HANGIL HC Co., Ltd.
Traffic System Specialized Enterprise

Pre-Detection Pedestrian Safety Systems

HG Smart VG-21





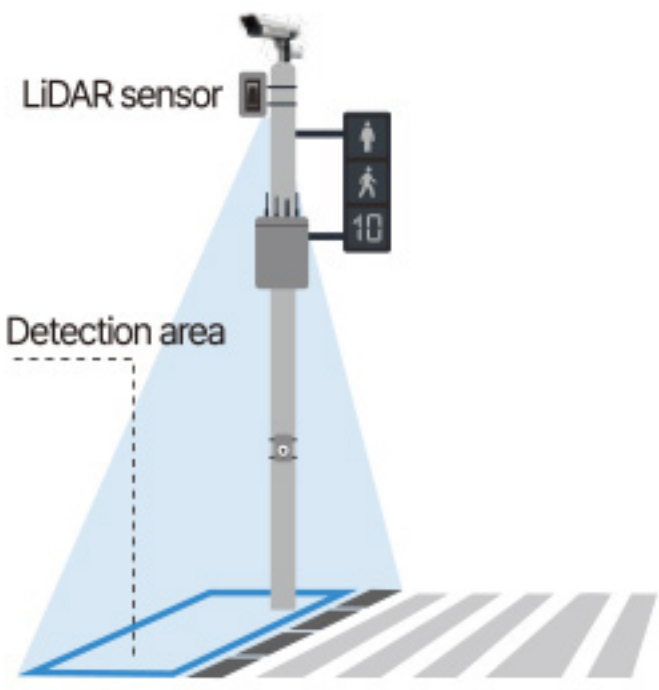
AI Camera

Key features

- Automatic detection
- Red-signal pedestrian crosswalking detection & warning
- Guidance & signal information for visually impaired
- AI-based automatic signal extension system

(Expandable with AI Camera module)

Automatic detection



Pedestrian automatic detection area



Automatic Pedestrian Detection



Green signal activation with audio guidance

Red-signal pedestrian entry detection & warning



When crossing during red signal



Immediate audible warning upon detection



Guiding pedestrians to step back into the waiting area

Guidance & signal information for visually impaired



Audible guidance to wait behind the waiting line



Safe waiting until the signal turns green



Voice guidance for crossing safely

AI-based automatic pedestrian signal extension system

Pedestrian automatic detection



Voice guidance & signal extension



Integrated & interconnected traffic signals



Safety support for vulnerable pedestrians



Product specification

Input power	AC 110/220V±10%(60Hz±5%)	Power consump.	Within 30W
Com. protocol (Transmitter-receiver)	358.5MHz	Audio output	5W or higher, Adjustable 40dB~90dB, Default 70dB±5dB
Com. protocol between receivers	235.3MHz	Operating Temp.	-34 ~ +74°C
Detection method / Direction	LiDAR / User setting	Com. method	RS232, RS485
Operating range	Location guidance audio: 20m		
	Signal guidance audio: 20m		

Dimensions

Item	Height	Width	Depth
System main unit(Controller)	260±30(mm)	160±20(mm)	70±10(mm)
Push button	125×95×40(mm) ±5(mm) or less		

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HANGIL HC Co., Ltd.
Traffic System Specialized Enterprise

Smarter guidance with
LED animations

Smart Pedestrian Guiding System

Smart Embedded In-Ground Pedestrian Signal Light

HGHC-24DP1



- Energy Efficient Service
- Integrated Management
- Animated Visual Information
- Improved Visibility
- Strong Durability
- Optimized Installation

The smart embedded in-ground pedestrian signal light is a smart pedestrian guiding system that goes beyond a simple auxiliary signals. In response to the 'Smombie (Smartphone Zombie)' phenomenon, it provides various animated effects, such as remaining time display, direction to cross, visual warnings, etc., and improves overall visibility and pedestrian safety.
The IoT-network monitoring system allows real-time data collection, individual LED adjustments, enables energy-saving settings, and improves maintenance efficiency. The smart embedded in-ground pedestrian signal light is a next-generation component connected to transportation infrastructures optimized for smart city implementation.



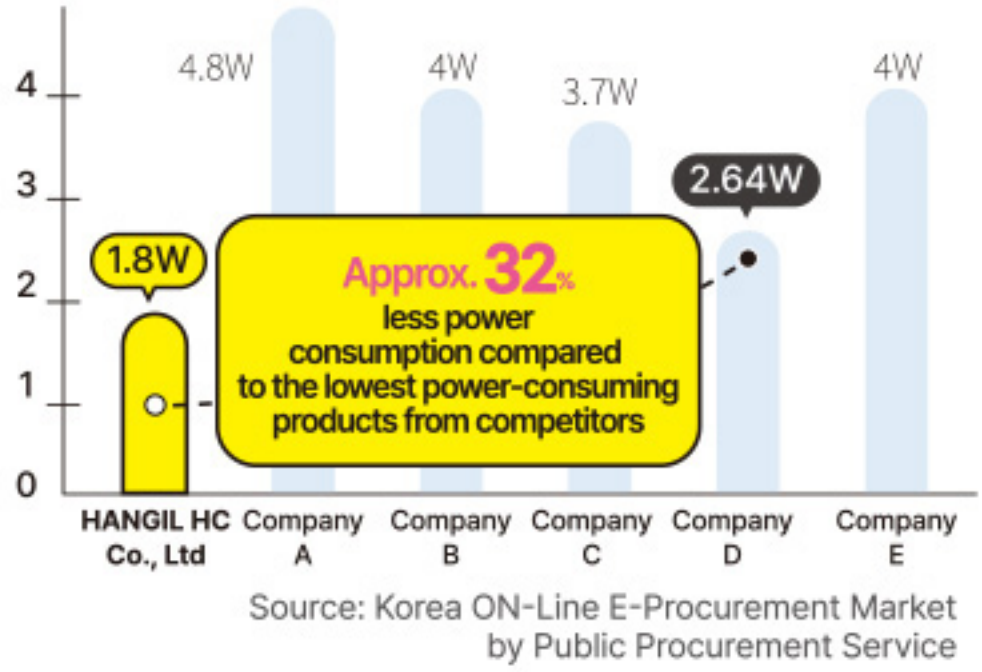
- Public Procurement Service Registration (MAS)
- Certificate of Traffic Signal Controller Functional Inspection
- Certificate of Conformity for Broadcasting and Communication Equipment
- Approval of the National Police Agency Standard Guidelines for Traffic Safety Facilities

Product Competitiveness

Energy Efficient

Maximize energy efficiency with the lowest power consumption in the industry

HANGIL HC's embedded in-ground pedestrian signal light boasts the lowest power consumption in the industry, consuming approximately 32% less power than the lowest power-consuming products from competitors.



Source: Korea ON-Line E-Procurement Market by Public Procurement Service

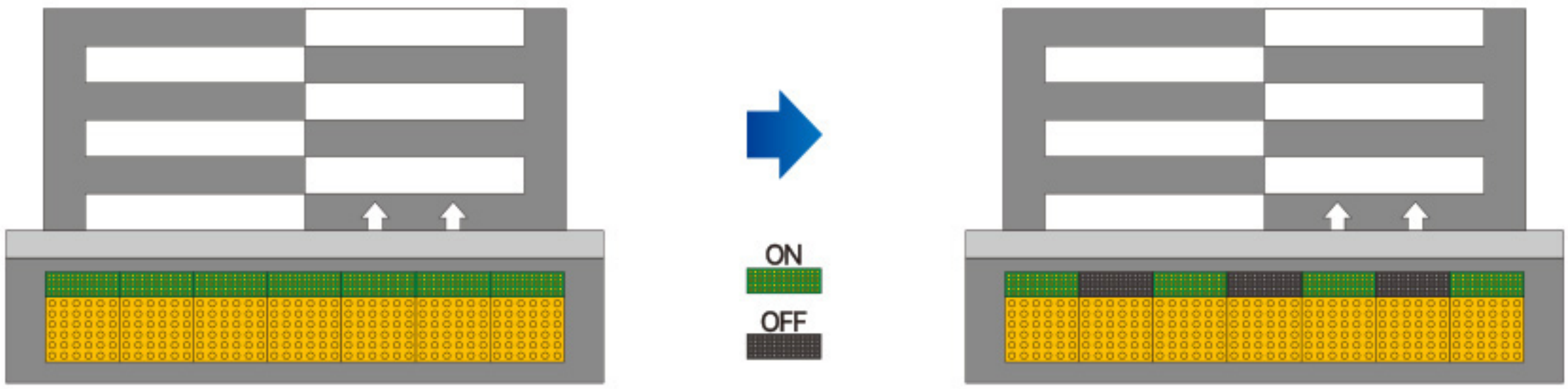
Save energy consumption by automatically adjusting day nighttime brightness

Reduce unnecessary power consumption while maintaining visibility by automatically adjusting brightness accordingly for day/nighttime using a photoresistor.



Save energy and maintain visibility by varying the lighting ON/OFF pattern for a set timeframe

Allows alternating the odd and even lighting patterns for a set timeframe by client request, for further energy saving.
You can also reduce power consumption while maintaining visibility, this by selectively turning on the display units individually rather than turning on all at once.



