Smart Analog

Renesas Electronics
www.renesas.com

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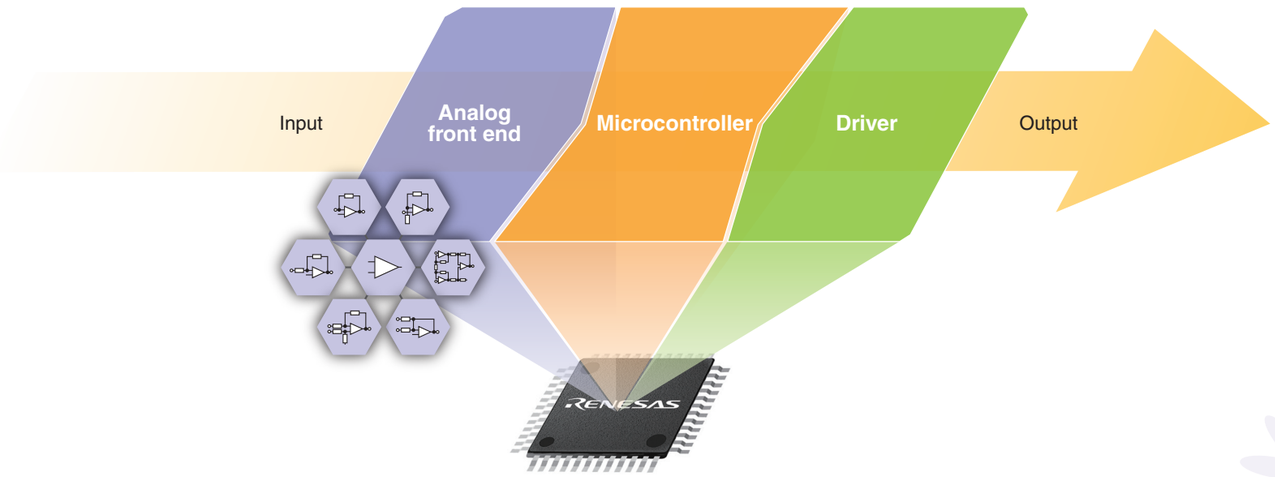
Redefining The Link Between Analog And Digital Worlds

RENESAS “Smart Analog”

A Smart Society is more convenient, eco-friendly, and safe.
Advancements in analog sensor technologies have enabled “smarter” devices and equipment. For example, we can detect and measure the faintest hint of a dangerous gas, the identify a defective part in a fast moving production conveyor, or the sense slightest seismic movement, all with more precision than ever before.
Renesas, a global leader of microcontrollers and analog technologies introduces Smart Analog technology that redefines how these analog sensors link to the digital electronics world through a flexible, intelligent analog front end (AFE) platform.

Smart Analog

The Smart Analog platform is a reconfigurable analog front-end device that interfaces to the most sophisticated sensors used in industrial, consumer, commercial and medical applications. An intelligent software tool eliminates time consuming trial-and-error rewiring of the circuit resulting in reduced time to market, lower system costs, and reduced power consumption.



Extensive

Complete solution

A complete set of development tools including IDEs, compilers, extensive libraries of drivers

Flexible

Unbeatable versatility

Supports a wide range of sensors and sensor output signals.

Speedy

Reduce time to market

Develop your product quickly. Achieve fast output and quick rollout.

Smart Analog
Five Advantages

Intelligent

Clever functionality

Enjoy the intelligent features of the built-in MCU.

Reliable

Excellent support

Take advantage of an excellent support system, including dedicated Smart Analog websites and seminars.

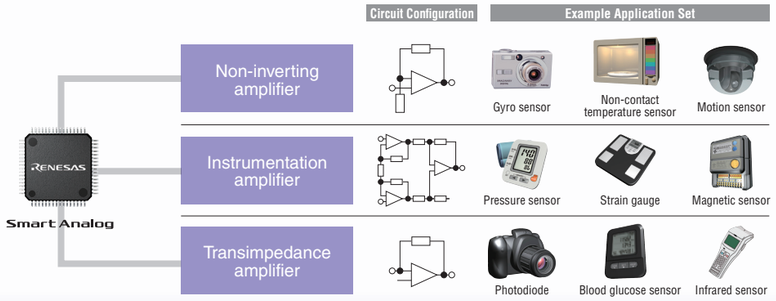
Building a Smart Society

With Smart Analog you can build an analog circuit development platform that lets you quickly and flexibly respond to the ever-changing sensor needs of tomorrow's Smart Society.
Smart Analog propels the creation of human interfaces that are more intuitive and user friendly, economically viable ecosystems that meet the demands of the green society, and robust security systems that function smoothly.

