

**T**HE 528E IS A COMPLETE, SELF-CONTAINED VOICE PROCESSOR that performs six separate functions: microphone preamplification, de-essing (sibilance removal), compression/limiting, downward expansion, parametric EQ, and voice symmetry alignment. All six processors may be used simultaneously. Although we call the 528E a “Voice Processor”, it is perfectly suitable for any signal, vocal or not.

Each function features a full complement of controls in an easy-to-use layout. Separate LED meters monitor mic gain and dynamics gain reduction functions thus facilitating quick and accurate adjustment of controls. As a dedicated single-channel voice processor, the 528E delivers the same processing power found in an entire recording studio signal chain. With the 528E you get all the control you need, without the cost or complication of separate units.

The 528E works with any professional microphone. The mic preamp’s gain is variable up to 60 dB, and 48 volt phantom power is provided for condenser mics. A switchable 15 dB pad reduces gain in front of the mic preamp to prevent distortion in super close miking situations. A front panel switch selects between microphone or line input. Both inputs are transformerless and are equipped with filters to prevent radio frequency interference (RFI).

The de-esser senses and regulates selectable high frequencies to reduce or eliminate annoying sibilance and “lip smacking”. De-esser controls are Frequency and Range.

Symetrix’ program controlled Integrated Dynamics Processing (IDP) techniques combine the best attributes of compressor/limiters and downward expanders. The compressor/limiter maintains uniform levels while the downward expander eliminates “pumping”, “breathing”, and noise build up. Because it’s program controlled, the 528E’s dynamic range processor responds quickly to transients, and gently to

smaller level changes. Controls provided are Expand Threshold, Compress Threshold, and Compression Ratio.

The three band parametric EQ performs both creative and corrective operations, with bandwidth variable from .3 octave to 4 octaves, 15 dB boost/cut, and overlapping frequency ranges.

A unique “leap frog” topology minimizes the number of amplifiers in the signal path while ensuring that each frequency band interacts with its neighbor in a desirable and musical fashion. Use the 528E’s parametric to enhance voices and/or eliminate resonances and interference. EQ controls are Cut/Boost, Bandwidth, and Frequency for each of three bands.

The voice symmetry switch corrects for excessive positive or negative signal peaks of the human voice. A simple in/out switch controls voice symmetry.

Revered as the choice for broadcast voices and known as the “one channel console” by recording studios, the 528E easily steps into the track of it’s predecessor, the Symetrix 528 Voice Processor. •

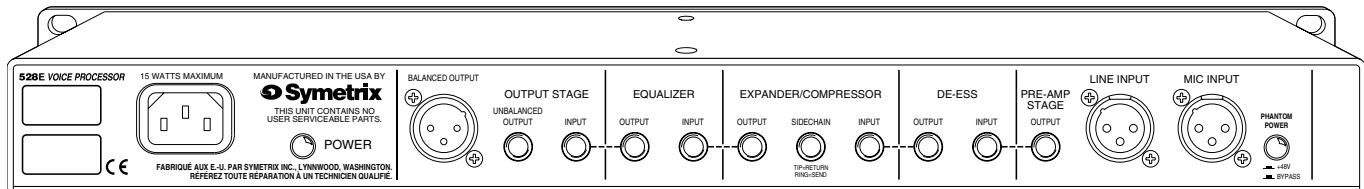
## APPLICATIONS

- Broadcast Announce Mics
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- Voice-overs and Music Recording
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- High Level Sound Reinforcement
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- Public Address/Paging Systems
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## FEATURES

- Works with any microphone (or line input)
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- Enhances vocal intelligibility
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- Increases perceived loudness and “presence”
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- Great for voices as well as instruments and effects
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- Reduces off-mic noise
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- Reliable, proven design
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# 528E



## SPECIFICATIONS

Specifications subject to change without notice.