Integrated Management System (IMS)

Detection of auxiliary device failure

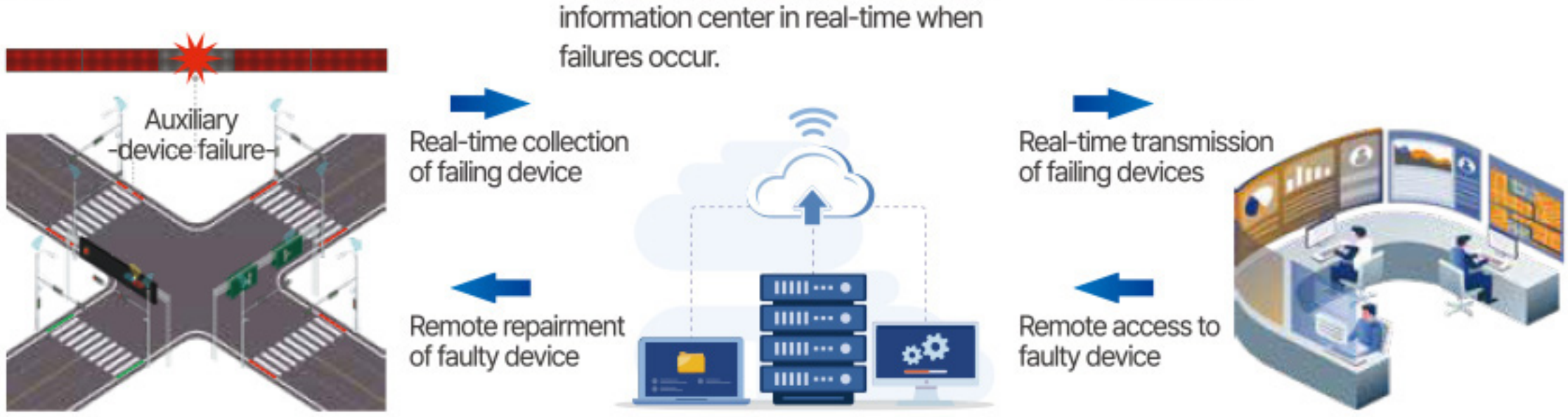
Monitor the operating status of traffic safety facilities in real-time via an integrated gateway to collect relevant information when failures occur.

Collection transmission via integrated gateway

Monitor the operating status of each module of all traffic safety facilities at the subject intersection to transmit the collected information to the traffic information center in real-time when failures occur.

Traffic Information Center - Remote Control Access

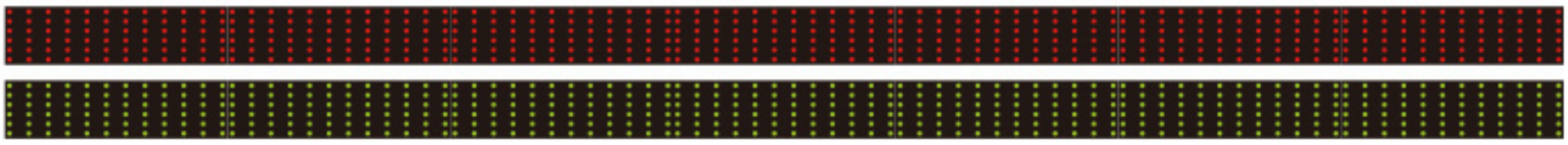
Remotely control and repair when failures occur by monitoring traffic safety facilities at all intersections in the local government in real-time.



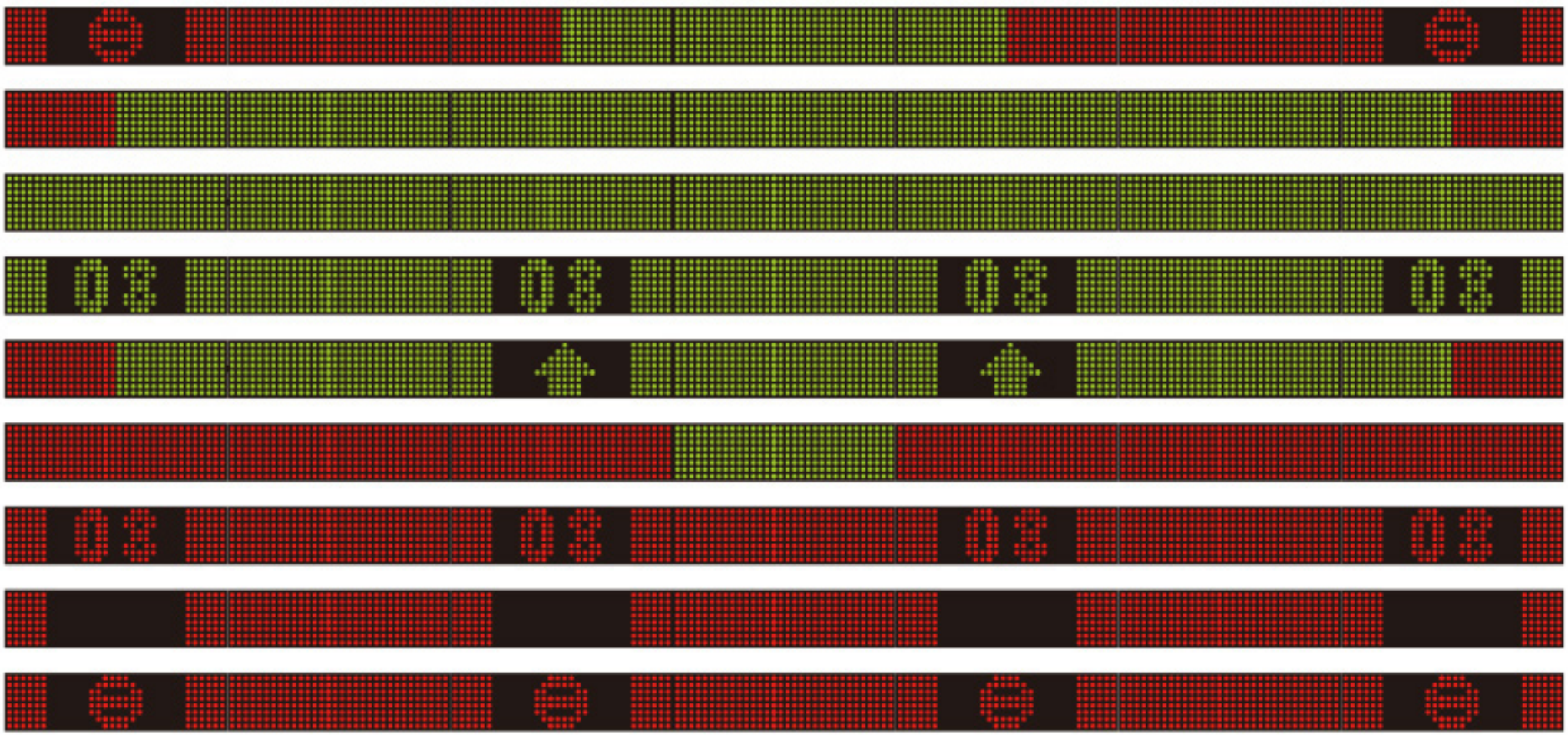
Animated Visual Information

The existing in-ground pedestrian signal lights only flash, which provides neither directional guidance nor a remaining time counter, causing low pedestrian awareness. There are also limitations in unnecessary power consumption and shortening product lifespan due to full LED lighting.
On the contrary, HANGIL HC's smart embedded in-ground pedestrian signal light is a next-generation smart pedestrian guiding system that dramatically improves pedestrians' visibility, safety, and maintenance efficiency through animation-based visual information, dimming function through sequential and partial lighting, and 1.8W ultra-low power design.

Display Pattern of Current Embedded In-Ground Pedestrian Signal Light



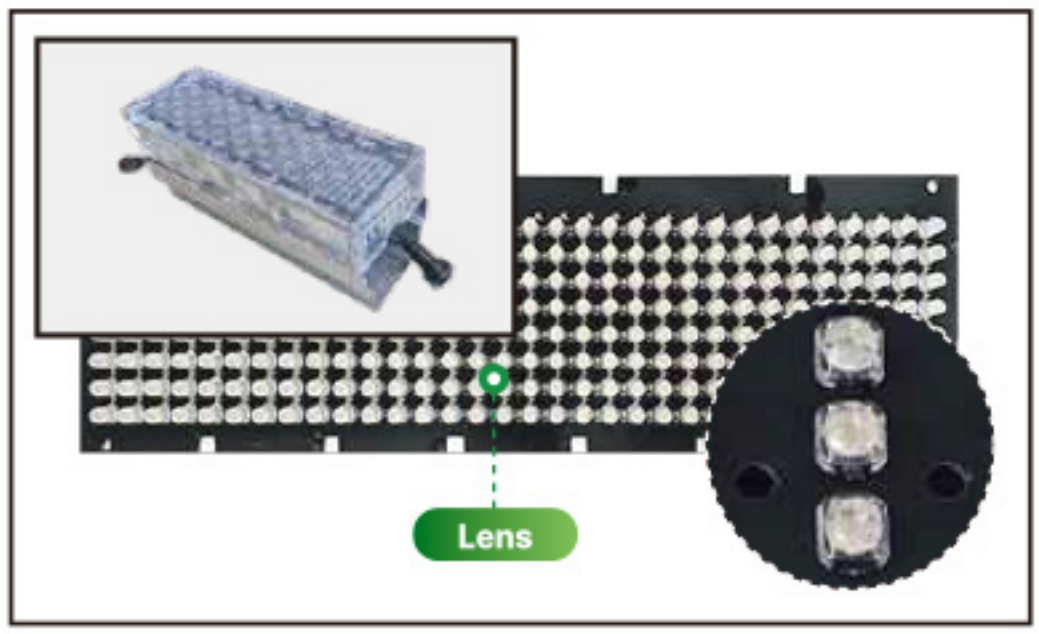
Display Pattern of Smart Embedded In-Ground Pedestrian Signal Light

