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## YUSUN SMART Radar Interactive LED Floor Tile Screen Technical Documentation

### 01 PART ONE

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## RADAR INTERACTIVE LED FLOOR TILE SCREEN TECHNICAL STANDARD | YUSUN SMART

YUSUN SMART releases the official technical standard for **radar interactive LED floor tile screen**, defining unified structural performance, interactive principle, display parameters, installation requirements and factory testing standards for commercial immersive display projects. Different from traditional pressure, capacitance and infrared interactive floor screens, our series adopts **top external overhead radar induction** as the only interactive solution, effectively solving common industry pain points such as sensor aging, high failure rate, difficult maintenance and unstable induction.

## Core Technical Advantages of Radar Interactive Floor Tile Screen

The biggest technical upgrade of YUSUN SMART radar interactive LED floor tile screen is the separation of sensing system and display cabinet. There are no built-in induction sensors inside the cabinet, completely avoiding component damage caused by long-term trampling, heat accumulation and dust erosion. The overhead radar detection method realizes non-contact human body induction, delivering longer service life and more stable long-term commercial operation performance.

In terms of display performance, the P3.91 high-definition specification supports 16-bit grayscale and 1920Hz high refresh rate, ensuring smooth and flicker-free visual effects in indoor commercial environments. The 3mm anti-slip tempered glass surface and 2000kg/m<sup>2</sup> super load-bearing

standard meet high-frequency pedestrian flow scenarios such as shopping malls, exhibition halls and museums. All products pass 72-hour continuous aging test and full function inspection before delivery to ensure consistent batch quality for global wholesale and custom projects.

## Official Standard Parameter Table

**Product Model:** YS-RI6001 (YUSUN-P3.91-FLOOR-RADAR)

**Core Annotation:** Interaction method = Top external radar, no built-in sensors in the box (no pressure/capacitance/infrared sensing)

| Item                      | Specification                                    |
|---------------------------|--------------------------------------------------|
| Pixel Pitch               | 3.91mm                                           |
| LED Type                  | SMD1415                                          |
| Module Size               | 250mm × 250mm                                    |
| Cabinet Size              | 500mm × 500mm                                    |
| Cabinet Material          | Aluminium alloy                                  |
| Cabinet Weight            | Approx. 45 kg/m²                                 |
| Brightness                | 1500 cd/m² (suitable for indoor hall)            |
| Refresh Rate              | ≥1920Hz                                          |
| Grey Scale                | 16bit                                            |
| View Angle                | Horizontal / Vertical: 140°                      |
| Protection Grade          | IP65 (Front), IP54 (Back)                        |
| Surface Cover             | 3mm Anti-slip tempered glass, scratch resistant  |
| Max Load Capacity         | 2000 kg/m²                                       |
| Working Voltage           | AC110~240V, 50/60Hz                              |
| Max Power Consumption     | 800 W/m²                                         |
| Average Power Consumption | 350 W/m²                                         |
| Working Temperature       | -10°C ~ +45°C                                    |
| Control System            | Mooncell / Novastar LED sending & receiving card |

|                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interactive Solution                                                                                                                                                                                                                                                                                                                                                                                                   | Overhead Radar Camera Interaction, sensor mounted above screen                                                                                                  |
| Response Delay                                                                                                                                                                                                                                                                                                                                                                                                         | <150ms                                                                                                                                                          |
| Recognize Quantity                                                                                                                                                                                                                                                                                                                                                                                                     | Support multiple people recognition                                                                                                                             |
| Radar Installation Height                                                                                                                                                                                                                                                                                                                                                                                              | 2.8m ~ 4.0m above floor surface                                                                                                                                 |
| Important Note                                                                                                                                                                                                                                                                                                                                                                                                         | Radar performance will be affected by strong ambient light, reflection and shadow. Local AV team responsible for radar overhead mounting bracket & installation |
| Software                                                                                                                                                                                                                                                                                                                                                                                                               | Pre-configured interactive software & project file; factory pre-set all mapping & interactive effects before shipment                                           |
| Warranty                                                                                                                                                                                                                                                                                                                                                                                                               | 2 years warranty for LED hardware (manufacture defect only). Consumables: glass mask & scratch damage excluded from warranty                                    |
| Factory Test Standard                                                                                                                                                                                                                                                                                                                                                                                                  | Full assembly test, 72h aging test, interactive function test, official test video record provided                                                              |
| Rmark:<br>1. The tempered glass acts as surface protection. The load-bearing capacity relies on the reinforced aluminium alloy cabinet frame. Static load $\geq 2000\text{kg/m}^2$ , for indoor pedestrian use only.<br>2. Viewing Angle: total $140^\circ$ ( $\pm 70^\circ$ from normal). Brightness $\geq 50\%$ inside this range.<br>3. TOF-LiDAR radar scanning radius: 10m, ceiling-mounted for motion detection. |                                                                                                                                                                 |

