



# Micro-Acoustic and Advanced Human Interface Devices

KNOWLES ELECTRONICS

KNOWLES ACOUSTICS



# Micro-acoustic innovation and beyond...

**At Knowles, we understand the pace of innovation. Today's product ideas are tomorrow's market realities, and you can depend on us for rapid product ideation, design, development, manufacturing, and delivery.**

Our worldwide facilities and support channels bring you reliable capabilities for micro-audio design, micro-electromechanical components and subassembly manufacturing. You can depend on us to help grow your business in such fast moving markets as hearing health, mobile communications, and consumer electronics.

## **Our resources turn your ideas into reality.**

Knowles offers you the collaborative strength of two business units, bringing a unique breadth of solutions to your marketing challenge. As Knowles Electronics, our capabilities in highly refined audio design, expertise in micro-electromechanical component design, and manufacturing are derived from decades of leadership in the field of hearing health. And as Knowles Acoustics, our evolution into the design and development of the world's first, second, third, and fourth generations of surface mount microphones has come naturally.

## **Production-ready MEMS solutions**

Knowles is the leading manufacturer of MEMS microphones. Our fourth-generation designs support many of the world's top cell phone brands and leading device manufacturers. You can depend on our teams of researchers, engineers, marketers, and application experts to help you bring your product ideas to market. At Knowles, product innovation, quality, delivery, and service are our core values.

*Knowles' global research, design and manufacturing facilities support the rapid development and delivery of new product ideas into the global marketplace...*



# Capabilities and markets

## Hearing Health

We design and manufacture a wide range of hearing aid components, including miniature microphones and receivers. Our proprietary technology supports uniquely advanced designs that provide the highest reliability and electro-acoustic performance.



## Mobile Communications

Knowles is the leading supplier of MEMS microphones to the cell phone market, offering a consistent track record for helping major brands evolve their product lines. Our third and fourth generation surface mount microphones are smaller than ever, yet they bring an unprecedented range of audio performance and cell phone functionality for increased brand value.



## Consumer Electronics

Knowles micro-acoustic components are increasingly preferred for consumer applications such as digital still cameras, pda's, laptops, bluetooth headsets, and many other consumer electronics.



## Security and Military

Knowles meets new, challenging military needs with advanced micro-transducer technology. Military communications can be significantly enhanced with Knowles Balanced Armature technology, rugged microphone elements, and robust boom assemblies. Knowles also offers open platforms for subassemblies designed for manned and unmanned acoustic detection devices.



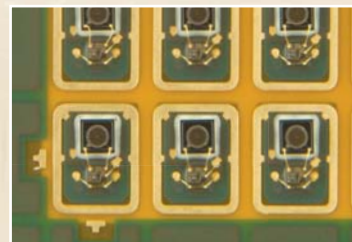
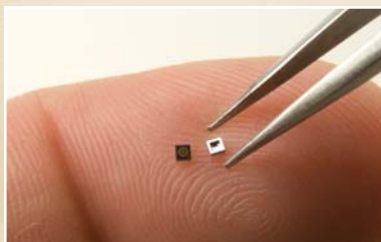
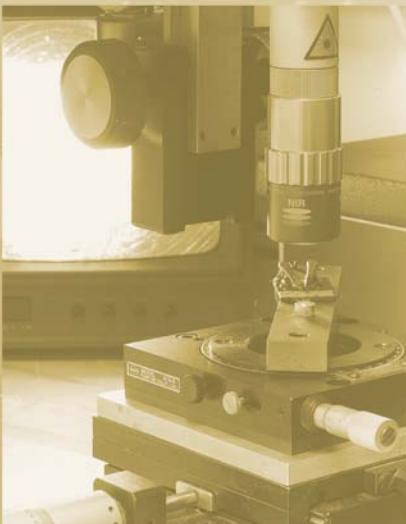
## Pro Audio

For years, professional musicians have relied upon the clarity and reliability of headset and ear bud solutions driven by Knowles innovation. Leading headset brands continue to look to us for audio solutions that leverage today's wireless environment and consumer demand for ever-smaller, form-fitting ergonomics.