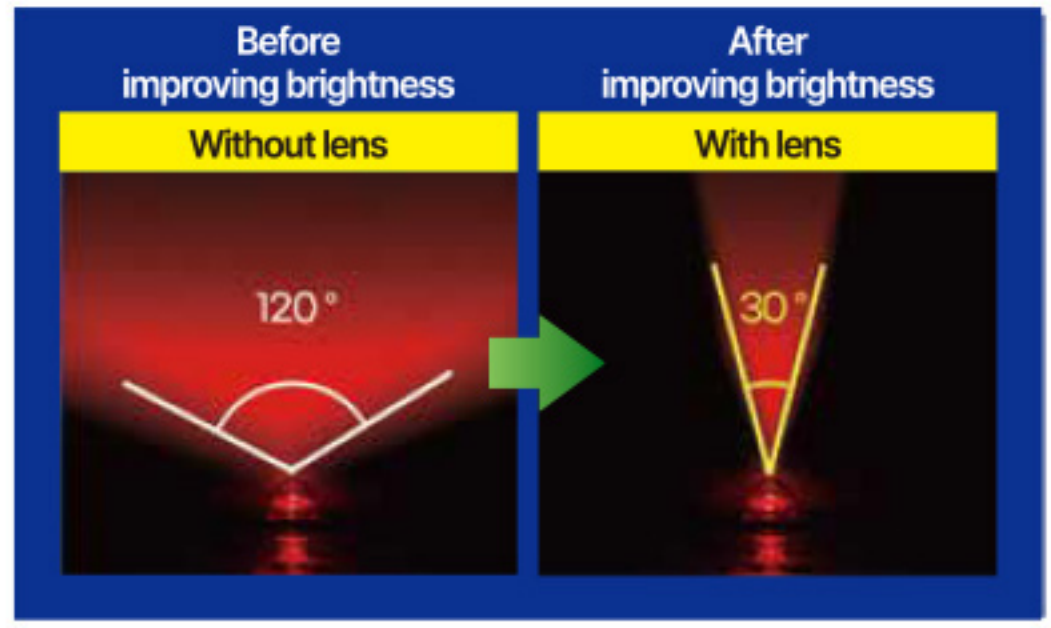


Improved Visibility

Increased brightness by combining SMD LEDs and lenses

It focuses light with a lens over the SMD LED on the display unit, which enables higher brightness with the same power consumption, providing clearer signal information to both pedestrians and drivers by ensuring visibility.

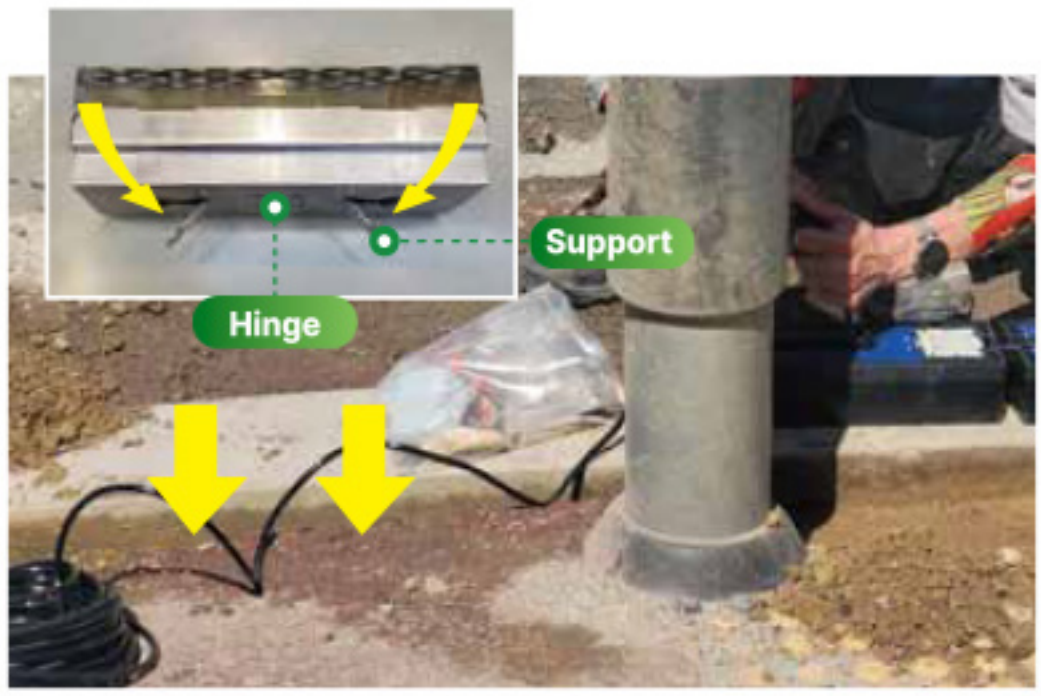




Strong Durability

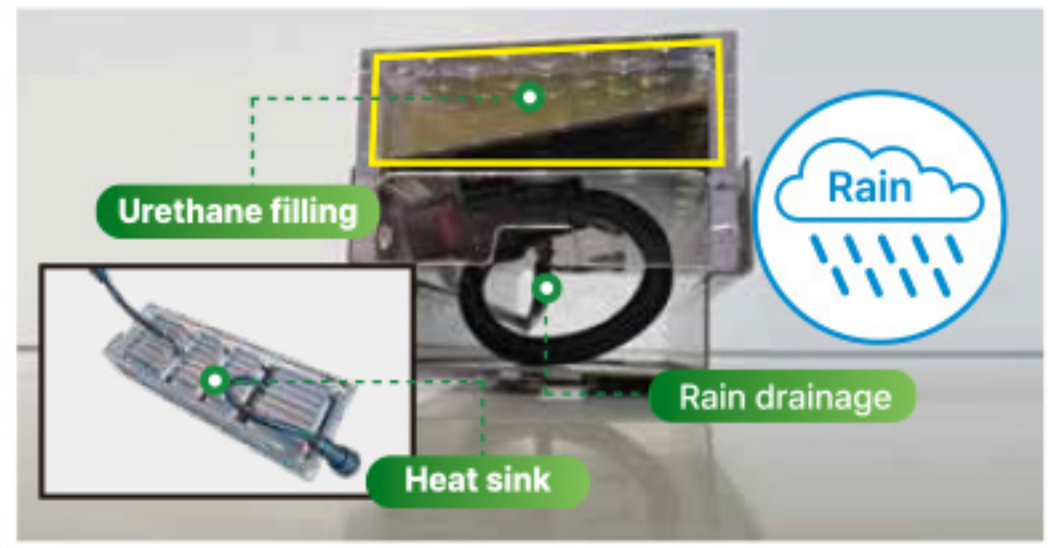
Improved strong durability with stable fixation

Securely fixed to the ground with bracket supports and hinges, it offers excellent durability against external impacts and weather changes.



Improved device durability with waterproof and condensation resistance

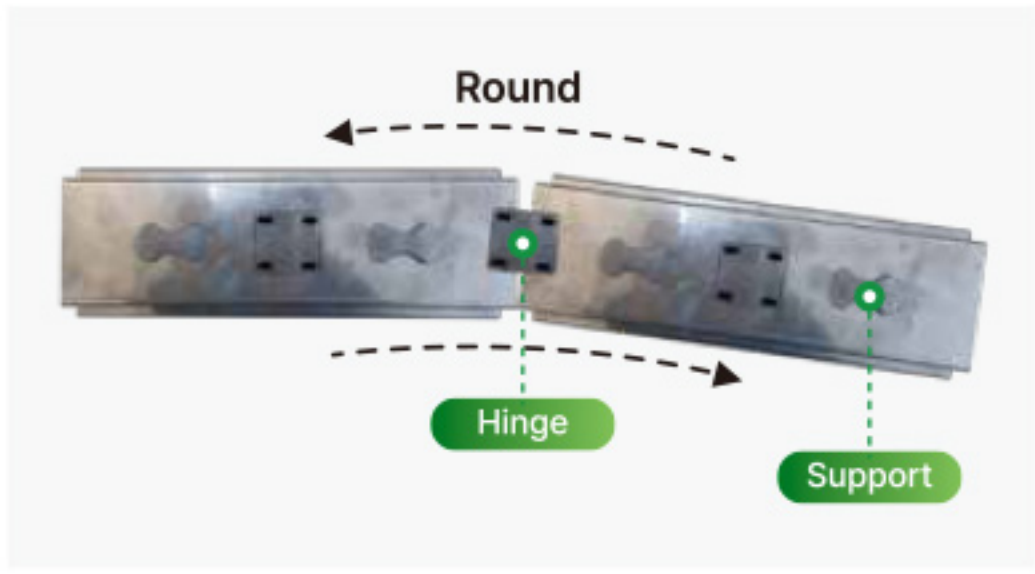
The Urethane-filled display unit delivers a waterproof effect. The space secured under the bracket offers protection against rainwater and condensation, which reduces device failure and prolongs the device's life.