## Standard Application & Execution Explanation

All technical parameters above are official factory standards for YUSUN SMART radar interactive LED floor tile screen, applicable to most indoor commercial exhibition, museum immersive display, shopping mall interactive area and event rental projects. The overhead radar solution ensures stable multi-person interaction, low latency response and long-term stable operation, which is the core standardized advantage different from traditional pressure-sensing floor screens.

## 02 PART TWO

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# RADAR INTERACTIVE LED FLOOR TILE SCREEN

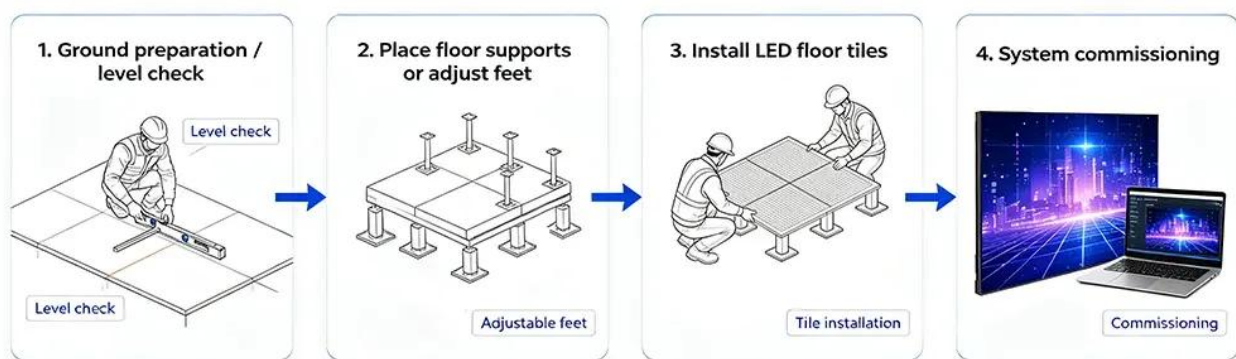
## INSTALLATION GUIDE

**Quick Summary** Proper installation determines stability & interactive performance of radar interactive LED floor tile screen. YUSUN SMART supports three mainstream installation solutions for different site conditions.

### Overview of 3 Installation Options

Our radar-driven interactive LED floor tile screen offers three practical installation solutions: direct ground mounting, track mounting, and welded steel-structure mounting. Project engineers can select the solution according to ground condition, load-bearing capacity and construction budget. Adjustable support feet are pre-installed on cabinet bottom for leveling adjustment in most scenarios.

#### Option 1 — Direct Ground Mounting

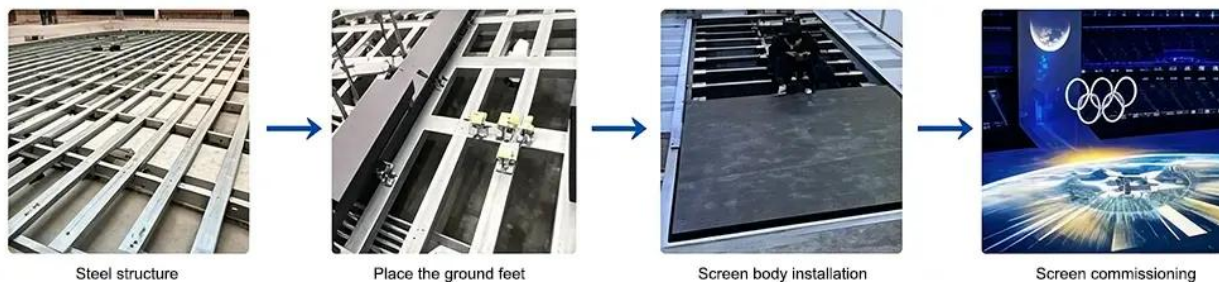


Direct ground mounting is the most-used solution for finished hardened ground.

