical locations but not necessarily multiple receivers.

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

The term "diversity" is derived from the word "diverse", which according to the American Heritage Dictionary means varied or unlike. In the RF world, this translates to two or more unlike sources of received signal energy at the receiver. As long as the two sources of signal are unlike or varied from each other, they are diverse, hence the term 'diversity'. These days you hear a lot of hype about some systems that claim to be "true" diversity. It this were true, there would also have to be a "false" diversity. But, by definition, any receiver using two or more varied signal inputs has diversity, so the only 'false' diversity would be single antenna non-diversity. Major manufacturers may differ in their particular implementation of the diversity circuitry, but all diversity systems use different sources of received energy from two or more antennas. The term 'true diversity' is meaningless from an engineering standpoint.

What is patented Posi-Phase Diversity?

Posi-Phase diversity uses two antennas spaced apart, 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 a partial phase cancellation (multipath) or total phase cancellation (dropout) the logic circuitry adjusts the phase of the secondary antenna to a positive condition relative to the primary antenna. This process occurs in a fraction of a second and continually adjusts the phase of the second antenna for the optimum signal. A similar patented technique is used in cellular telephones to insure their 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. Since only one receiver is needed, we are able to concentrate on the overall receiver design on more important aspects of the receiver design such as filtering, IF circuitry, squelch and audio circuitry Concentrating on these critical areas of a receiver design yields superior performance over switching diversity.

The superior performance is easily verified by a simple shoot-out with range and audio quality tests. Generally, under the same environment Telex systems will go nearly twice as far as competitive models in a similar price range.

What is Phase Cancellation?

Phase cancellation or multipath dropout is a phenomenon where a direct radio signal and a reflected radio signal combine in the receiver. The two signals are slightly out of phase from each other due to the delay in the reflected signal. The phase difference causes the two signals to interfere with each other and cause deterioration in the quality of signal at the receiver. When the distance and geometry are just right, the signals are 180 degrees out of phase and can cancel each other completely, often referred to as a dropout.

A very common example of phase cancellation or multipath dropout has occurred to most people at one time or another. If you have ever driven your car listening to your favorite FM radio station and pulled up to a stop light and noticed your radio station become fuzzy and faded away as you pull slowly forward, you have experienced phase cancellation. Did you notice that when you pulled your car up just a few feet the station came back to perfect reception?

Because multipath problems are related to the geometry of the set up, it is possible to walk test the transmitters and correct potential dropouts using tools like the Sound Check Screen in the RE-1 and adjusting your antenna placements. But be wary, each time you change the scenery, arena, or even add people, the mix changes.

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, or RF detection circuitry. This circuitry is the "gate" that allows the audio to turn on or off based on the RF signals entering the receiver. Simple gate squelch circuits that are commonly used in most competitive wireless receivers have a detector circuit that opens the audio path as soon as a preset level of RF energy is reached. When the signal is below the preset level, the audio path is "closed" or grounded to be very quiet. The obvious problem with a simple gate squelch is that any RF energy including distortion, hiss, harmonics from such sources as lighting dimmers, CD or DVD players, computers, digital effects and electric motors are indistinguishable from the desired signal. This extraneous RF energy will open the squelch gate just as easily as the intended transmitter. So, often times the user must "crank" up the squelch level all the way up to limit the sensitivity to noise, which reduces 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. If, in the unlikely event, random noise fools the tone detector, the signal at the intended frequency still needs to be high enough to register on the amplitude squelch. The back up amplitude squelch further reduces the chances that an errant signal will cause audio noise while the transmitter is turned off.

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. That is, if you eventually intend to add more systems, make sure you select a system that will allow for the total number of future systems. Also, don't forget to look at accessories such as antenna combiners, antennas, low loss coaxial cable, and microphone choices.