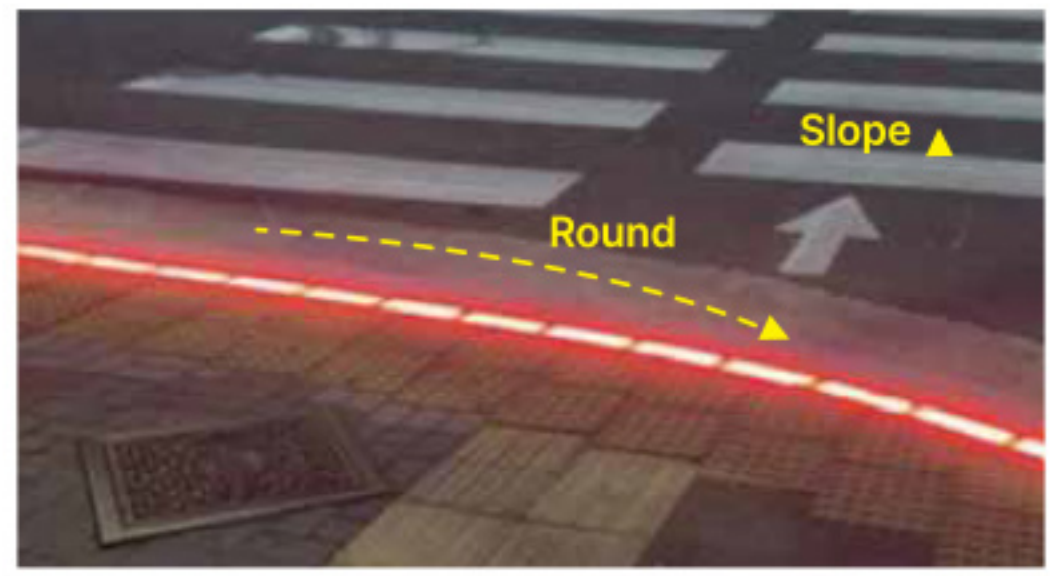


Optimized Installation

Installation flexibility optimized for various environments

Installation in straight lines as well as smooth curves and slopes is possible by adding additional brackets using hinges, which improve displacement and twisting prevention.





Product Specifications



Display Unit

A device installed behind the curb of a crosswalk that indicates the pedestrian light status as green, flashing green, or red

- **Model** HGHC-24D1
- **Dimensions** 300×100×60mm
- **Power Consumption** 1.8W
- **Input Voltage** 24DCV
- **Weight** 1.45kg



Control Unit

Device that controls day nighttime lighting by collecting pedestrian light status from the traffic signal controller External Device Integrated Interface Board

- **Model** HGHC-24C1
- **Dimensions** 300×250×160mm
- **Input Voltage** 220ACV
- **Weight** 5.1kg



External Device Integrated Interface Board

A device that is connected to a standard traffic signal controller to transmit a pedestrian signal to the control unit in real time

- **Model** HGHC-24EDIB01
- **Dimensions** 233×160mm
- **Weight** 0.20kg

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Approx. 32%

less power consumption compared to the lowest power-consuming products from competitors

Improved Visibility

Energy Efficient

Strong Durability

Optimized Installation

Integrated Management Service

Walk Safely and Save Energy!

Energy Efficient Embedded In-Ground Pedestrian Signal Light

HGHC-24DE1

- Public Procurement Service Registration (MAS)
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HANGIL HC Co., Ltd.

Energy Efficient Embedded In-Ground Pedestrian Signal Light

HGHC-24DE1

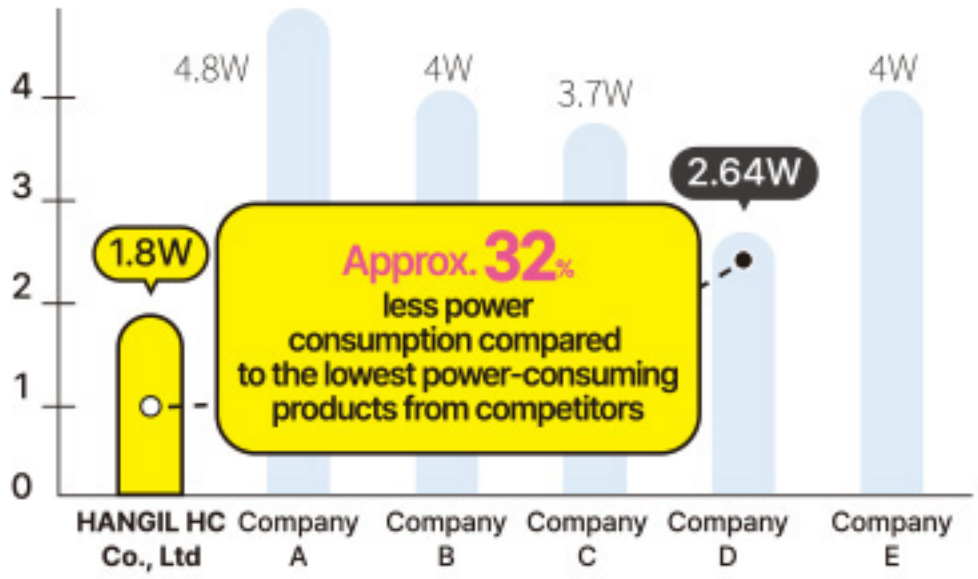
Pedestrian safety system that visually guides pedestrians to wait or cross the road preventing traffic accidents. The system operates by synchronizing the embedded in-ground signal light with the crosswalk pedestrian signal light. It perfectly prevents thermal deformation and leakage.
The power consumption is reduced to 1.8W for energy efficiency!
HANGIL HC's embedded in-ground pedestrian signal light enhances efficiency while maintaining the advantages of existing products, is environmentally friendly and ensures safe crosswalking!

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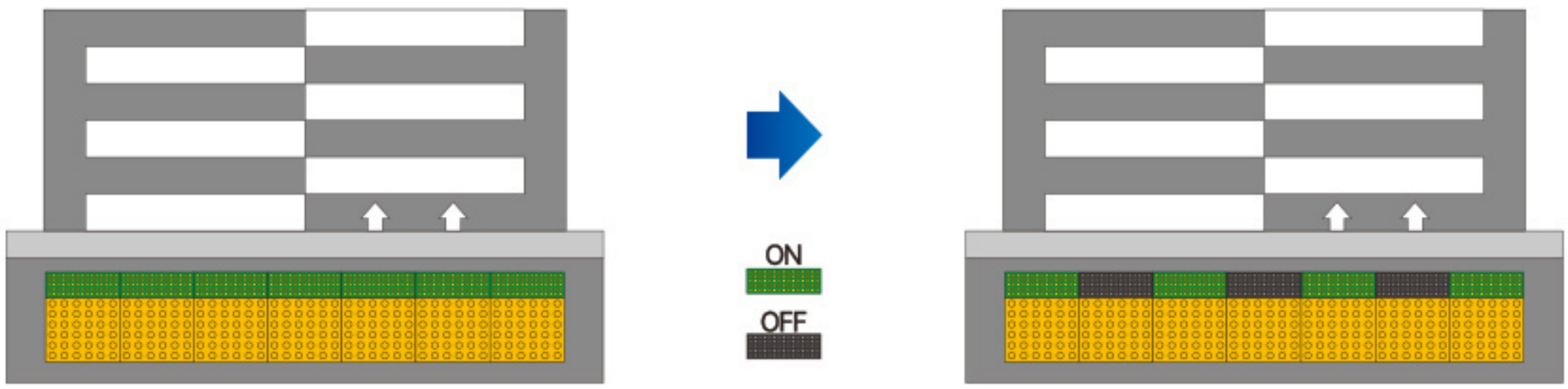
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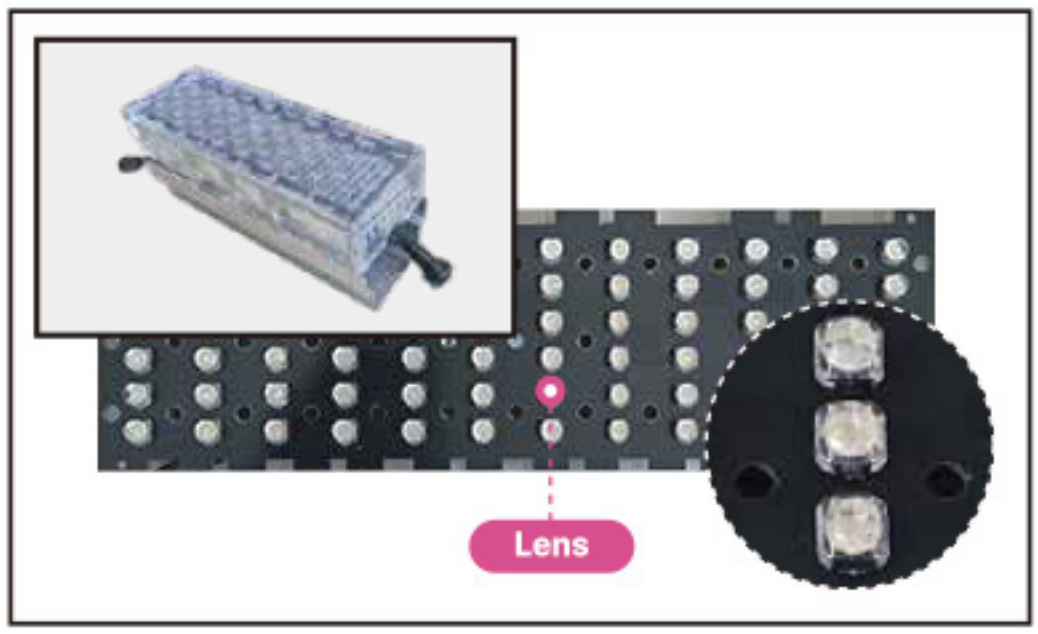
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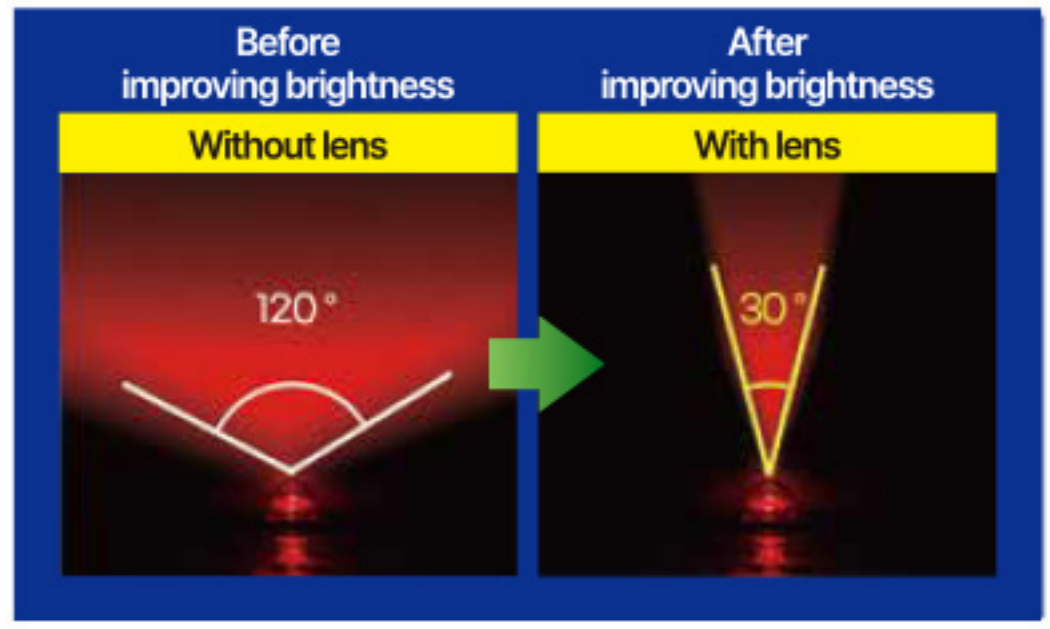


