

# Smarter Solutions for Weather Monitoring

Application: Smart Cities

Product: SEG-001 Smart Environment Gauge

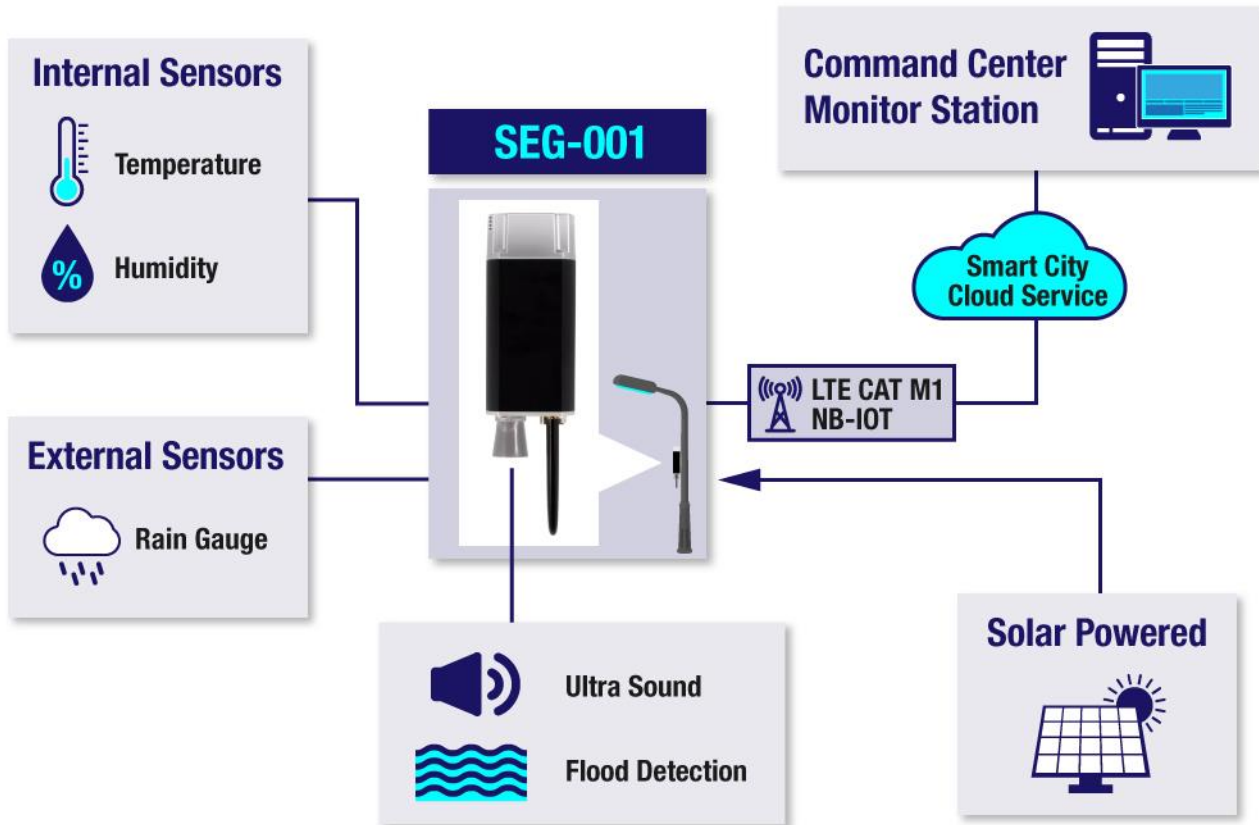
## Introduction

Across the globe, city governments are investing in Smart City infrastructure to create efficient cities which better serve its citizens. The Smart City ecosystem is a vital tool in helping to combat climate change, but also keeping citizens connected and informed with weather and traffic data, as well as providing immediate up to date information on any hazards or potential dangers to the city.



Despite the importance of Smart City applications and solutions, not all cities are equal, especially when it comes to budgeting infrastructure and maintenance. Installing the necessary hardware requires an upfront investment in both money and labor in order to realize savings later. There are many reasons why cities might not be able to meet the upfront investments, or perhaps balk at the dollar figure even if its within their budgets. However, the importance of deploying Smart City infrastructure necessitates a solution.

AAEON, an industry leader in embedded technology and Smart City solutions, has developed the SEG-001 Smart Environment Gauge. This innovative device is designed to easily install onto just about any streetlight post and provide a range of monitoring including flood, weather, PM2.5 and support for additional monitoring devices such as rain gauges. The SEG-001 offers these capabilities in a package that is budget friendly, yet rugged and capable, with reliable and low-cost maintenance and operation. To create the SEG-001, AAEON identified several key challenges faced by city governments on a budget.



## Challenges

To adequately meet the needs for Smart City deployment and meet the budget requirements of local governments, the SEG-001 has to overcome several challenges. The SEG-001 needs to be able to withstand the environment and operate outdoors, be able to install without require additional infrastructure support, and provide reliable low maintenance and low-cost operation.