Electro-Voice has a complete line of wireless accessories for both VHF and 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 1/4-inch wave 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-500, 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 mounting antennas ten feet in the air at the side of the state is one of the best places for them. 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 use 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 APD$+ provides power and antenna connectors for 4 receiver and can be cascaded to run antennas for up to 16 systems from 2 antennas (using 5 APD4+ units). The important thing to keep in mind is to connect the input of each additional splitter to the output of the original APD4+ (the one connected directly to the antennas) to prevent a loss of rang.

Wireless "Gain" Settings

Almost every wireless microphone system has an adjustment on the transmitter that is called a "Gain" adjustment, which often confuses users. This setting should really be called a "Deviation Control", but that would more than likely confuse users even more. The problem with calling it a gain setting, however, is that the end user attempts to use it to set their overall audio level – not what the control is designed to do. After all, wired microphones do not have a gain control and the mixing board or amplifier must be used to control the audio levels.

The gain setting is unique to wireless microphones and is used to maximize the signal-to-noise ratio and dynamic range whether it is used as a podium microphone, close talking signing mic, lapel, headworn, or even guitar or instrument. Frequency Modulated (FM) radios transmit audio information as changes in the carrier frequency. The bigger the changes in frequency, the better the signal-to-noise ratio. So, if the system's maximum deviation is +/-40KHz, we want the loudest level input into the microphone to generate 40KHz deviation. With the gain set above that, we would be clipping or distorting the maximum input and if it is set too low, we are not getting the clearest possible signal.

To set the Wireless "Gain" properly, it should be adjusted without any audio output.

1) Before the audio connections are even made or with the PA system muted, simply sing or scream into the microphone as loudly as it will ever be used in performance in this application. (For guitar systems, turn the gains on the guitar to maximum and hit the hardest note that will be used in concert)
2) Then adjust the gain on the transmitter until the audio meter peaks in the usable range (or the overmodulation light does not come on).
3) Then make the audio connections and use the mixing board or amplifier to set the audio levels for the PA. Or, with a guitar/instrument wireless system, when the bodypack gain is set and the audio meter is not railing, set the receiver output to match whatever instrument amplifier is being used.

Bosch Communications Systems
Americas–Headquarter Americas
Telex Communications, Inc.
12000 Portland Ave South,
Burnsville, MN 55337, USA
USA–Ph: 1-800-392-3497
Fax: 1-800-955-6831
Canada–Ph: 1-866-505-5551
Fax: 1-866-336-8467
Latin America–Ph: 1-952-887-5532
Fax: 1-952-736-4212

Europe, Africa & Middle-East
Headquarter EAME
EVI Audio GmbH
Hirschberger Ring 45, D-94315,
Straubing, Germany
Phone: +49 9421 706-0,
Fax: +49 9421 706-265

France: EVI Audio France S.A.,
Parc de Courcerin,
Allée Lech Walesa,
F 77185 Lognes, France
Phone: +33 1-6480-0090
Fax: +33 1-6006-5103

UK: Shuttlesound,
4 The Willows Centre,
Willow Lane, Mitcham,
Surrey CR4 4NX, UK
Phone: +44 208 646 7114
Fax: +44 208 254 5666

Asia & Pacific Rim–Headquarter Asia
Singapore: Telex Communications (SEA)
Pte Ltd
38C Jalan Pemimpin
Singapore 577180
Tel: (65) 6319 0621
Fax: (65) 6319 0620

Japan: EVI Audio Japan Ltd.
5-3-8 Funabashi, Setagaya-Ku,
Tokyo, Japan 156-0055
Phone: +81 3-5316-5020,
Fax: +81 3-5316-5031

Hong Kong: Telex EVI Audio (HK) Ltd.
Unit 5,1/F, Topsail Plaza
11 On Shum Street
Shek Mun,Shatin HK
Phone: +852 2351-3628,
Fax: +852 2351-3329

Bosch Communications Systems
Telex EVI Audio (Shanghai)Co., Ltd.
Room 3105-3109, No.1 Building, No. 218,
Tian Mu West Road.
Shanghai, China.
Postal Code: 200070
Tel: 86 21-63172155
Fax: 86 21-63173023