- Site prerequisite: The ground surface **must be fully hardened**. Soft soil, loose floor or uneven ground is not allowed. Ground hardening, leveling base plate and civil-work modification are completed by customer-side on-site.
- Operation: Place LED floor tile cabinets directly on hardened ground. Use built-in adjustable support feet to calibrate flatness. No extra steel frame required.
- Best-fit scenario: Shopping mall exhibition hall, indoor event space with existing solid concrete ground.

*Note: Do not lay screens directly on carpet, asphalt or deformable ground substrate.*

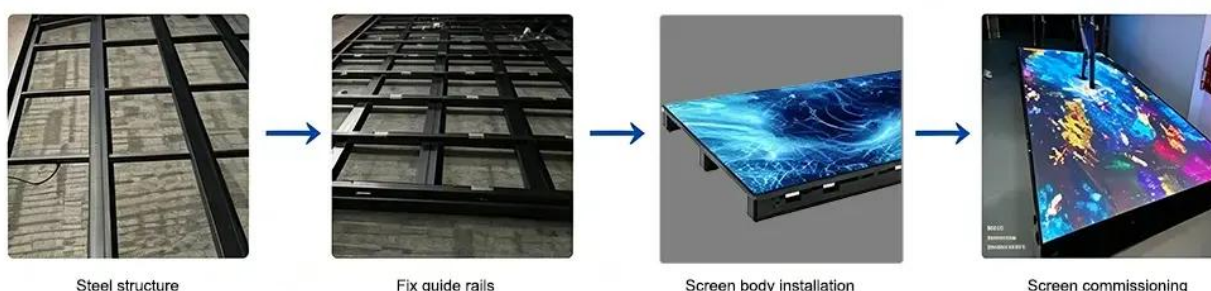
#### Option 2 — Track Mounting



Track mounting uses pre-laid metal track as positioning base.

- Site prerequisite: Flat and solid base ground. Lay metal tracks in advance to fix cabinets.
- Operation: Fasten cabinets onto installed metal tracks. Tracks help align cabinets neatly and simplify later disassembly & re-layout.
- Best-fit scenario: Temporary exhibition, roadshow, frequently-changed event projects, convenient for repeated dismantling and reuse.

## Option 3 — Welded Steel-Structure Mounting



Welded steel-structure mounting applies for sites where ground bearing is insufficient or raised height is required.

- Site prerequisite: Custom-made welded steel-structure frame according to site load-bearing demand. YUSUN SMART can provide steel-structure design drawings for customer reference.
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- Best-fit scenario: Plaza outdoor projects, raised stage, places need extra ground load-bearing reinforcement

## Important Pre-installation Reminders

1. For TOF ceiling-mount radar: Reserve proper overhead installation space, keep maximum 10-meter radar scanning radius without shelter.
2. Power supply & signal wiring shall follow our official wiring schematic diagram.

3. All three installation methods require flatness inspection after cabinet laying to avoid screen module stress damage.
4. Civil-work, ground hardening, steel-structure fabrication belong to on-site customer work scope, not included in screen product scope.

