

## 1. Solafact 5300

### Key Strengths:

- **Detection Technology:** Utilizes an **active Fourier infrared system**, requiring a through-beam light source. This makes it highly accurate in controlled and stable environments.
  - **Detection Sensitivity:** Can detect gases at **ppb levels**, ranging from 0.1 to 10 ppm, suitable for detecting trace amounts of hazardous substances.
  - **Response Time:** **<3 seconds** for initial response and **<30 seconds** for qualitative and quantitative analysis.
  - **Size and Portability:** Compact components:
    - Host: 25 kg
    - Light source: 10 kg
    - Control box: 5 kg
  - **Monitoring Range:** Effective up to **100 meters**, making it suitable for smaller-scale monitoring such as shopping malls, airports, or industrial plants.
  - **Applications:** Excellent for real-time, continuous environmental monitoring with customizable features to meet diverse user needs.
  - **Limitations:** Requires an external light source and has a limited monitoring range compared to the other models.
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## 2. Solafact 5400

### Key Strengths:

- **Passive Detection:** Operates without an external light source, leveraging the natural infrared emissions from gases. This makes it effective even in **dark or low-visibility environments**.
- **Long-Range Monitoring:** Capable of detecting gases from **up to 5 kilometers**, making it ideal for large-scale and remote monitoring.
- **Advanced Imaging:** Includes **360° horizontal rotation** and **±60° pitch scanning**, allowing comprehensive coverage of the monitored area.
- **Detection Sensitivity:** Capable of **ppb level sensitivity**, suitable for highly toxic gases.
- **Dynamic Distribution Analysis:** Tracks gas diffusion patterns and trends in real-time with visual outputs, enabling faster decision-making in emergency scenarios.
- **Robust Build:**
  - **Explosion-proof rating:** Ex db IIBT4 Gb.
  - **Vibration resistance:** Compatible with vehicle-mounted, ship-mounted, or airborne deployments.
- **Applications:** Emergency response, anti-terrorism, and industrial safety where large monitoring coverage and mobility are required.

**Limitations:**

- Slightly bulkier than the 5300a, with a **host weight of 28 kg** and **gimbal weight of 22 kg**.
  - More suited for expansive outdoor environments rather than small-scale indoor monitoring.
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### 3. Solafact 5500

**Key Strengths:**

- **Passive Detection:** Like the 5400a, it does not require an external light source, offering flexibility for **dark and rugged environments**.
- **Versatile Monitoring Radius:** Covers **3+ kilometers** with **360° horizontal and ±90° pitch scanning**, enabling vertical coverage superior to the 5400a.
- **Robust and Military-Grade:**
  - Withstands harsh conditions, including vehicle and UAV vibrations.
  - Includes a **2x military-grade off-axis telescope** for precise measurements.
  - Equipped with **shock-absorbing brackets** for stable operations in dynamic environments.
- **Detection Sensitivity:** Designed to detect gases with a broader sensitivity range, from **50 ppm·m to percentage levels**, useful for both trace and bulk gas detection.
- **High Durability:**
  - Operational in temperatures ranging from **-20°C to 55°C**.
  - Extended storage temperature range (**-40°C to 65°C**) compared to the other models.
  - Detector life exceeds **12,000 hours**.

**Limitations:**

- Weighs more than the 5400a (Host: **30 kg**, shock-absorbing bracket: 10 kg).
  - Lower maximum detection range compared to the 5400a.
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### Detailed Comparison Table

Feature	SOLAFACT 5300	SOLAFACT 5400	SOLAFACT 5500
Detection Type	Active FTIR	Passive FTIR	Passive FTIR
Monitoring Range	≥100 m	≥5 km	≥3 km
Scanning Capabilities	N/A	360° horizontal, ±60° pitch	360° horizontal, ±90° pitch
Gas Sensitivity	ppb level (0.1–10 ppm)	ppb level	ppm to percentage levels

Feature	SOLAFACT 5300	SOLAFACT 5400	SOLAFACT 5500
Applications	Indoor and controlled environments	Large-scale, outdoor applications	Rugged, dynamic environments
Weight	Host: 25 kg	Host: 28 kg, Gimbal: 22 kg	Host: 30 kg, Bracket: 10 kg
Key Features	Short-range, customizable monitoring	Long-range, imaging and diffusion	Durable, versatile for harsh areas
Operating Temperature	-10°C to 50°C	-20°C to 50°C	-20°C to 55°C

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### Recommendation Based on Usage

- **Indoor Environmental Monitoring:** Solafact 5300a is the most suitable for small, controlled spaces requiring precise and immediate results.
- **Outdoor Long-Range Monitoring:** Solafact 5400a offers superior range and imaging capabilities for monitoring vast areas, such as industrial zones or security events.
- **Rugged and Dynamic Environments:** Solafact 5500a is ideal for tough conditions and mobile applications, especially for military, UAV, or vehicle-mounted deployments.