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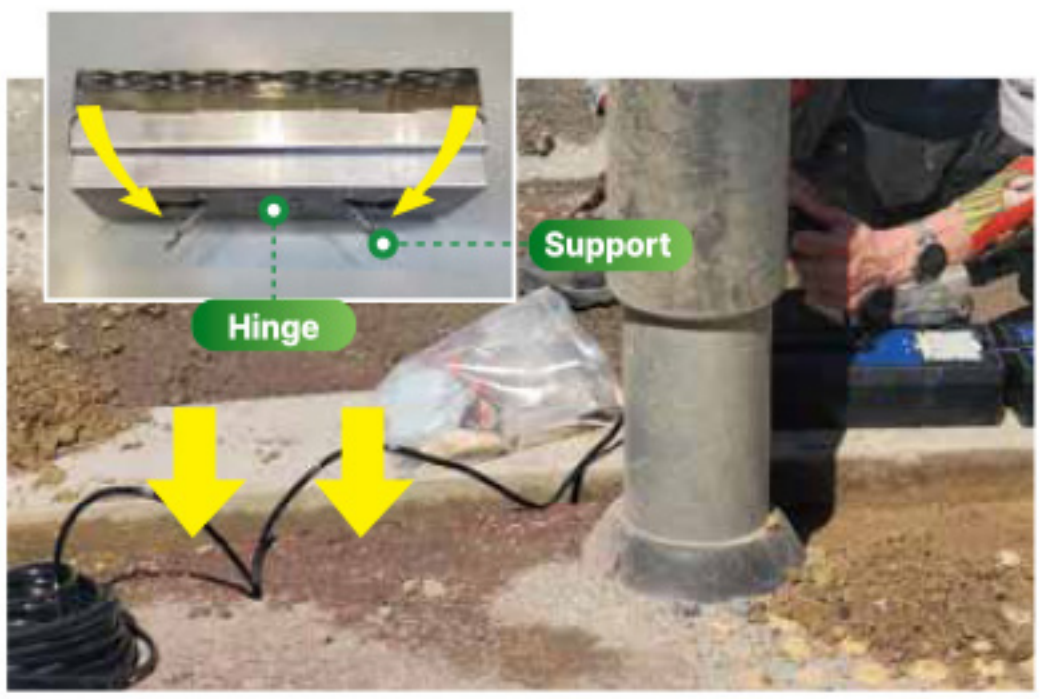




Strong Durability

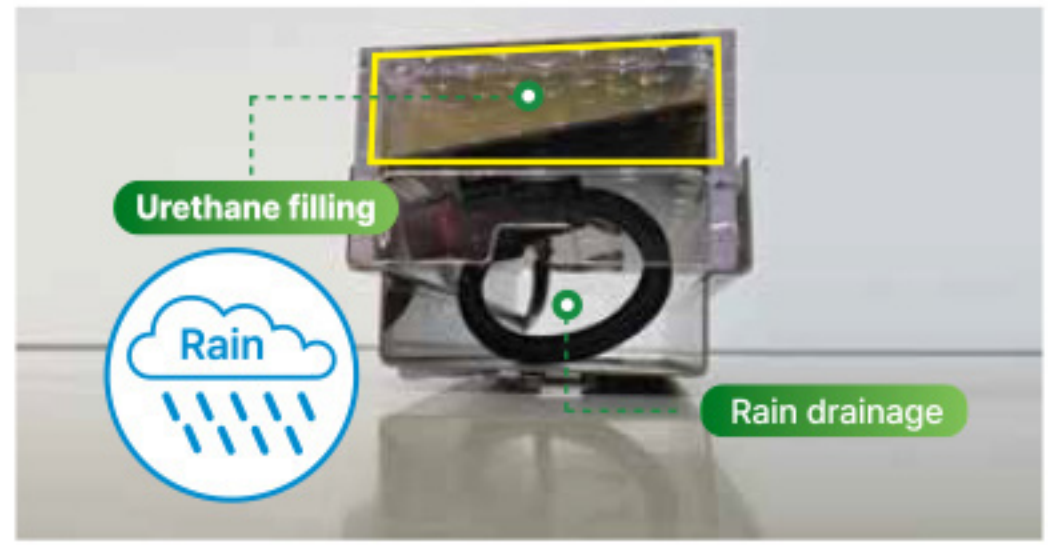
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Improved device durability with waterproof and condensation resistance

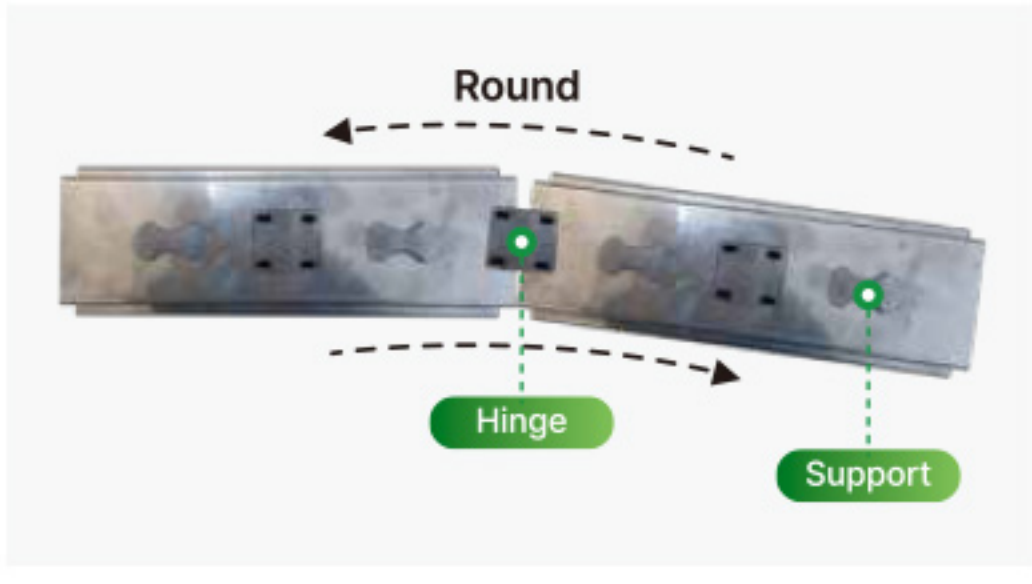
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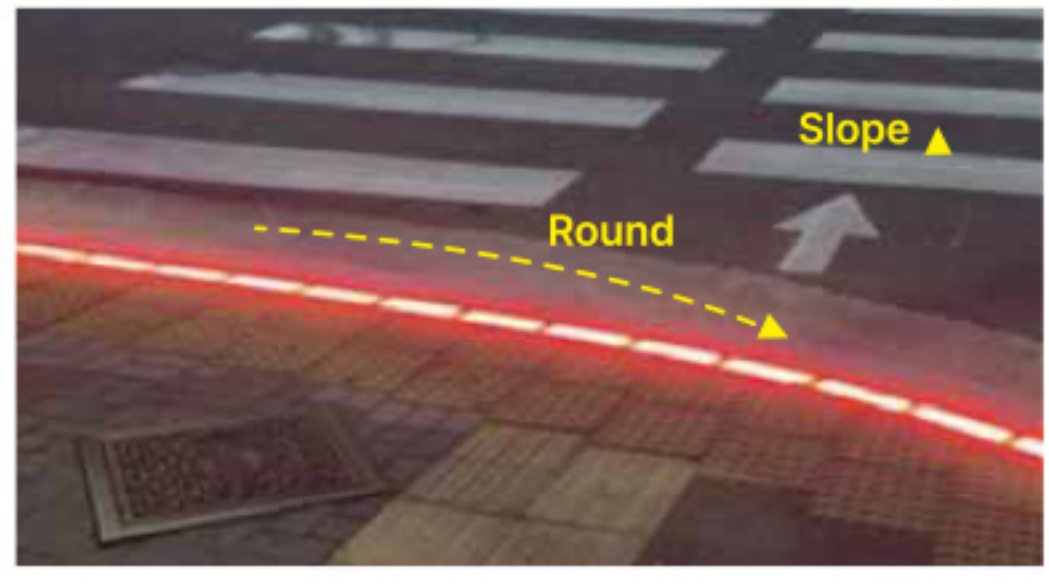