## Post-installation Debugging

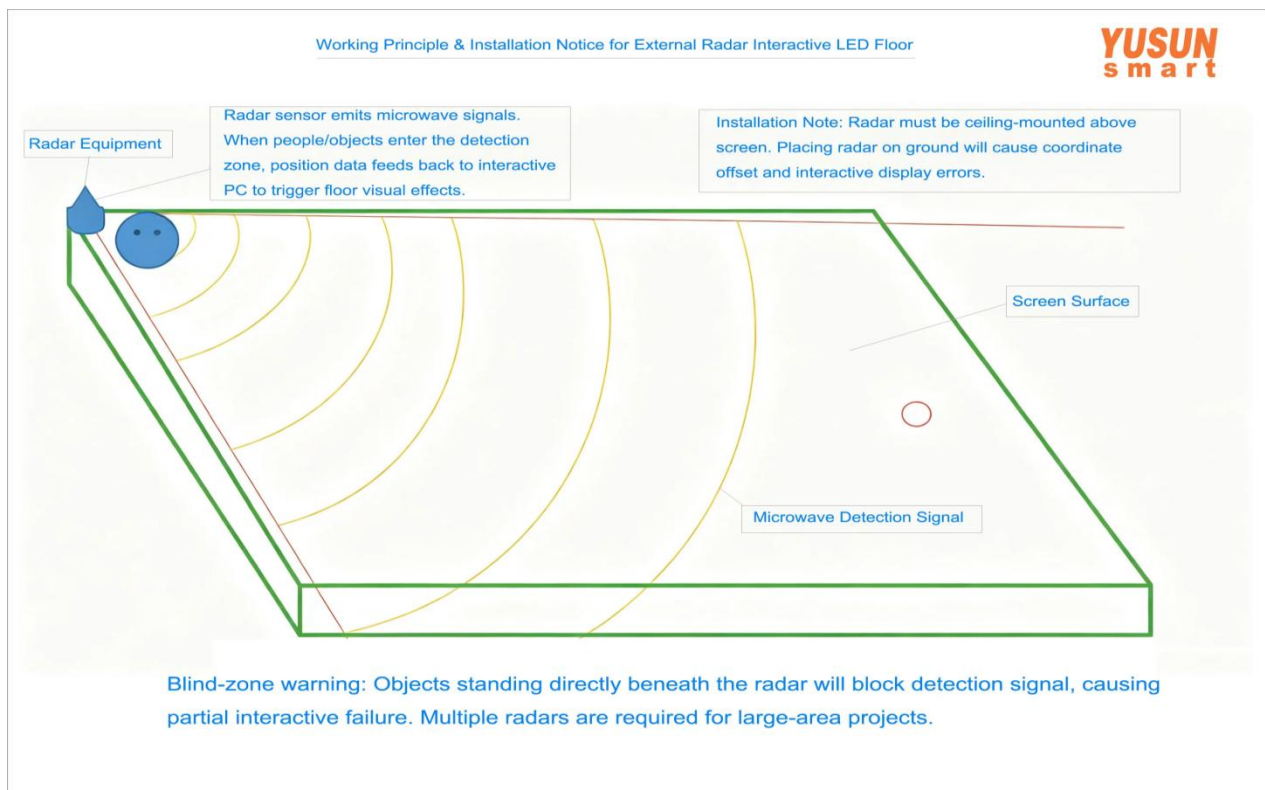
After mechanical installation finished, connect control system, launch supporting interactive software, calibrate TOF radar induction range. Test walking interactive feedback to ensure low-latency trigger effect before project hand-over.

