

## PRODUCT PREVIEW

Zarlink's ZL38003 acoustic echo canceller is an integrated solution that bundles high-quality algorithms with codecs to meet design cost, complexity and integration issues for a wide range of hands-free communication systems. Applications include car kits, speaker phones and intercom systems.

The ZL38003 chip deploys field-proven advanced adaptive algorithms designed to deliver exceptional performance in high background noise environments. The ZL38003 AEC's integrated features, including codecs, programmable gain pads and a four-port cross-point switch eliminate the need for many external components.

The chip supports full-duplex speech to provide clear signal transmission in both audio path directions, even when signal levels are low. Full-duplex operation prevents subjective sound quality problems associated with noise gating or noise contrasting to ensure clear speech and uninterrupted background signals during conversation.

### Performance and Features for Hands-Free Communications

- ➔ Full-duplex operation and adaptive algorithm improve voice quality
- ➔ Optimized to reduce noise in hands-free communications
- ➔ Advanced NLP (non-linear processor) design provides full-duplex speech with no switched loss on audio paths

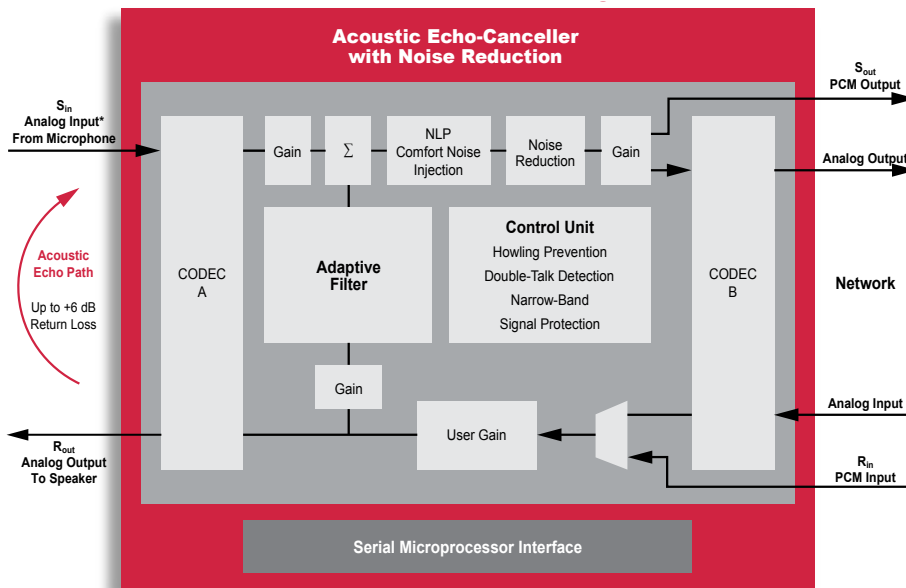
### Integrated Codec

- ➔ Two integrated DAC and ADC codecs with analog gain pads
- ➔ Mixed dual or single codec mode
- ➔ Integrated four-port cross-point switch allows analog signal to be directed to any of four ports
- ➔ Includes microphone and speaker amplifiers

### High Quality Performance

- ➔ Up to 12 dB of noise reduction
- ➔ Fast re-convergence time quickly tracks changing echo environment
- ➔ Control of adaptive filter convergence speed during periods of double-talk, far end single-talk and near-end echo path changes
- ➔ Provides protection against narrow-band signal divergence
- ➔ Howling prevention stops uncontrolled oscillation in high loop gain conditions
- ➔ Automatic gain control on the receiver speaker path

### ZL38003 Simplified Block Diagram



### Applications

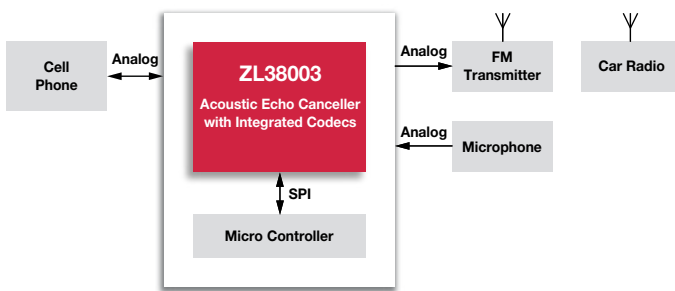
- ➔ Hands-free car kits
- ➔ Speakerphones and videoconference units
- ➔ Intercom and pedestal systems
- ➔ Security systems