### Rugged Design

Monitoring weather and air conditions requires the system to operate outdoors in a range of environments and temperatures. AAEON's expertise in rugged embedded systems ensures the SEG-001 will keep operating no matter the weather, and its IP65 rated environmental sealing protects against contaminants such as dust or water from interfering with operation.

### Easy Installation

To help keep the cost of installation and deployment down, the SEG-001 is designed to easily mount onto virtually any light or lamppost, with built in mounting holes to easily attach to mounting brackets or surfaces. Operating on solar charged batteries, the SEG-001 does not require additional wiring or consideration for an external power source, reducing the need for additional electrical infrastructure.

### Low Cost Operation

Providing a system which can operate reliably and effectively while reducing long-term operation costs is a must for city governments with budget constraints. The SEG-001 achieves this goal in several ways: solar charged battery powered operation reduces electrical consumption; wireless communication utilizing LTE Cat M1 or NB-IoT to reduce bandwidth requirements and costs from cellular providers; and the use of reliable, long-lasting components.

## AAEON Advantage

In addition to helping overcome these challenges, AAEON and the SEG-001 offer several key advantages over the competition. SEG-001 is designed Smart City ready, and AAEON provides industry leading support and customization services to ensure cities are getting not only the right tool for the job, but one which will last.

### Smart City Ready

Made to work out of the box with cloud systems, the SEG-001 is ready to connect whether it's the customer's own cloud service or through services such as Pelion, AWS or Microsoft Azure. The SEG-001 is adaptable whether it's a pre-existing system

or deploying a brand-new Smart City network.

### Customizable

AAEON offers customization services, with hardware or software, to ensure solutions fit the applications where they're needed. This provides ultimate flexibility in platforms to meet a project's every need.

### AAEON Services

AAEON provides industry leading support and service, from creating new platforms or solutions, to providing the technical support to ensure deployment and operation are as smooth and problem free as possible. AAEON offers end-to-end support designed to shorten development times and accelerate deployment.

## Impact

With the SEG-001, more cities are now able to take advantage of the technologies and tools available within the Smart City ecosystem. With the easy installation, lower cost operation, and more valuable designed package, the SEG-001 can help sway even stern budget hawks to the side of adopting Smart City technology.

The SEG-001 also provides real tangible benefits for the city and its citizens, from flood detection with ultrasound sensor to providing up to date weather and air quality information. This information allows the city to keep citizens abreast of developing weather conditions, ensuring healthier and safer lives. Overall, as more cities deploy Smart City networks, the world will benefit through more efficient use of resources with the goal of greener, more environmentally conscious cities.



## Smart Environment Gauge

The SEG-001 Smart Environment Gauge node platform brings weather and disaster monitoring to Smart City networks on a budget. Designed to give the best value cost and money saving operation, it utilizes several innovative technologies to provide a solution that will put a smile on the face of even the staunchest budget hawk. Powered by the Arm Cortex M4 MCU, the SEG-001 is powered by an internal battery that is solar rechargeable. It comes packed with a suite of sensors including ultrasound distance sensor for flood detection; temperature and humidity

sensors; and a built-in PM 2.5 air quality sensor. The SEG-001 also features an external port to connect with additional sensors, such as a rain gauge.

AAEON's expertise in rugged embedded design provides the SEG-001 with IP65 rated environmental sealing and wide operating temperature range, so it can provide continuous reliable service no matter the weather. It also saves cities money in connecting to Smart City cloud services by utilizing LTE Cat M1 or NB-IoT, a lower bandwidth protocol to help save costs with cellular service providers. The SEG-001 is also easy to mount to existing infrastructure such as lamp posts, with screw mounting holes built into the case to allow flexible and easy deployment.

AAEON offers end-to-end services for developing and deploying platform solutions for a range of applications, and is heavily involved in helping to implement Smart City ecosystems in several countries and regions around the world. From the SEG-001 to the innovative Air Box and powerful Smart Street Light, AAEON brings industry leading support to provide the best solutions for any application. AAEON Smart City solutions integrate the latest in edge computing, IoT and AI technologies, as well as compatibility with cloud and management technologies such as Arm Pelion, AWS, and Azure.

## About AAEON

Established in 1992, AAEON has become one of the leading designers and manufacturers of advanced AI, IoT and edge computing platforms. Committed to innovative engineering, AAEON provides Industry 4.0 integrated solutions, hardware and intelligent automated services for premier OEM/ODMs and system integrators worldwide, as well as IoT solution platforms that seamlessly consolidate virtual and physical networks. AAEON designs reliable and high-quality platforms to power AI Edge Computing, Advanced IoT solutions, and the adoption of next generation technology such as 5G based networks. AAEON also offers customized end-to-end services from initial product conceptualization and product development through to volume manufacturing and after-sales service programs. AAEON is also committed to continuously redefining and harmonizing the management and development processes of the industry.

With its constant pursuit of innovation and excellence, AAEON became a member of the ASUS group in 2011, enabling the company to further strengthen its leadership, access advanced technology from ASUS, and leverage resources from within the group. AAEON is poised to offer more diversified embedded products and solutions at higher quality standards to meet world-class design and manufacturing demands in the years to come.

AAEON is an Associate member of the Intel<sup>®</sup> Internet of Things Solutions Alliance.

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