## YUSUN SMART On-site Support

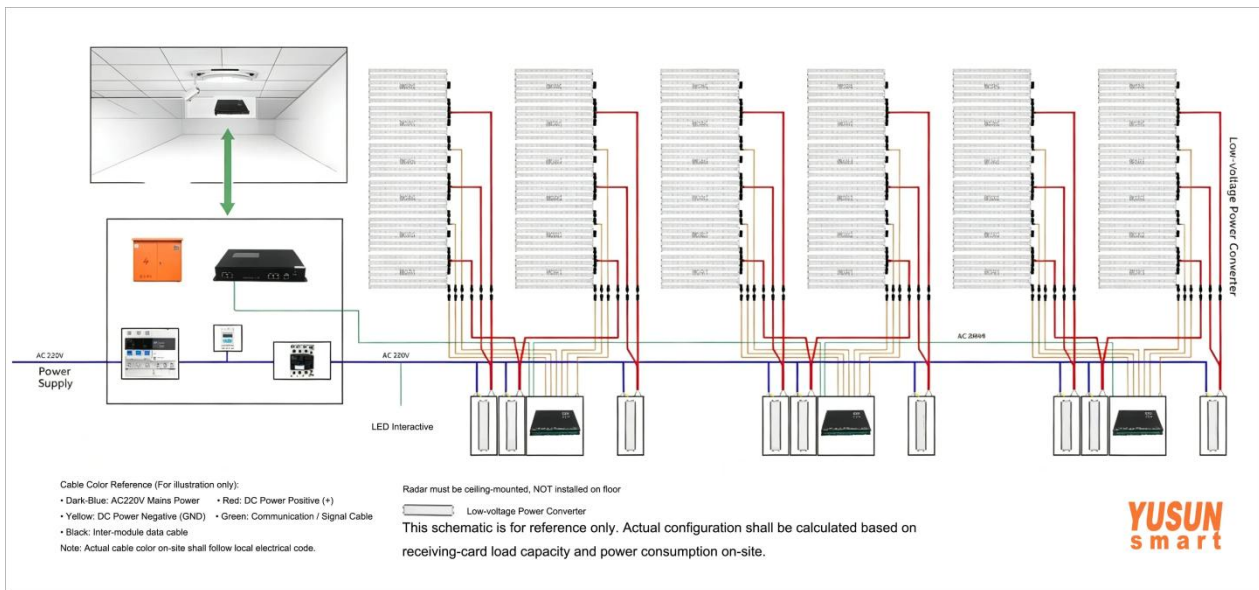
YUSUN SMART provides wholesale OEM & ODM radar interactive LED floor tile screen. We supply technical drawings and remote debugging guidance for global commercial projects.

## DRAWINGS

Working Principle & Installation Notice



## Wiring Diagram External Radar Interactive LED Floor tile



## 03 PART THREE

# RADAR INTERACTIVE LED FLOOR TILE SCREEN: COMPLETE TECHNICAL INTRODUCTION

## 1. Overview of Radar Interactive LED Floor Tile Screen Technology

The radar interactive LED floor tile screen is a new-generation immersive interactive display solution independently optimized by YUSUN SMART, completely different from traditional pressure-sensing floor tile screens. This product adopts external ceiling-mounted TOF-LiDAR radar sensing technology, abandoning the built-in sensor design inside the LED cabinet. As a professional **manufacturer** and **supplier**, we focus on solving the core pain points of high failure rate, difficult maintenance and short service life of traditional interactive floor screens for global commercial projects. The whole system realizes non-contact real-time human body induction and dynamic visual feedback, which is more suitable for long-term high-frequency commercial operation scenarios and supports bulk **wholesale** and project **custom** solutions. Clients can contact us for accurate project **quote** and technical support.

## 2. Core Working Principle of TOF Radar Interactive Technology

The core technical logic of the radar interactive LED floor tile screen relies on high-precision TOF-LiDAR radar detection. The ceiling-mounted radar device continuously emits microwave detection signals to cover the entire LED floor tile laying area. When pedestrians or moving objects enter the sensing range, the radar instantly captures position coordinates and movement tracks, and transmits real-time data to the interactive control host. After rapid algorithm calculation, the system synchronously triggers dynamic visual effects such as water ripples, particle diffusion, pattern follow-up and interactive switching on the LED floor tile screen.

Compared with traditional pressure sensing and infrared sensing technologies, the external radar solution has no physical contact induction, no wear and tear, and no induction dead zone caused by cabinet aging. The whole induction process is stable and low-latency, supporting multi-person simultaneous interaction without lag, which greatly improves the overall interactive experience and equipment stability of commercial projects.

## 3. Structural & Installation Technical Advantages

The radar interactive LED floor tile screen adopts an integrated cabinet structural design. All adjustable support feet are pre-installed at the bottom of the cabinet as standard accessories, not separate auxiliary brackets. This integrated structure avoids assembly errors and structural instability caused by split accessories, and simplifies on-site construction procedures. Three standardized installation technologies are available to adapt to different on-site conditions: direct ground mounting, track mounting and welded steel structure mounting.