Flexible Unbeatable versatility

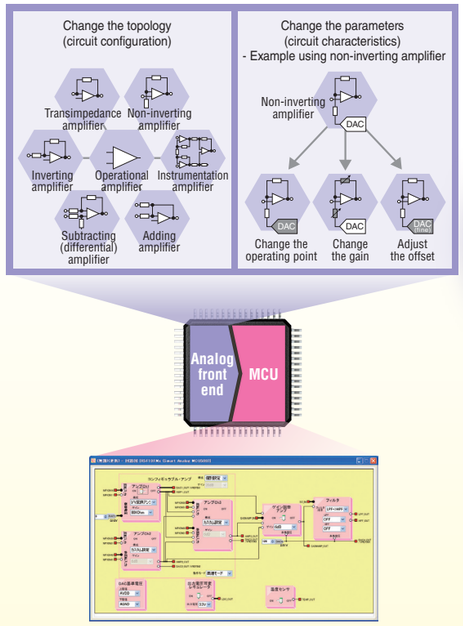
Use a wide range of sensors and sensor output signals simply by changing the configuration and characteristics of the operational amplifiers.

The MCU can also be used to reconfigure the circuits according to the sensor being developed. A single Smart Analog IC handles all the different voltage, current and differential output signals unique to each type of sensor. Even if your application includes a mixture of sensors, a single Smart Analog chip can be reconfigured in the set to provide the functionality of multiple analog front end circuits.



Configurable amplifiers

Smart Analog incorporates configurable amplifiers whose topology (operational amplifier-based) and parameters (amplitude, operating point) can be reconfigured.



Configure by using MCU and software

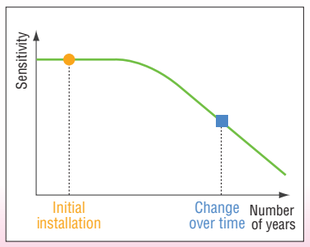
Intelligent

Clever functionality

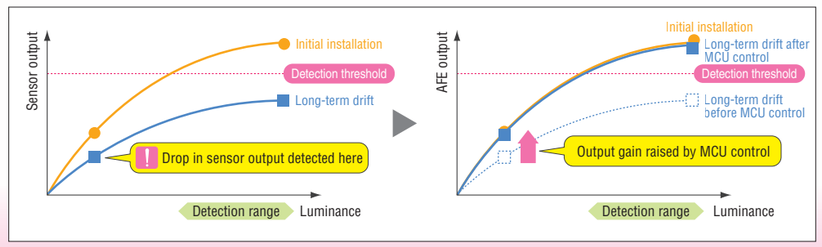
Receive the benefit of the MCU's intelligent functionality used to automate trimming and automatically correct long-term drift.

Previously, trimming had to be performed manually during manufacture of the sensor equipment to absorb variations in sensor characteristics. But with Smart Analog, the configuration and characteristics of the analog circuits are controlled automatically by the MCU. Smart Analog is also field programmable, allowing long-term sensor drift to be automatically corrected and repaired. This prolongs the life of your system and raises its added value.

■ Practical example of field programming (light sensor)