Optimized Installation

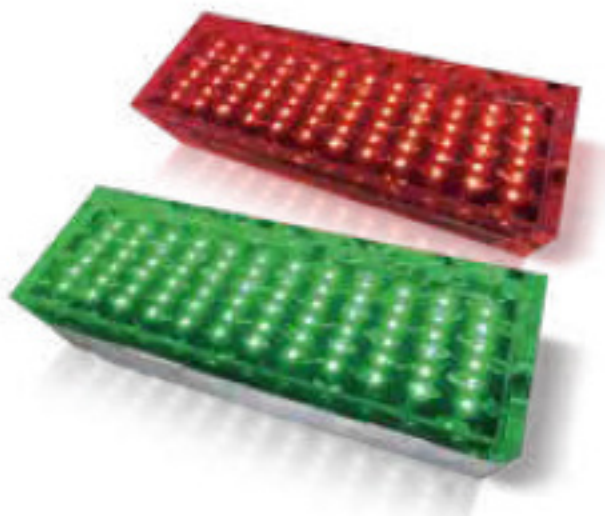
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Product Specifications



Display Unit

A device installed behind the curb of a crosswalk that indicates the pedestrian light status as green, flashing green, or red

- **Model** HGHC-24DE1
- **Dimensions** 300×100×60mm
- **Power Consumption** 1.8W
- **Input Voltage** 24DCV
- **Weight** 1.45kg



Control Unit

Device that controls day nighttime lighting by collecting pedestrian light status from the traffic signal controller External Device Integrated Interface Board

- **Model** HGHC-24CE1
- **Dimensions** 300×250×160mm
- **Input Voltage** 220ACV
- **Weight** 5.1kg



External Device Integrated Interface Board

A device that is connected to a standard traffic signal controller to transmit a pedestrian signal to the control unit in real time

- **Model** HGHC-24EDIB01
- **Dimensions** 233×160mm
- **Weight** 0.20kg

Integrated Management System (IMS)

Detection of auxiliary device failure

Monitor the operating status of traffic safety facilities in real-time via an integrated gateway to collect relevant information when failures occur.

Collection/transmission via integrated gateway

Monitor the operating status of each module of all traffic safety facilities at the subject intersection to transmit the collected information to the traffic information center in real-time when failures occur.

Traffic Information Center - Remote Control Access

Remotely control and repair when failures occur by monitoring traffic safety facilities at all intersections in the local government in real-time.



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Traffic System Specialized Enterprise

Smart Solution for Pedestrian Safety

Pedestrian Light Countdown Timer (Red/Green Timers) HGHC-25RTI

This auxiliary device joins operation with pedestrian lights installed at crosswalks. This LED display device simultaneously shows the remaining time for red and green signals, enhancing pedestrian safety, reducing road crossing anxiety, and preventing jaywalking, thus improving overall traffic efficiency.



Current



Pedestrian Light Countdown Timer
(Indicate remaining time in green)

Improved



Pedestrian Light Countdown Timer (Red/Green Timers)
(Indicate remaining time in red + green)

Safety
Designed for reliable operation at high and low temperatures

Built-in Sensing Circuit
Display the remaining time only when the received signal information and lighting status match to resolve signal inconsistency issues

Reliability
Proven performance and continued technical support

Built-in Circuit Breaker
Easy to protect and maintain circuits against electric leakage

Integrated Management System (IMS)

Detection of auxiliary device failure



Collection/transmission via integrated gateway

Real-time collection of failing device

Remote repairment of faulty device



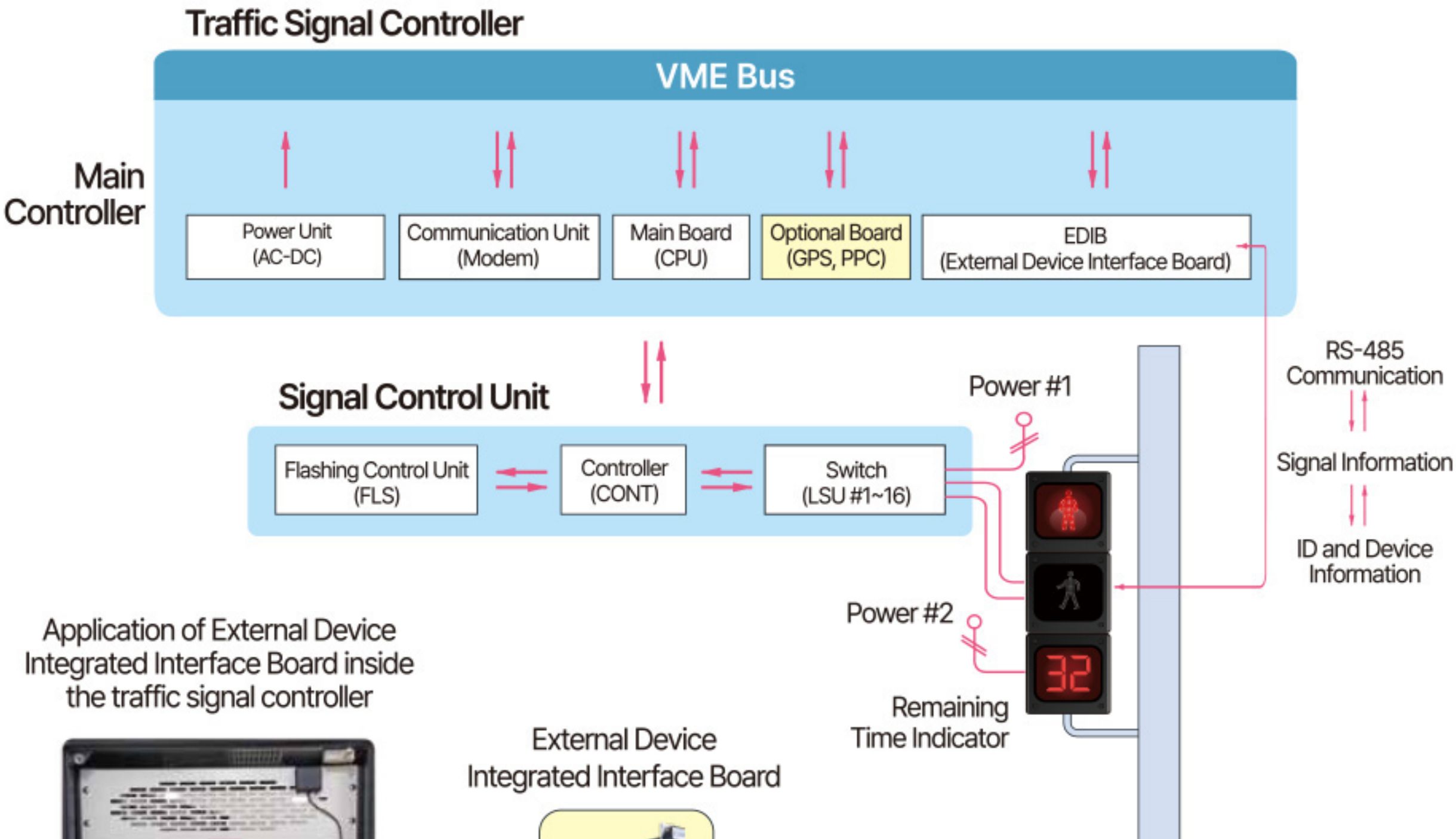
Traffic Information Center - Remote Control Access