For direct ground installation, the hardened ground is the basic condition to ensure stable operation of the equipment, and all ground leveling and civil engineering transformation shall be completed by the on-site contractor. For special projects requiring steel structure fixing, YUSUN SMART can provide standardized steel structure design drawings for customer reference, realizing one-stop **custom** technical service for global partners. In addition, the modular quick-disassembly structure greatly simplifies daily cleaning and later maintenance, effectively reducing project operation and maintenance costs.

## 4. Core Technical Features & Performance Standards

In terms of display performance, the radar interactive LED floor tile screen has high brightness, high refresh rate and wide viewing angle, with realistic color restoration and flicker-free switching, ensuring clear and delicate display effects in various commercial lighting environments. The cabinet adopts high-load-bearing and anti-slip wear-resistant design, which can adapt to long-term pedestrian trampling and meet the load-bearing requirements of large commercial venues.

In terms of system stability, the separated design of external radar sensing and display cabinet completely isolates sensing components from the working environment of LED screen, avoiding sensor damage caused by screen heating, humidity and dust. The whole system has passed FCC, CE EMC and RoHS international certifications, meeting the export standards of mainstream global markets. As an original factory, we support **wholesale** bulk orders and personalized **custom** modification, providing stable quality guarantee and complete after-sales technical guidance for global integrators.

## 5. Commercial Application Technical Adaptability

With its stable interactive technology, durable structural performance and flexible installation solutions, the radar interactive LED floor tile screen is widely applicable to multiple commercial scenarios. It is the preferred interactive display equipment for museum immersive exhibitions, shopping mall interactive experience areas, exhibition hall display projects, stage performances and event rental projects. Its non-contact induction and low-failure rate characteristics are especially suitable for high-flow and long-operation commercial scenarios, effectively solving the frequent failure and high maintenance cost pain points of traditional pressure-sensing floor screens.

## 6. Factory Technical Support & Custom Service

YUSUN SMART is a professional **manufacturer** and **supplier** focusing on commercial interactive display equipment. While providing standard radar interactive LED floor tile screen products, we support full-process OEM/ODM **custom** services, including cabinet logo customization, display effect adjustment, project-specific technical drawing design and scheme optimization. We provide complete pre-sale technical evaluation, in-sale installation guidance and after-sale fault maintenance services. Global customers can send project parameters to our official email to obtain a detailed project **quote** and targeted technical solution.

## 7. Glass Surface & Relationship With Mirror-Surface Technology

The surface of interactive LED floor tile screen adopts tempered glass, which is an extension of mirror-surface product technology. High-strength tempered glass provides excellent load-bearing performance for pedestrian traffic, meanwhile delivering clear display output. Combined with high-density LED beads and TOF-LiDAR radar induction, it balances mechanical durability, display quality and interactive experience for commercial projects.

## FAQ

**Q1: Why is radar interactive technology better than traditional pressure sensing?**

A1: Radar interactive LED floor tile screen adopts external TOF-LiDAR non-contact induction, no internal sensor wear, lower failure rate, longer service life and more stable interaction, avoiding frequent maintenance problems of pressure-sensing products.

**Q2: What installation technologies does the radar interactive floor screen support?**

A2: It supports three installation methods: direct ground mounting, track mounting and welded steel structure mounting, adapting to different site ground conditions and project requirements.

**Q3: Does the product support wholesale and custom services?**

A3: Yes. As an original factory, we support global **wholesale** bulk orders and personalized **custom** solutions, providing professional technical drawings and project scheme design.

**Q4: What certifications does the radar interactive LED floor tile screen have?**

A4: The product has passed FCC, CE EMC and RoHS international certifications, fully meeting global export and commercial use standards.

## 04 PART FOUR

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### RADAR VS CAPACITIVE INTERACTIVE LED FLOOR TILE SCREEN: KEY DIFFERENCES

Interactive LED floor tile screens are widely used in shopping malls, exhibition halls, museums, and stage event projects. Currently, two mainstream interactive solutions dominate the commercial market: **overhead TOF radar induction** and **built-in capacitive induction**. Although both realize human-screen interactive lighting effects, their working principles, structural designs, stability, service life, and later maintenance costs are completely different. Choosing the right interactive solution directly determines project stability and long-term operating benefits.

