

Prism

Seat occupancy for trains without cameras: a railway-certified 60 GHz radar sensor that tells operators and passengers which seats are vacant. Available as part of SeatSense.

- 60 GHz radar · ±10° beam · 0.2–6.8 m
- Occupied or vacant · no cameras
- LoRaWAN · NFC · about 10 years battery
- Fitted in under 30 s per seat, with a jig
- Railway certified · IP54

OVERVIEW

Prism points a ±10° beam of 60 GHz coherent radar at a seat and reports, in real time, whether someone is sitting in it. There is no camera and no image, only an occupied or vacant state, so passenger privacy is built in. With the installation jig it is fitted with adhesive in under 30 seconds per seat, needs no change to the seat, and comes in single- and double-seat configurations with several mounting geometries for standard and first class.

It is certified for rolling stock: EN 50155 (electronic equipment on rolling stock), EN 50121-3-2 (electromagnetic compatibility) and EN 61373 (shock and vibration). EN 45545-2 (fire) does not apply, as each device is below the mass the standard tests; the material is rated UL94-V0. It runs on one or two 2,500 mAh $LiMnO_2$ batteries for about ten years, works from –20 to +60 °C, and has a temperature sensor built in. Prism is the sensor inside SeatSense, Sensative's seat-occupancy service, in service across a passenger fleet, and it is supplied only as part of that service.

WHY IT MATTERS

Railway certified

Certified to EN 50155, EN 50121-3-2 and EN 61373 (electronics, EMC and shock/vibration for rolling stock), in UL94-V0 material, and in service across a fleet.

No cameras

Radar returns occupied or vacant. No image, no identity, nothing to protect.

Single or dual sensor

One or two internal radar sensors and thirteen mounting variants: standard and first class, single and double seats, left and right.

Fitted in under 30 seconds

A jig positions the sensor under the luggage rack and the adhesive does the rest. No structural change, no cables, and about ten years on the batteries.


Prism under the luggage rack, one sensor per seat

Specifications

SENSING

Radar	60 GHz coherent radar, ±10° beam
Range	0.2–6.8 m, centimetre accuracy
Sensors	Radar, temperature

CONNECTIVITY

Protocol	LoRaWAN 1.0.4, Class A
Frequency	EU868
Configuration	Both boards over LoRaWAN; on site with Android apps, Hugin (NFC) and SweIoT Toolbox (Bluetooth)

OTHER

Updates	LoRaWAN board: firmware and VSM app with Hugin (NFC), VSM apps also over LoRaWAN. Radar board: firmware only over Bluetooth, with SweIoT Toolbox

POWER AND HOUSING

Variants	Single or dual sensor · 13 mounting variants
Standards	EN 50155 (rolling-stock electronics), EN 50121-3-2 (EMC), EN 61373 (shock and vibration); UL94-V0 material (EN 45545-2 not required below its mass limit)
Battery	1 or 2 × $LiMnO_2$ 2,500 mAh, about 10 years
IP rating	IP54
Operating temp	–20 to +60 °C
Dimensions	82 × 82 × 27 mm
Mounting	Adhesive
Patent	Pending (PCT/EP2025/079948)
Availability	As part of SeatSense

TYPICAL USE

Rolling stock first: one sensor per seat or wheelchair space, feeding live availability to passengers and demand data to the operator.

- Seat and wheelchair-space availability on trains
- Live seat maps in passenger apps and on-board displays
- Demand and capacity planning on real usage
- Occupancy of office pods and meeting rooms
- Utilisation of shared environments
- Any seat where a camera is not acceptable

WHAT EVERY SENSOR SHARES

Years on one battery

Ultra-low-power design, and cloud-side processing where it saves energy. Battery life depends on the sensor and how often it reports: well over ten years for most sensors.

Configured over the air

Every sensor takes its settings over the air, so a change of reporting interval or threshold never means a ladder. Square, Square Xtreme, Puck and Prism can also be set up on site with an Android phone over NFC, and they run downloadable VSM apps: a sensor already on the wall can be given a new task without touching the hardware.

IN THE BOX · MOUNTING



The installation jig: under 30 s a seat



Under the luggage rack, looking down

In the box

Prism in the chosen mounting variant, adhesive pre-applied. Positioned with the installation jig: under 30 seconds per seat, no change to the seat, no cables.

Mounting

Adhesive

MORE INFORMATION

Product page and downloads: sensative.com/sensors/prism
Manuals, payload decoders and integration guides: public.yggio.net/docs
Questions and quotes: sales@sensative.com · Buy: shop.sensative.com or a Sensative reseller

Specifications are subject to change without notice in the interest of continuous product improvement.