Real-time transmission of failing devices

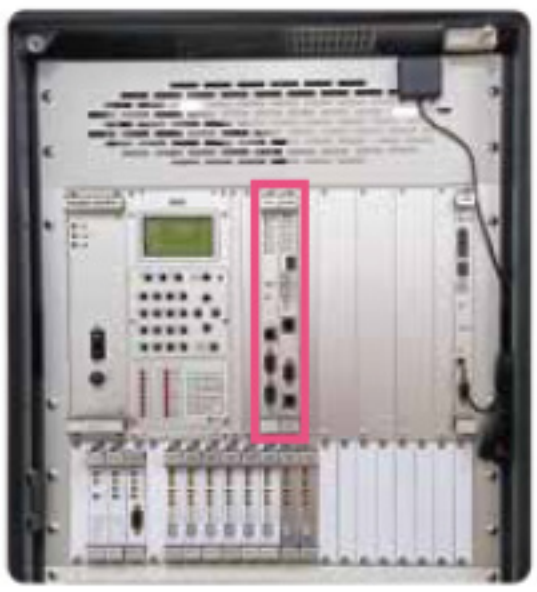
Remote access to faulty device



▶System Configuration



Application of External Device Integrated Interface Board inside the traffic signal controller



External Device Integrated Interface Board



▶Technical Specifications

Input Power	220 ACV	**Signal Timing Cycle**	Signal information acquisition by the External Device Integrated Interface Board
Output Power	5.0 DCV	**Display**	Remaining Time Count (Red / Green)
Power Consumption	10W ACV	**Operating Temperature**	-34 °C ~ +74 °C
Power Factor	≥ 0.9	**Installation Location**	Installable at the under of the existing pedestrian lights (Attachable to the side or in alignment with existing pedestrian lights)

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HANGIL HC Co., Ltd.
Traffic System Specialized Enterprise

Pedestrian Safety by only ONE device

All-in-One AI Smart Pedestrian Safety System(ASPS)

HG Smart Voice-1

Key Features

Pedestrian detection by LiDAR
Precise detection
Enhanced safety

Accessible pedestrian signal
Audible signal designed to assist visually impaired

IoT remote management
Real-time monitoring and remote control

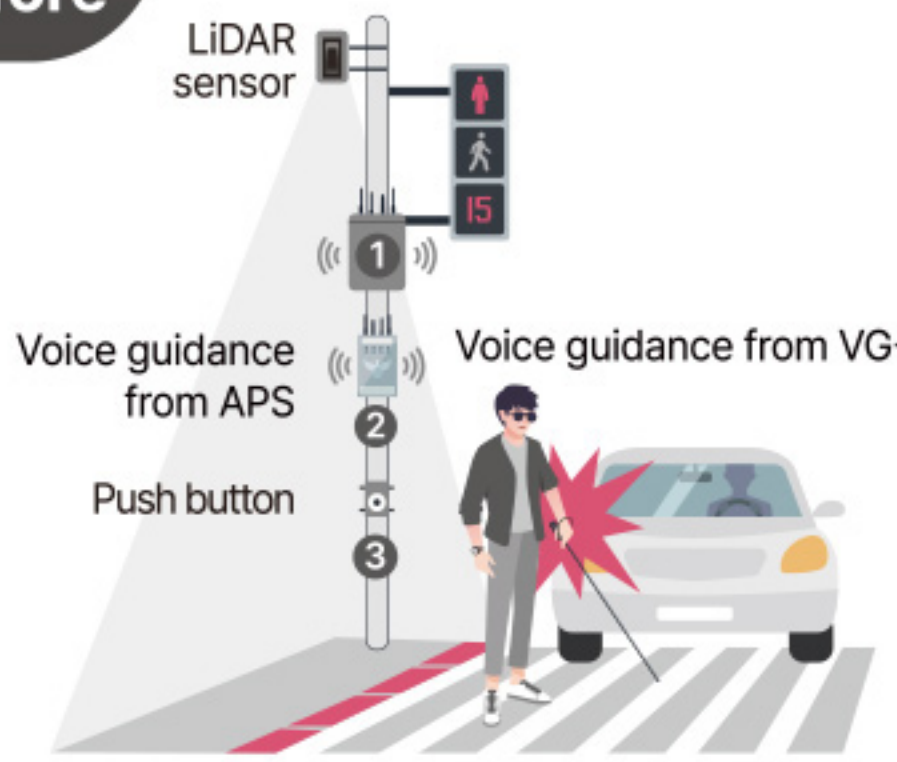


Integrated pedestrian push button
One-button signal activation for crossing requests

All-in-One integrated design
Small footprint and easy maintenance

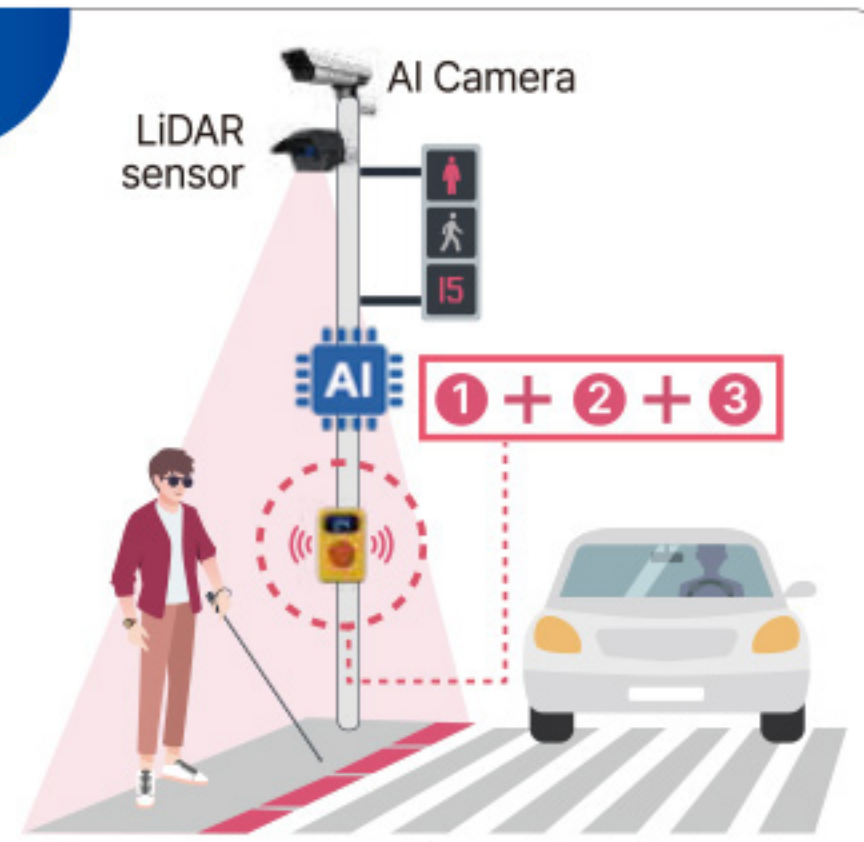
AI function expansion
AI-based automatic pedestrian signal extension system
(Expandable with AI Camera module)

Before



Operation by separate device

After



A safer environment for pedestrians,
All in one device.

3 Functions!
One Smart Device!



Pre-Detection Safety System + Accessible Pedestrian Signal + Push Button = All-in-One AI Smart Pedestrian Safety System(ASPS)

- Suitable for both visually impaired and general pedestrians.
- Minimize confusion caused by overlapping voice guidance.
- Reduces installation costs and minimizes visual clutters on poles.

Smart App · AI Function Expansion

Smart phone App. Remote control



- Automatic guidance & signal information
- Select Direction
- Remote control available

AI predictive maintenance system



- Real-time status monitoring
- Early detection of abnormalities
- Predictive maintenance & fault alerts

AI expansion



- Expandable to AI-based automatic signal extension system

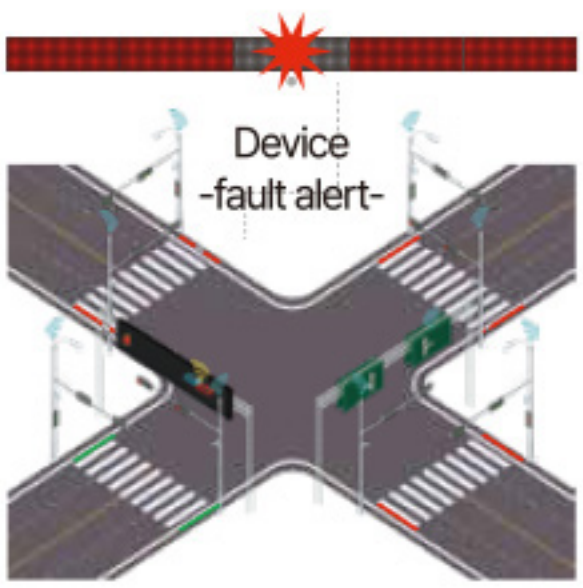
Product Specification

Input power	220 ACV	Operating Temp.	-34 °C ~ +74 °C
Power consump.	12W	IP rating	IP65
Power factor	0.9	Weight	0.63Kg
Signal cycle change	EDIB or CT communication	Installation	1M~1.2M above the ground
Output	Voice guidance		

Integrated Management System - IMS

Device fault detection

Automatic fault data collection through real-time monitoring



Integrated gateway data collection-transmission

Real-time collection and transmission of fault information to the traffic control center