## Emerging Markets

Product innovation has no boundaries, when your ideas are supported by Knowles' micro-audio component design, high-volume manufacturing, and customized sub-assembly capabilities. Count on our expertise and experience to help you bring your increasingly smaller and more dynamic products to market...



### **KNOWLES SHIPS 1 BILLIONTH SISONIC™ MEMS MICROPHONE**

Knowles Acoustics has reached a major milestone in the history of MEMS technology with the shipment of its 1 Billionth SiSonic™ surface mount MEMS microphone. Knowles Acoustics, which shipped its first MEMS Microphone in 2003, is the world leader in MEMS-based silicon microphone manufacturing.

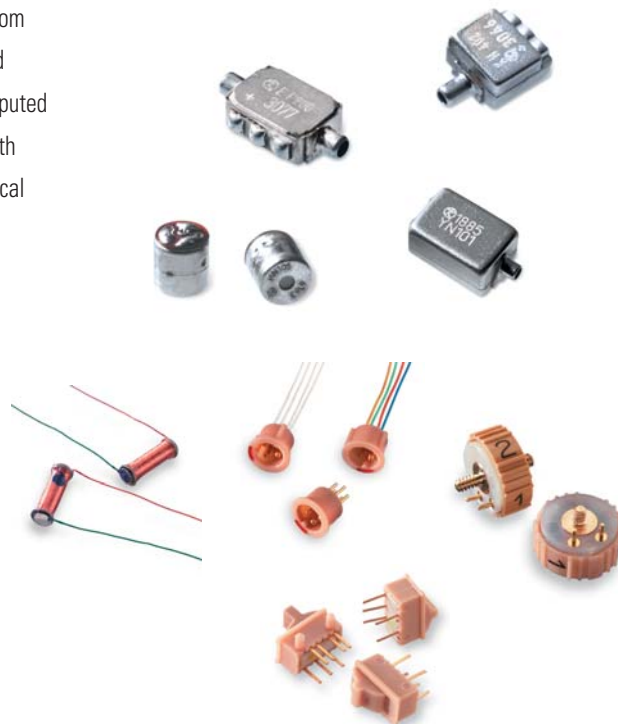
– August 2009

# Knowles business units

## Knowles Electronics

Knowles' capabilities in highly refined audio design and manufacturing are derived from decades of leadership in the field of hearing health. Having pioneered the hearing aid component marketplace in the 1950's, Knowles Electronics continues to be the undisputed leader in this market today, contributing new ideas for the application of sound in both hearing aid design and applications beyond. Our capabilities in micro-electromechanical product development also began in the hearing health industry. We design and manufacture a broad range of micro-components. Numerous design patents attest to our capabilities in micro-level product development for both electronics and mechanical applications in the realm of audio and beyond.

- *World's leading provider of hearing aid components*
- *Subminiature microphones, receivers and subassemblies*
- *Market share leader for over 50 years*
- *Micro-electromechanical components for hearing aids*
- *Volume controls, trimmers, switches, telecoils and more*
- *Introduced the first transistor-based miniature microphone in 1947*
- *Developed the first miniature hearing aid microphone and receiver in 1954*



## Knowles Acoustics

Our expertise in MEMS audio components derives from our early understanding of the growth potential for surface mount solutions in the broad electronics marketplace. Built on our CMOS/MEMS technology platform (originally launched in 2002), the SiSonic™ silicon-based microphone series is entering its fourth generation of development. The proven and evolving design series continues to support high-performance, high-density innovation in such applications as cell phones, digital still cameras, portable music players, and other portable electronic devices. The world's leading consumer brands rely on us because they know we are the proven production-level supplier of surface mount audio solutions, offering years of acoustic innovation and high-volume delivery.

