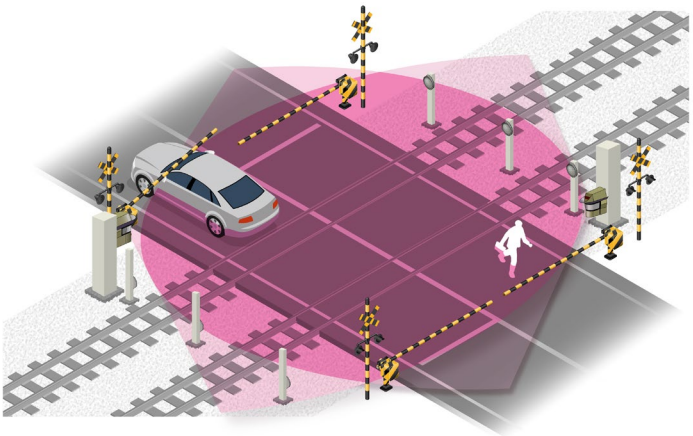
Laser-Sensor Type

Level Crossing Obstacle Detection System

Highly-Functional Surface-Detection Obstacle Detection System (using 2D Lasers) Compared to Conventional Line-Detection Systems

Kyosan is now ready to introduce a Level Crossing Obstacle Detection System which responds to the need that asks for safety at the crossing area, and revision to the "Act on Promotion of Railway Crossings" in Japan. This new system covers the whole level crossing area using 2D Lasers (surface-detection), which differentiates from conventional line-detection using Light Emitters and Receivers.



Characteristics

- No need of processor(s) in Equipment Box as our system integrates distance ranging, detection, and judgement elements into one Laser-Sensor (Sensors)
- High-quality on low cost due to sensing technology developed through Advanced Driving Assistant System (ADAS)
- Robustness enhanced against weather conditions such as rain, fog, or snow
- Sure Detection of black cars with low reflectance, in which lasers are weak in, by Pole Detection (Patented)
- Free drawing and setting of sensor detection area(s) using dedicated tool (Up to 6 areas)
- Heater(s) embedded for the purposes of front-panel fog prevention and snow melt
- Fail-safe and redundant sensors produced by DENSO WAVE INCORPORATED (have undergone a Safety Assessment by the Rail Technical Research Institute in Japan)
- Failure-detection self-diagnostic function mounted, 7-segment display, with relay-contact output
- 2 Sensors (top and bottom) mountable on one dedicated post (to avoid, as much as possible, non-detection of vulnerable road users and small children passing through by installing at low height)

Major Specifications

	General Description of Sensors
Pulse Laser Light	Near-Infrared Light (Wavelength: 905nm) IEC60825-1 Class 1
Ranging Principle	Irradiation Angle: 190° , Resolution: 0.25° (761 beams), Scan Time: 33.3ms (1,800rpm)
Detectable Distance	2~30m radius (object(s) with 10% reflectance or more)
Detection Target	Object(s) 20cm or more in all directions
Object Detection	Beam-interrupt detection utilizing Time-of-Flight (TOF) method, filtering processing and reflectors
Usual Maintenance	Cleaning of sensor screens (when dirty)

Sensors are developed by DENSO WAVE INCORPORATED.

