

# Safety guarded by AI.



Cloud-based disaster monitoring  
Edge AI camera system

## eTA001b

By integrating AI technology into the river monitoring that is needed now, we make safety a step ahead.



We participated in a development project led by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) for the "Crisis-Management Water Level Gauge" and "River Monitoring Camera." As part of this initiative, we developed a compact, lightweight, cloud-based "River Monitoring System" that requires no commercial power supply. Since 2017, we have introduced approximately 2,500 units to national and local governments. Building on this foundation, we further enhanced its functionality and developed a new river monitoring system that integrates AI technology into the "River Monitoring Camera." Demonstration experiments conducted in multiple municipalities have all received high praise. This innovation consolidates river monitoring, which traditionally relied on water level measurement using gauges and on-site image confirmation, into an advanced system powered by edge AI cameras, achieving a new level of river monitoring.

### POINT

#### AI cameras measure water levels

AI equipped with machine learning can measure water levels directly from on-site images, enabling measurement using cameras alone. This efficient water level monitoring reduces the workload of disaster management personnel.

### POINT

#### Clear and high-resolution imaging at night

Thanks to a high-sensitivity camera module, clear images can be captured even under moonlight-level brightness without the need for additional lighting. Furthermore, the virtual ruler (scale) clearly displays water levels at night, ensuring easy visibility.

### POINT

#### No need for power supply or wiring work

Utilizing solar power generation and LTE networks, the system can be installed and operated even in areas without power or communication infrastructure. Additionally, the compact and lightweight design eliminates the need for large-scale installation work. Combined with a battery, the system can operate for up to 7 days even without sunlight.

### POINT

#### Compact yet high-performance, with high-speed communication

By using a smartphone as the base, the system achieves compact size, high performance, high-resolution imaging, energy efficiency, and high-speed communication. When the predefined danger water level is exceeded, it sends alerts to responsible personnel via SMS or email.

## What is Edge AI

Edge AI refers to a system where AI capabilities are integrated directly into edge devices (the term "edge" refers to "the periphery" or "end"). These devices perform AI-driven analysis and decision-making locally within the device itself. By processing data on the edge device, Edge AI enables real-time decision-making with minimal latency, reduces communication volume with the cloud, lowers communication costs, and enhances security by not transmitting raw data to the cloud.

# Installation Records and Examples



Location:  
Hashimoto City,  
Wakayama Prefecture

A demonstration experiment began in August 2022. By October 2023, it was officially adopted and is currently operational. Its advanced AI water level measurement, lack of infrastructure requirements (power and communication), and cost advantages were highly evaluated, leading to its adoption.

## Feedback from Our Installation Team



When objects like vegetation, which change shape with the seasons, appear in the image, they can interfere with image recognition. To address this, we conducted detailed surveys of the site's surrounding environment beforehand and worked closely with customers and related departments. This allowed us to carefully determine installation locations, adjust shooting angles, and proceed with the installation work. As a result, the customer was satisfied, and we were delighted to receive praise at the end of the project: "The visibility is excellent. Thank you."

# Specifications/ Edge AI Camera

## Basic Control Module

Size	W280mm×H179mm×D64mm (Excludes metal fittings and protrusions)		
Condensation Prevention Measures	Equipped with a moisture control sheet and vent filter.		
Weight	Approx.2.3kg (Excludes metal fittings)		

(Basic Software) OS | Android 12

(Camera Lens Section 1)		(Camera Lens Section 1)	
Image Quality	48.5 megapixels	Image Quality	8 megapixels
Minimum Subject Illumination	0.02 lx	Minimum Subject Illumination	0.02 lx

(Surface Imaging Format) Image Sizes | VGA (640×480), HD (1280×720), FHD (1920×1080)

(Image Capture Interval) Standard | 5 minutes (Adjustable, minimum 2 minutes)

## (Water Level Observation Specifications)

Water Level Observation Interval	Standard: 5 minutes (Adjustable, minimum 2 minutes)
Water Level Transmission Interval	Standard: 5 minutes (Adjustable, minimum 2 minutes)
Measurement Range	Adjustable range of the ruler
Minimum Readout Unit	1% of the ruler's full scale
Measurement Accuracy	±3% of the ruler's full scale

## Solar Panel

Maximum Output	27W
Size	W350mm × H538mm × D35mm
Weight	Approx.2.8kg(Excludes metal fittings)

## Power Box

Size	W300mm × H350mm × D250mm
Weight	20.4kg (including battery [30Ah])
Operation Without Sunlight	When the battery is fully charged, it can transmit still images for 7 days at a 5-minute interval without sunlight.

## Environmental Resistance

Temperature Range	-20°C to +50°C
Humidity Range	20% to 90% RH (without condensation)
Dustproof and Waterproof Rating	IP55 (JIS C 0920-2003)
Durability	Capable of continuous use under general environmental conditions for 5 years.

## Stand Guard Disaster Prevention Cloud System

# eT-Cloud

A web application for viewing and confirming images and data captured by Edge AI cameras. By consolidating images collected from multiple cameras, it supports accurate situational assessments.



## Main Features

### Scheduling Function

Allows scheduled capturing by specifying intervals.

### Selectable Monitoring Station Range for Each User

Customers can select reference ranges for each user.

### Multi-Device Compatibility

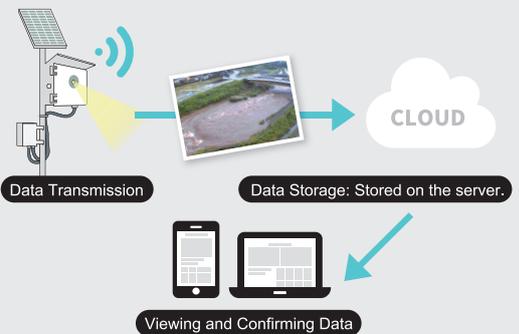
The viewing feature automatically adjusts to provide an easy-to-read layout based on the display device, such as PCs or smartphones.

### Sensor-Triggered Capture and Email Notifications

Integrates with various sensors to notify registered email addresses.

### Registration of Standard Images for Normal Conditions

Standard images of normal conditions can be registered for each monitoring station, allowing for immediate comparison with the latest images.



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