Use Case

A good night's sleep
Smart air conditioning

While we sleep, our smart air conditioning system measures and improves the air quality around us. An air quality monitor keeps an eye on a range of parameters like CO_2, pressure, temperature or humidity. Changes in air quality are monitored and adapted automatically to ensure good air quality all night long.

Bedroom air quality

For many people, a good air quality in their bedroom is a major concern. This is no surprise, as people spend about one-third of their life-time there and the quality of our sleep has a major effect on our next day's performance. The experienced sleep quality and the perceived freshness of bedroom air improved significantly when the CO_2 level was lower, shows the result of a study. Also, the next-day reported sleepiness and ability to concentrate as well as the subjects' performance at a test of logical thinking was much better. So it seems to be a good idea to make sure the air is of high quality, giving the body what it needs for restful sleep.

Monitoring air quality in the bedroom: CO_2, temperature, humidity, pressure

To monitor the air quality the air conditioning system has to be equipped with differrent high-quality sensors. An air quality monitor continuously checks the air quality in the bedroom regarding the different parameters like temperature, humidity etc. As the air conditioning and the monitor are connected, the different parameters will be adapted automatically to ensure the perfect quality throughout the entire night.

Additional challenges: smart, powerful, energy-efficient, quiet and secured

On top of the air quality monitoring, today's room air conditioning units must fulfill a growing list of demands. Because they're used in private homes, quiet air conditioning systems are highly sought after. Functions such as stable and smooth starting, a wide range of operating speeds and vibration suppression round out the list of must-haves. Above that, air conditioning systems should be equipped with power devices that make them more energy-efficient. And as more and more air conditioning units are connected to the cloud, they must work securely within the home automation network.

www.infineon.com/smarthome

Smart Aircon drivers

Energy saving
› WiFi-enablement for remote monitoring & control
› High-efficiency designs for less energy consumption

Convenience
› Voice-assistant enablement
› Gesture control

Intelligent sensitization
› Combination of different sensors to provide a more personalized, intuitive user experience
› Situational awareness with accuracy and reliability

Smart predictive maintenance
› Connectivity and intelligent sensing that allow greater insights of usage for predictive maintenance purpose

Smart security
› Secured identification of devices within a home automation system
› Secured communication between the server and the cloud
› Data privacy protection
› Brand protection of accessories
› Pre-provisioning of keys
› Mutual authentication
› Secured storage of keys and certificates
› Device platform integrity
› Secured firmware update

Leading components and products
Infineon's portfolio of right-fit and easy-to-use solutions

Designing room air conditioning units that boast such capabilities require everything from low vibration components, to a low acoustic noise compressor, to reliable fan control, to sensor less field oriented control. Semiconductor solutions must also be energy-efficient and reflect new form factors. Further-more, units must work securely within a home automation net-work. Besides security, an excellent price-performance ratio is key, as are new features oriented to appliances of the future: smart appliances.

Infineon's comprehensive portfolio of top quality semiconductors enables you to meet all the latest demands. Our components deliver the smartness, reliability, energy-efficiency and security you need to stand out from the competition. Equipped with Infineon's semiconductor solutions, the system you design live longer, make less noise and consume less energy – for a convenient, seamless and secured user-experience.

Infineons's offering

High-quality solutions and support for smart air conditioning systems

Advanced sensing capabilities
› Magnetic, current sensors
› Pressure sensors
› Radar 24 GHz / 60 GHz
› Silicon microphones

Efficient power management
› Discrete IGBTs and MOSFETs
› Level shift and isolated drivers
› Intelligent Power Modules and iMOTION™ controllers
› DC/DC: FETs, driver, EP IC, PoLs
› AC/DC: Control ICs, discretes and XDP™ digital power products for SMPS applications
› CoolSET™

Smart security with OPTIGA™ family
› Turnkey solutions for brand protection and IP protection
› Programmable solution
› CC Certified hardware
› Mutual authentication, secured communication to the cloud and secured firmware update

Smart Aircon is a fast growing market with requirements for power efficiency, secure connectivity and intuitive sensing.

Infineon's best-in class portfolio of industrial microcontrollers, power, sensor and authentication components complement each other for a broad and comprehensive solution

Infineon's quality products offers address an extensive set of use cases.

We provide time-to-market, savings, protection and differentiation.

Additional information
For further information on technologies, our products, the application of our products, delivery terms and conditions and/or prices, please contact your nearest Infineon Technologies office (www.infineon.com).

Warnings
Due to technical requirements, our products may contain dangerous substances. For information on the types in question, please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by us in a written document signed by authorized representatives of Infineon Technologies, our products may not be used in any life-endangering applications, including but not limited to medical, nuclear, military, life-critical or any other applications where a failure of the product or any consequences of the use thereof can result in personal injury.