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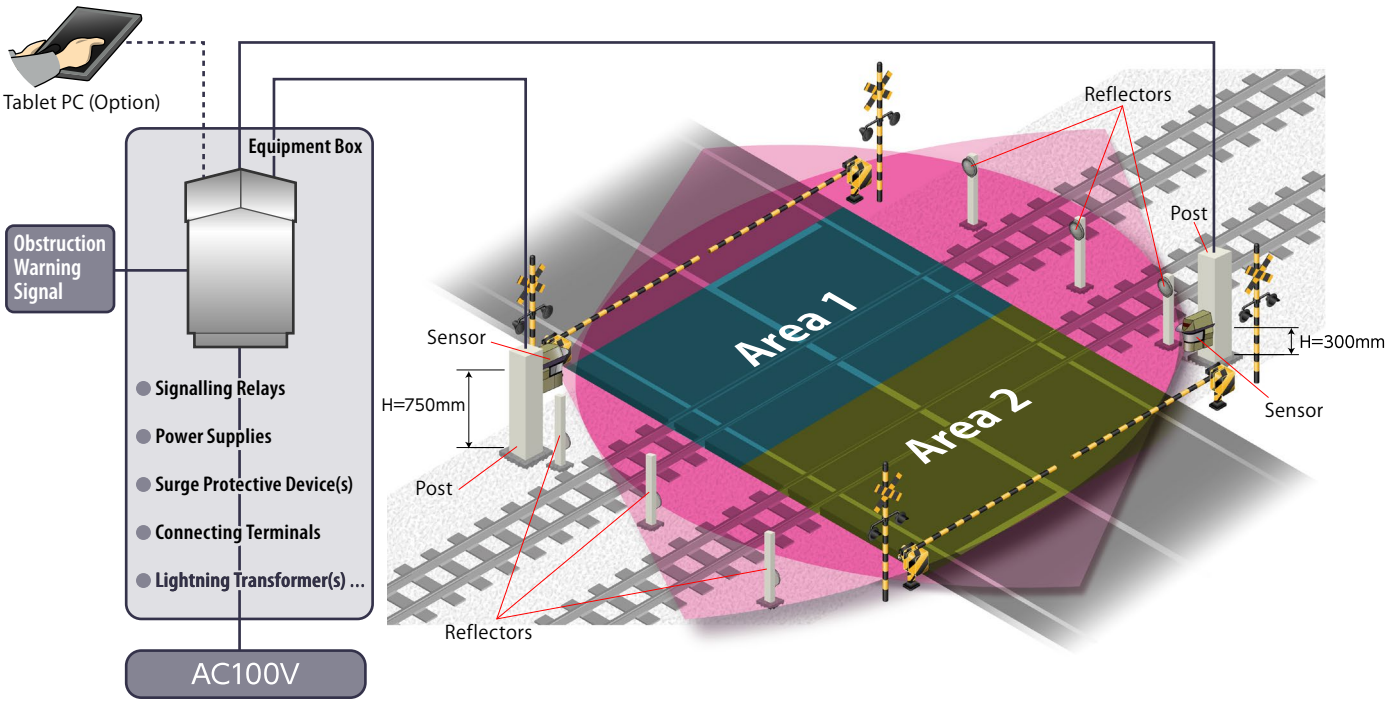
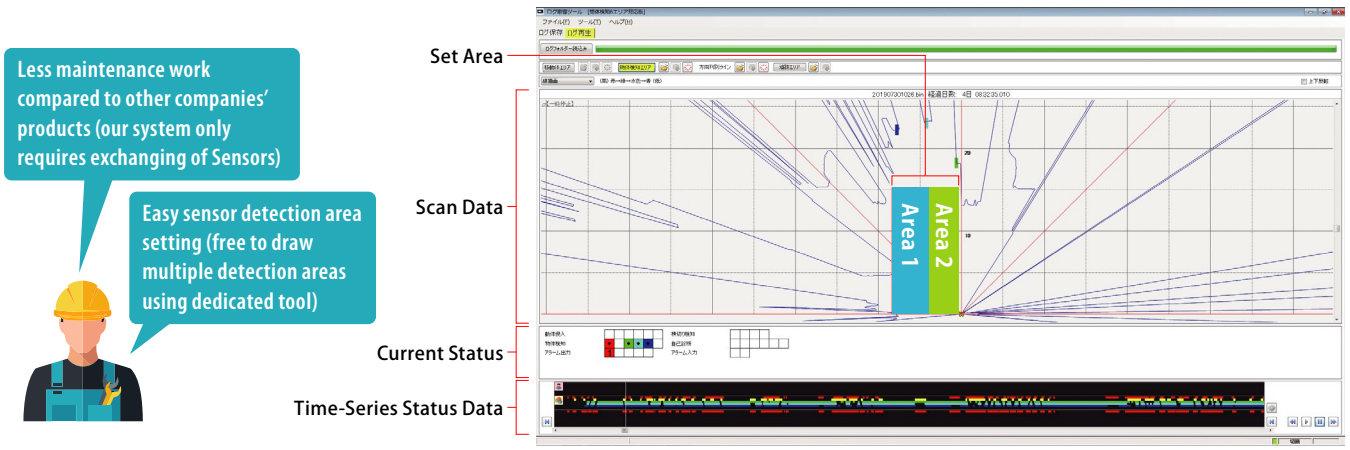
System Image Overview (Standard Type)



Maintenance Data Measurement Window (For Reference)



	General Description of the Whole System
Basic Constituents	① Sensors and Posts: 2 sets ② Reflector Poles: 8 max. ③ Equipment Box: 1 set ④ Outside Cables: 1 set Separate foundation work is required upon installation.
Detective Height	750mm and 300mm from rail top (Standard)
Internal Power Supplies	For Sensors, Heater(s), Relays in Equipment Box, and Level-Crossing-Related Equipment
Protection against Lightning Damage	Lightning Transformer(s): Surge protection against Power Supplies, and Surge Protective Device(s)
Maintenance Data	Possible to check Maintenance Data (Area Setting, Time Elements, Error Records, and so forth) by connecting Tablet PC(s) or similar devices, in which a dedicated tool is installed, with the Sensors via LAN (Option)
Useful Service Life	8 years for Sensors*, 7-10 years for Power Supplies, and 15 years for other items *Overhaul available on a chargeable basis (send-back).