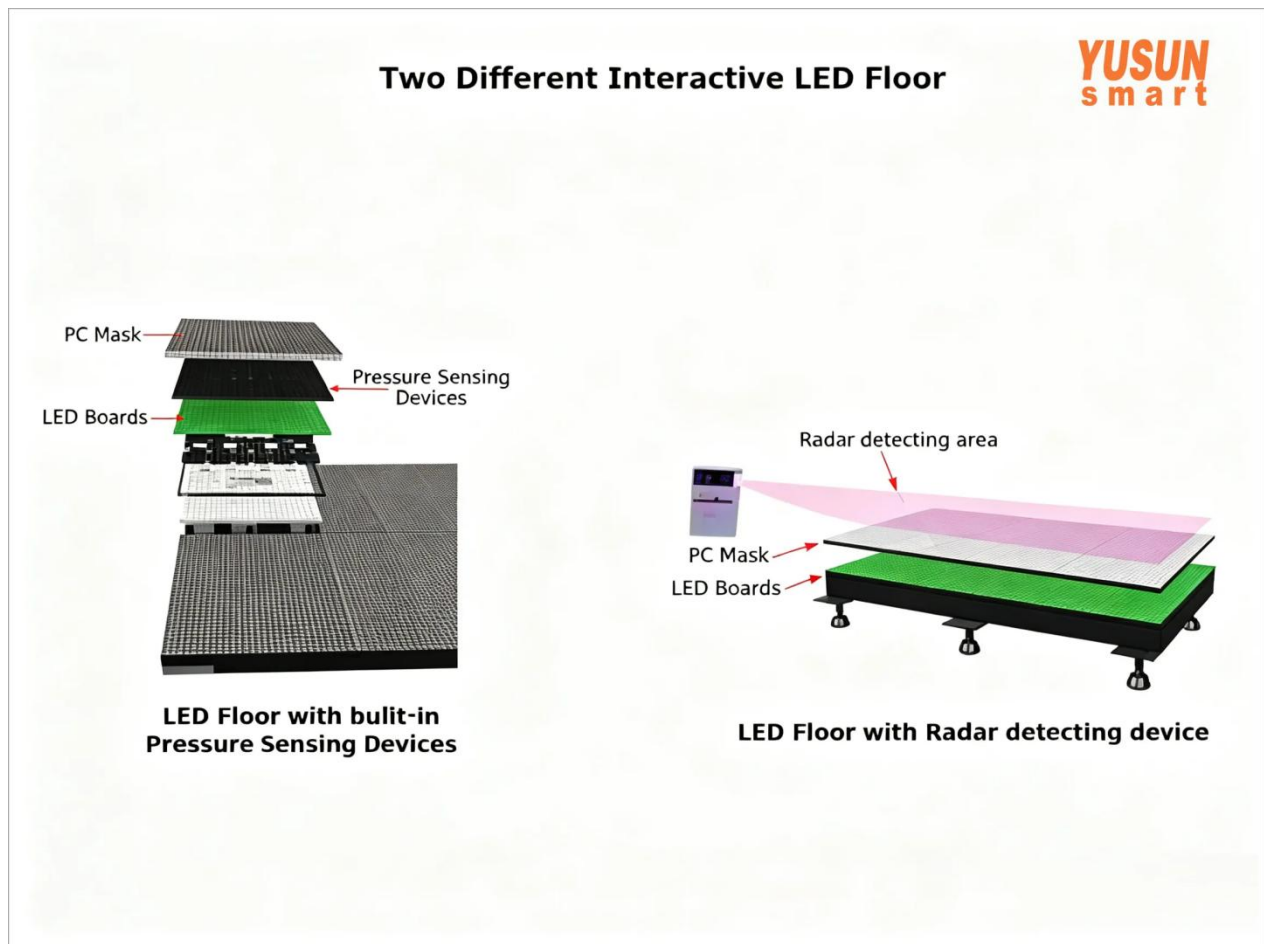


# Working Principle Differences

## Overhead Radar Interactive Solution

The radar interactive system adopts **separated induction and display structure**. No sensors, induction chips or sensitive components are built inside the LED floor cabinet. The TOF LiDAR radar is installed on the ceiling above the screen area, scanning the ground in real time through high-frequency radar waves. When pedestrians enter the induction area, the radar captures position tracks and transmits signals to the control system to trigger dynamic LED effects.