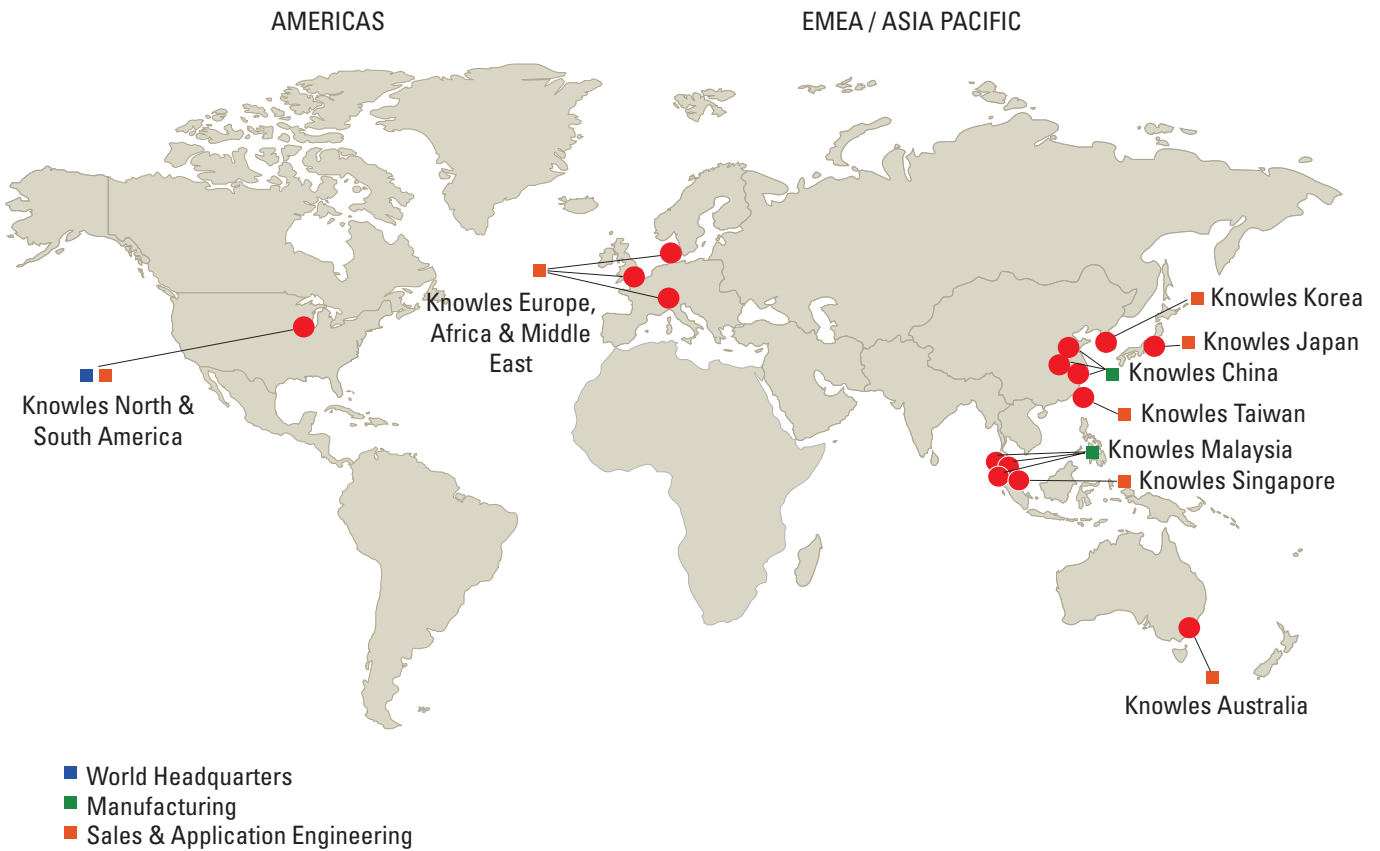
- *The top provider of MEMS surface mount microphones*
- *Developers and designers of custom assemblies and value-added solutions*
- *Leading manufacturer of specialty microphones and speakers, and speech-enhancing software*
- *Inventors of SiSonic™ – the world's first surface mount microphone*
- *Micro-acoustics, micro-design and micro-manufacturing solutions*



## Core Competencies

- *Innovation*
- *Technology Expertise*
- *World Class Manufacturing*
- *Customer Service*
- *Market Leadership*

# Globally Positioned



*Knowles maintains sales, marketing, engineering and manufacturing globally.  
For further information, please visit our web site.*

[www.knowles.com](http://www.knowles.com)