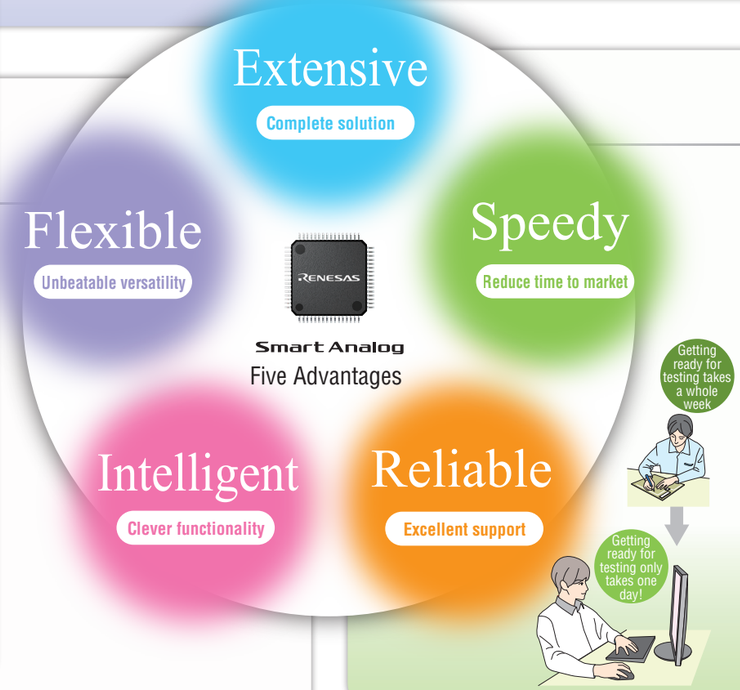


The sensor becomes dirty and its characteristics drift over time, causing a drop in sensitivity.



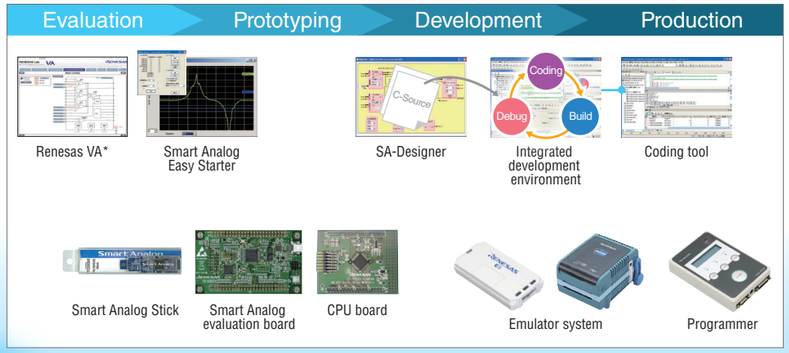
If the output gain of the sensor is the same as when the sensor was first installed, the MCU stops detecting the sensor output once it falls below the detection threshold. A drop in the steady-state output is identified before the MCU stops detecting the sensor output even when the luminance is within the detection range.

If the sensor output falls below the initial value, the output gain is raised programmably so that the MCU maintains its detection performance. This means that if the luminance is within the detection range, it will be detected normally.



Extensive Complete solution

Access an extensive range of Smart Analog development tools designed for all development needs, and choose from a wide selection of products.



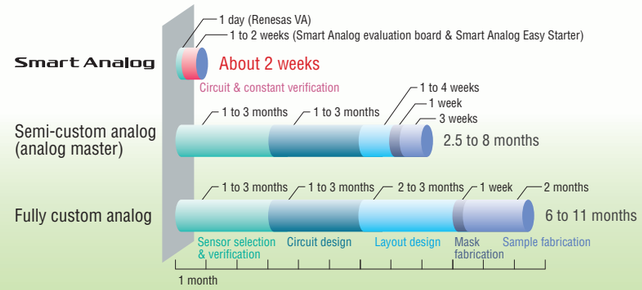
Renesas provides a rich lineup of development tools that suit all development needs, including Smart Analog Stick, which facilitates the design of analog circuits using Smart Analog, the web simulator Renesas VA*, and SA-Designer, which lets you configure your analog design easily on a GUI and converts your circuit data to C source code.
Even if you are new to the analog design field, you can get your development project up and running quickly and easily on your computer, because Smart Analog tools deliver the kind of usability you've never seen before.

* Renesas Virtual Analog Laboratory

Speedy Reduce time to market

Throw out the old ways of developing analog circuits and slash your development time. Smart Analog lets you achieve fast output and quick rollout.

All analog circuit configurations and characteristics can be changed and optimized by using SA-Designer software and the MCU, reducing the design lead time by 3 to 8 months*. You can also use the web simulator Renesas VA to perform all verification work from commercial sensor selection before purchasing your Smart Analog to system verification, which can speed up verification by up to 3 months*. Smart Analog allows you to develop your system faster and more efficiently by accelerating all development processes, including adaptive simulation.
*Compared with other Renesas products.



Reliable Excellent support

Take advantage of an excellent support system, including info-packed Smart Analog websites and seminars.

Smart Analog customers can visit Renesas's dedicated Smart Analog website to access the latest information on the Smart Analog family as well as download user's manuals and application notes full of application examples, and view comprehensive FAQs. Renesas also holds Smart Analog seminars covering a wide range of subjects and provides many other support services to ensure you can develop your analog front end quickly and without hassle.

http://www.renesas.com/smart_analog/

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