<b>Inputs</b>		<b>Overall Performance Data</b>	
Controls and Switches	Mic Gain, Phantom Power, Mic/Line XLR-female (2)	Frequency Response	20 Hz to 20 kHz (+0, -0.5 dB), EQ out compressor out, downward expander out, de-esser out
Mic and Line Input Connectors	Fires at +17 dBu output level from mic preamp or line input amplifier	THD+Noise	0.05%, 20 Hz to 20 kHz, +4 dBm output
Clip LED	Balanced Transformerless, Low Impedance +48V, nominal	Noise Floor	Better than -89 dBu, 20-22 kHz.
Microphone Input Type	Phantom Power (DIN 45 596)	<b>Dynamic Range Processor</b>	
Microphone Preamp Gain	22 to 60 dB (pad out), 7 to 45 dB (pad in)	Type	Interactive Comp/Limiter-Downward Expander
Microphone Input Maximum Input Level	-3 dBu (pad out)	Comp/Limiter Ratio	1:1 to 10:1
Equivalent Input Noise (EIN)	-126 dBV (150-Ohm source, 20 Hz to 20 kHz)	Downward Expansion Ratio (max)	1:1.8
THD+Noise (Preamp only)	0.05% (2 kHz, 50 dB gain, +17 dBu output)	De-esser Type	Program controlled high-cut filter, 12 dB/octave
Mic Preamp CMRR	> 50 dB (20 Hz to 20 kHz)	Frequency Range	800 Hz to 8000 Hz
Line Input Type and Impedance	10 kilohm Transformerless, Balanced Bridging	Threshold	-30 to 0 dBu
Line Input Maximum Input Level	+24 dBu	Output Section Type	Balanced, Transformerless
Line Input Nominal Input Level	+4 dBu	Maximum Output Level	+24 dBm Balanced, +18 dBm Unbalanced
Line Input CMRR	> 50 dB (0 dBu, 20 Hz to 20 kHz)	Connector	XLR-male
<b>Parametric Equalizer</b>		Output Clip LED	Fires 3 dB below clipping
Type	Three-band Parametric Equalizer	Output Source Impedance	200 Ohms, balanced
Bands	Low: 16 to 500 Hz, Mid: 160 to 6300 Hz High: 680 Hz to 22 kHz	Minimum Load Impedance	600 Ohms Balanced or Unbalanced
Peak/Dip Bandwidth	0.3 to 4 octaves, measured at maximum boost	Voice Symmetry Switch	Improves modulation symmetry of speech signals
Maximum Boost/Cut	±15 dB	Output Gain	±15 dB
<b>Metering</b>		<b>Physical</b>	
Type	Multi-segment LED bar graph	Size (hwd)	1.72 x 19 x 7.25 inches, 4.37 x 48.26 x 18.415 centimeters
Output Level	-20 to +3 VU (0 VU = +4 dBu), VU calibrated, peak responding	Weight	7.6 lbs (3.5kg) net, 10 lbs (4.6kg) shipping
Gain Reduction	Separate displays for: de-esser, downward expander, compressor 0 to 20 dB per display	<b>Electrical</b>	
		Power Requirements	117V nominal, 105 to 125V AC, 50 to 60 Hz, 15 watts maximum 230V nominal, 205 to 253V AC, 50 Hz, 15 watts maximum

## 528E ARCHITECTS AND ENGINEERS SPECIFICATIONS

The voice processor shall be capable of all signal processing functions commonly found on a mixing console input channel, including microphone signal preamplification, line input buffering, simultaneous de-essing, downward expansion, compression/limiting, and parametric equalization.

The unit shall have a low-noise, low distortion microphone preamplifier with variable gain (22 dB to 60 dB) and switchable (on/off) +48V phantom power. A 15 dB pad shall be provided to accommodate high output microphone signals. A balanced-bridging line input

suitable for +4 dBu input signals shall also be provided along with a switch to select either the microphone or line inputs.

The voice processor shall have an integral de-esser which shall offer up to 20 dB of attenuation within a manually sweepable frequency range of 800 Hz to 8 kHz. There shall be front panel controls for range, frequency, and a bypass switch.

The dynamics processing section shall contain an interactive compressor/limiter and downward expander. There shall be front panel controls for compression ratio (1:1 to 10:1), compressor threshold (-50 dBm to +20 dBm), expander threshold (-30 dBm to 0 dBm), and a bypass switch.

There shall be a three-band parametric equalizer. Each band shall have ±15 dB maximum boost/cut, and continuously variable bandwidth (3 octaves to 4 octaves). The equalizer bands shall have substantially overlapping frequency ranges, with a combined range of 16 Hz to 22 kHz. There shall be a front panel bypass switch.

The voice processor shall be equipped with the following LED displays: An eight-segment LED display shall be provided for monitoring the overall output level, six-segment displays for monitoring the de-esser, compressor/limiter, and downward expander. All displays shall be independent. There shall also be a single LED clip indicator to indicate clipping within either of the input preamplifiers or buffers.

The microphone input shall be an active balanced bridging design terminated with 3-pin XLR-female connector (AES/IEC standard wiring). The microphone preamp shall be capable of an equivalent input noise specification of at least -126 dBu (150-Ohm source, 60 dB gain, 20 Hz to 20 kHz). The line input shall be a balanced, transformerless design using a 3-pin XLR-female connector (AES/IEC standard wiring). All input circuitry shall incorporate RFI filters of the LC low-pass type.

The output shall be an active balanced design terminated with a 3-pin XLR-male

connector (AES/IEC standard wiring). The output signal level shall be switchable to accommodate subsequent line or microphone inputs. The output section shall provide a switchable phase rotator for the purpose of improving the asymmetry of speech waveforms.

Access to the dynamics processing sidechain shall be provided via a ¼" TRS jack. Access to the interstage connections between all processing sections (mic/line preamp, de-esser, compressor/limiter/downward expander, equalizer, output stage) shall be provided via half-normalled tip-ring-sleeve (TRS) jacks.

The voice processor shall be capable of operating by means of its own built-in power supply connected to 117V AC nominal (105 to 130V), 50/60 Hz or 230V AC nominal (207 to 253V), 50 Hz.

The unit shall be a Symetrix Incorporated model 528E Voice Processor.

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