Remote monitoring from traffic control center

Fault status check & remote control/maintenance



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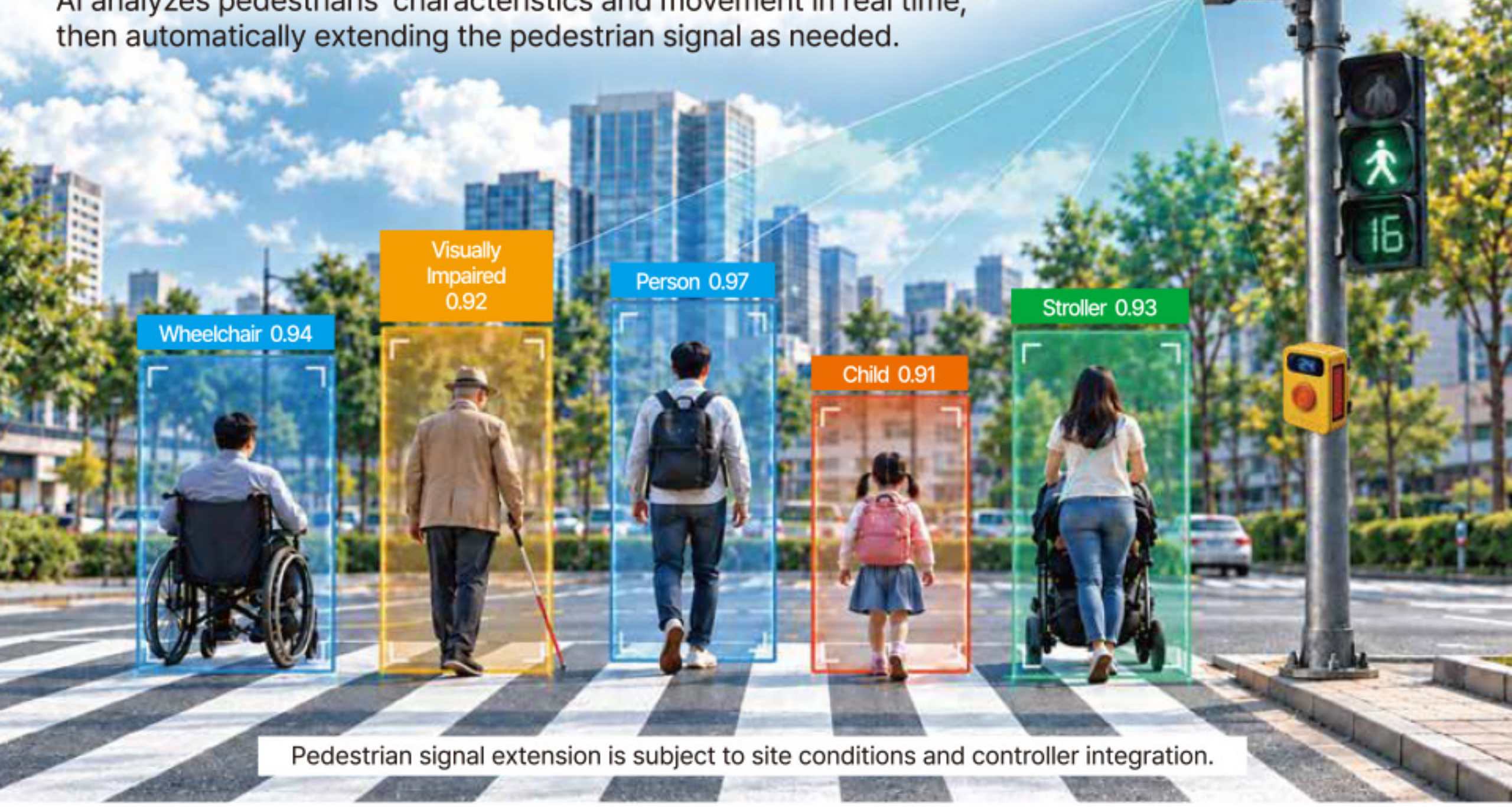
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AI-Powered Safer Crosswalks

AI SMART Pedestriann Signal Extension System

AI analyzes pedestrians' characteristics and movement in real time, then automatically extending the pedestrian signal as needed.



01 Pedestrian detection

02 Status analysis

03 Remaining crossing time prediction

04 Automatic signal extension

AI sees, analyzes, and makes decisions on site

Pedestrian detection · Movement tracking · Crossing status analysis · Remaining time prediction · Risk detection

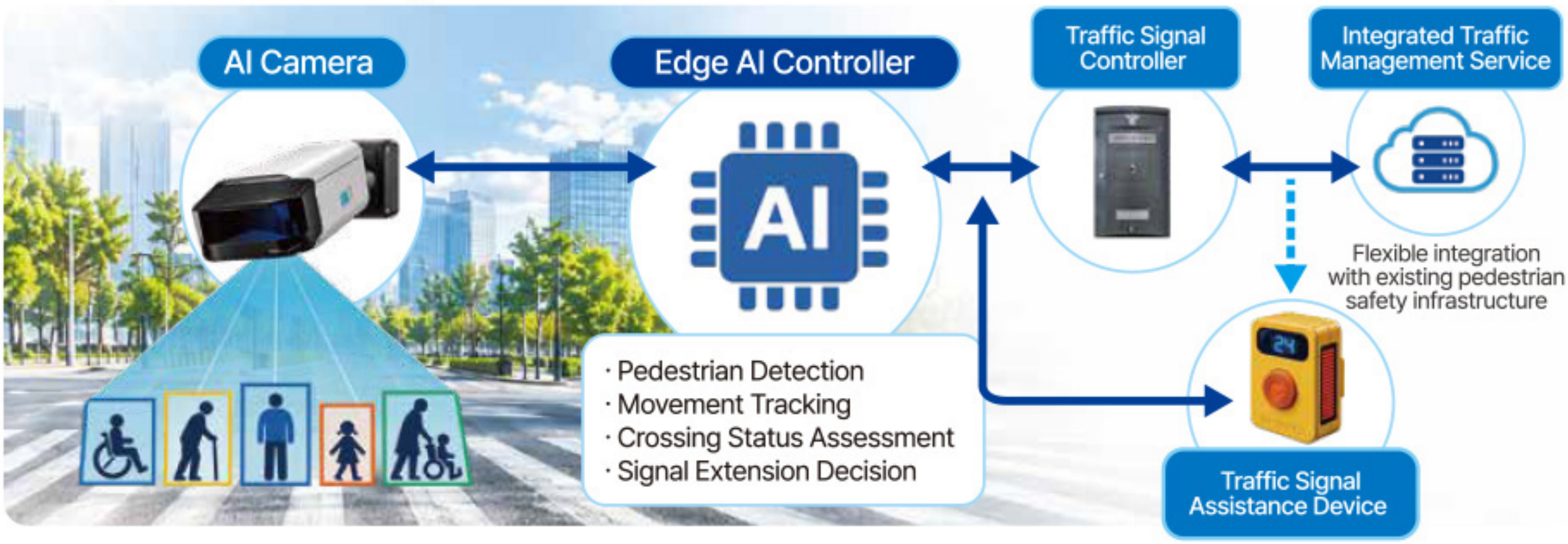
AI + Edge AI Controller Traffic Signal + IoT

SMART PEDESTRIAN SAFETY
FOR A BETTER TOMORROW

Building a Smarter City Where People Are Safer.
Hangil HC Is Making It Happen.

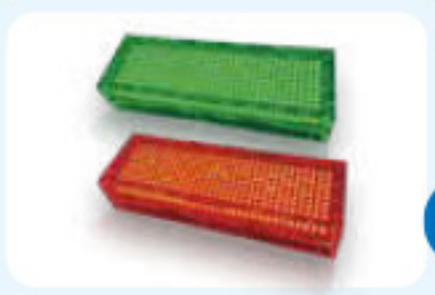
System Configuration

AI analyzes the surrounding environment in real time and automatically extends the pedestrian signal by integrating with existing infrastructure



Integration with Existing HANGIL H.C Products

Add AI to existing pedestrian safety infrastructure, and expands its capabilities without replacing the installed equipment.



In-Ground Pedestrian Signal
Visual guidance



All-in-One AI Smart Pedestrian Safety System
Audible signal



LoRa IoT
Wireless communication



Central management server
Centralized monitoring

AI SMART Pedestrian Signal Extension System + existing HANGIL HC`s Pedestrian Safety Infrastructure = One Integrated

Targets Quality Performance

Enhancing pedestrian safety with proven AI technology

Pedestrian detection accuracy	≥ 95%
Movement tracking accuracy	≥ 95%
Crossing status assessment accuracy	≥ 95%
Signal extension decision accuracy	≥ 95%
AI decision latency	≤ 100ms

Product specification

Reliable hardware and software optimized for on-site deployment.

Edge AI	NVIDIA Jetson Orin Nano Super
OP system	Ubuntu 22.04 · JetPack/L4T
Communication	RS-485 · Ethernet · LoRa · LTE
Power	AC 100–240V · DC 12/24V
Operating Temp.	-34 °C ~ +74 °C
Key Tech.	YOLO · ByteTrack · TensorRT · ONNX

Application

To create safer pedestrian environments, the system can be deployed at a wide range of sites

- Automatic Pedestrian Detection Signal
- Automatic Pedestrian Signal Extension System
- AI-Based Traffic Safety Prediction System

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