# ZL38003 ACOUSTIC ECHO CANCELLER WITH DUAL CODECS

## APPLICATION

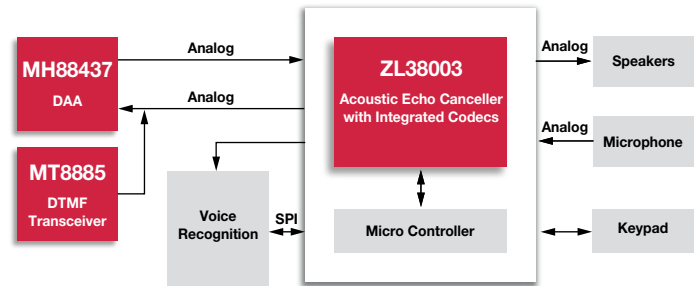
### Hands-Free Car Kits

Buyer Benefit	Zarlink Solution
<b>Safety:</b> Voice Recognition (VR) allows hands-free operation	Noise reduction enables reliable VR, integrated codecs allow economical VR and playback implementation
<b>Convenience:</b> In-car audio system	Bluetooth, FM transmitter and audio interfaces
<b>Sound Quality:</b> Clear speech, reduced noise	Noise reduction and full-duplex operation enhance sound quality
<b>Interfaces:</b> Bluetooth, VR, FM transmission	Bluetooth reference design, interfaces allow use of off-the-shelf chips
<b>Configuration:</b> Easy to install	Bluetooth, FM transmission for seamless installation of car kits



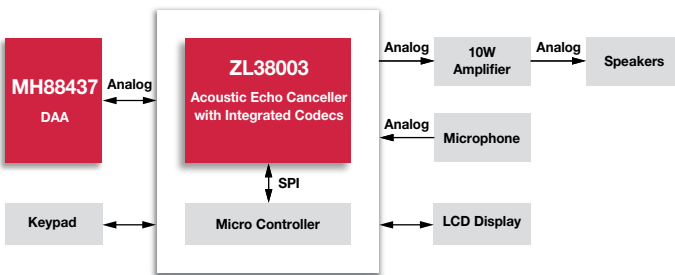
### Desktop Phones

Buyer Benefit	Zarlink Solution
<b>Sound Quality:</b> Clear sound, no echo	Noise reduction, full-duplex operation, AEC/LEC algorithms
<b>Hands-free Operation:</b> Clear sound	Noise reduction eliminates background noise
<b>Functionality:</b> Cancel echo in multi-size rooms	No tuning required for room conditions, programmable echo tail and patented NLP ensure echo cancellation
<b>Configuration:</b> Integrated approach	No ROM code required to initialize chip
<b>Ergonomics</b>	Algorithms tunable to different plastic enclosures



### Home Security System

Buyer Benefit	Zarlink Solution
<b>Security:</b> Two-way communications, faster emergency service	Audio interface to DAA simplifies establishing two-way communication
<b>Privacy:</b> Voice communication activated only by owner	Noise reduction improves VR
<b>Reduce False Dispatches:</b> Eliminate phone verification	Improved quality enables direct voice communication and voice enhancement
<b>Sound Quality</b>	AEC/LEC enhances sound quality
<b>Cost Reduction/Ease of Use</b>	One chip replaces multiple components



### Order Pedestal

Buyer Benefit	Zarlink Solution
<b>Sound Quality:</b> Clear sound, no echo	Noise reduction, full-duplex operation = improved customer service
<b>Cost Reduction and Design Ease</b>	One chip with integrated codecs and algorithms, supported by reference designs and modules with discrete components