The entire floor screen only undertakes display and load-bearing tasks, realizing **non-contact human-body induction** with a maximum scanning radius of 10 meters and stable multi-person simultaneous recognition.



## Built-in Capacitive Interactive Solution

The capacitive interactive floor tile screen integrates **capacitive induction sensors inside each cabinet module**. It relies on the human body's electrostatic induction to detect foot contact and

position changes. When pedestrians step on the screen surface, the capacitor value changes instantly, and the system feeds back signals to trigger interactive effects.

Since the sensors are embedded inside the screen body, the induction components work under long-term pressure, heat and dust erosion, which leads to natural aging and rising failure rate over time.

## Core Performance & Structural Comparison Table

| Comparison Item          | Overhead Radar Type                                 | Capacitive Induction Type                          |
|--------------------------|-----------------------------------------------------|----------------------------------------------------|
| Induction Structure      | External ceiling-mounted radar, no built-in sensors | Built-in capacitive sensors inside each tile       |
| Working Mode             | Non-contact real-time scanning                      | Contact foot stepping induction                    |
| Response Delay           | < 150ms ultra-low latency                           | 150–300ms regular delay                            |
| Multi-person Recognition | Support unlimited multi-person tracking             | Limited recognition range, easy cross-interference |
| Cabinet Failure Rate     | Extremely low (no vulnerable internal sensors)      | Higher (sensor aging & damage)                     |
| Maintenance Difficulty   | Simple, screen body maintenance-free                | Complex, requires sensor replacement               |
| Service Life Stability   | Long-term stable operation                          | Performance declines after long trampling          |
| Affected Factors         | Slightly affected by strong ambient light           | Affected by temperature, humidity and dust         |

## Advantages & Disadvantages Analysis

### Overhead Radar Interactive Floor Screen

**Advantages:** The biggest advantage is **separation of sensing and display**. The cabinet has no vulnerable induction parts, fundamentally avoiding sensor damage caused by long-term pedestrian trampling, heat accumulation and dust. It supports wide-range multi-person

interaction with ultra-low latency, stable effect and almost zero later maintenance cost. The whole machine maintains consistent performance for long-term commercial operation.

**Limitations:** Ceiling installation space is required for radar equipment; strong highlight and complex reflection environments will slightly interfere with radar scanning accuracy.

## Capacitive Interactive Floor Screen

**Advantages:** Independent of ceiling equipment, no need for overhead wiring and installation. The overall project construction process is simple for temporary short-term use.

**Limitations:** Built-in capacitive sensors are wearable and vulnerable parts. Long-term frequent trampling will cause sensor aging, drift and failure. Once the induction module is damaged, the whole cabinet needs maintenance or replacement, resulting in high after-sales cost and unstable later interactive effect.

## Applicable Project Scenarios

### Choose Radar Interactive Solution For:

- Long-term fixed commercial projects: shopping malls, brand exhibition halls, museums, art galleries
- High pedestrian flow and long operating hours scenarios
- Projects requiring stable multi-person interactive effects and low maintenance rate

### Choose Capacitive Interactive Solution For:

- Short-term temporary events, roadshows and temporary stage displays
- No ceiling installation conditions and one-time use projects
- Low-budget and short-cycle display demands

## Conclusion: Which Solution Is Better?

For **commercial fixed installation and long-term operation projects**, overhead radar interactive LED floor tile screen is the more reliable and cost-effective solution. It solves the core pain points of traditional capacitive screens such as easy aging, high failure rate and difficult maintenance. For temporary event projects with low durability requirements, the capacitive solution can meet basic interactive display needs with simpler construction.

***Disclaimer: All technical comparisons and project suggestions are for reference only. YUSUN SMART reserves the right to update product solutions and technical standards without prior notice according to industry iteration and project requirements.***

|                |                                                        |
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| Factory Visit  | Welcome · Please contact us to schedule an appointment |

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