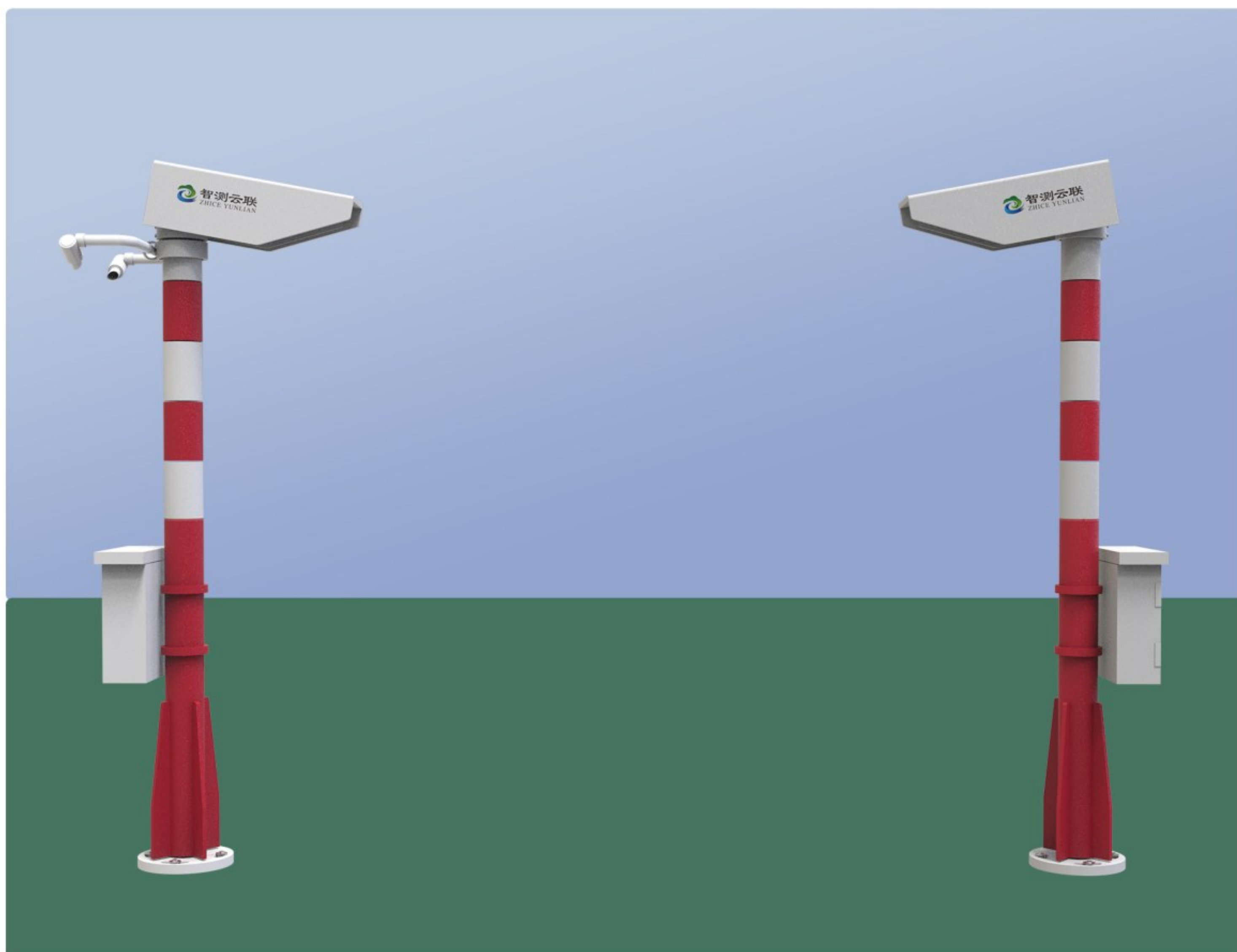




IMAGING ATMOSPHERIC RADIOMETER



Introduction

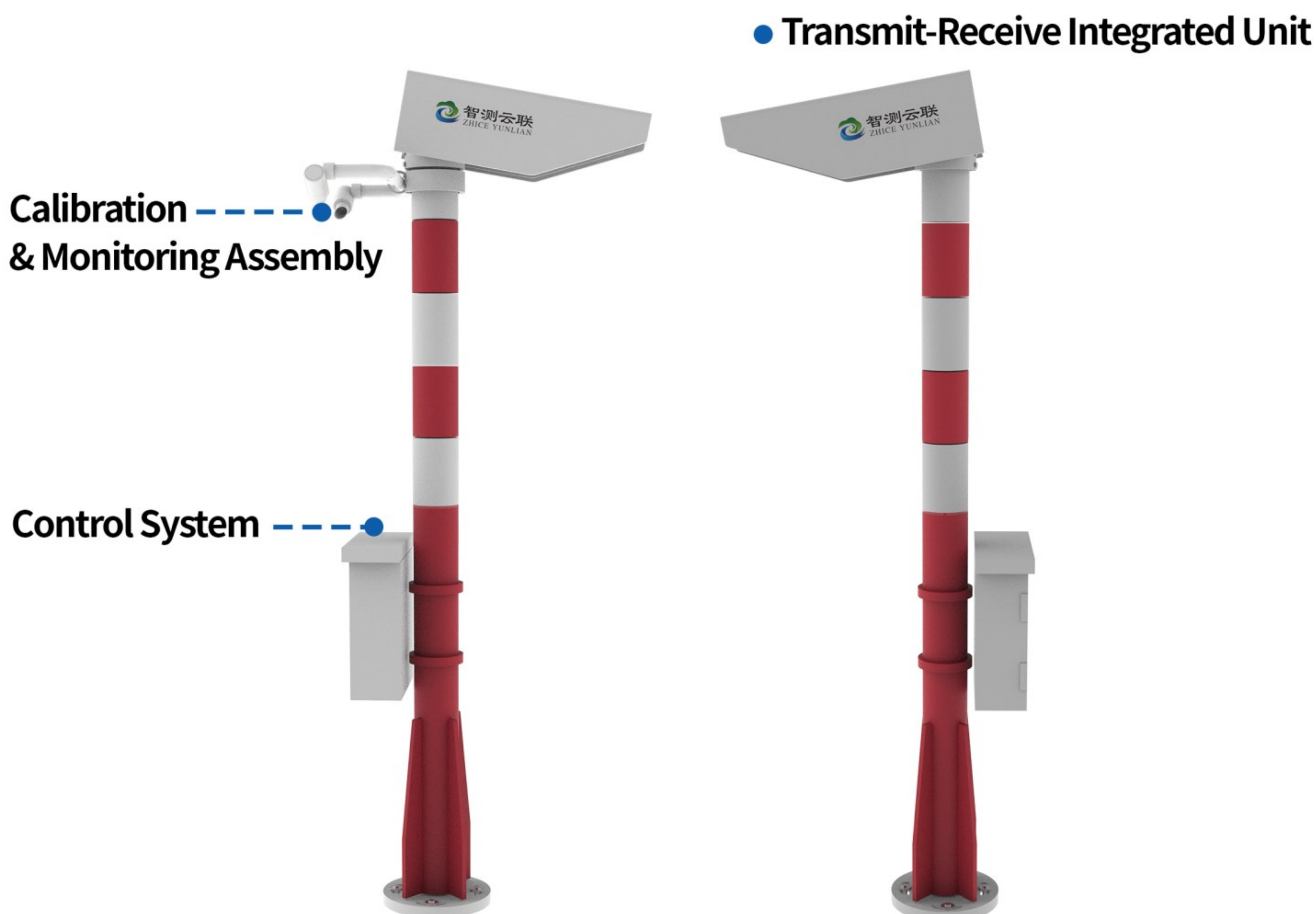
The Zhice Yunlian Imaging Atmospheric Radiometer emits collimated light beams from an LED with a color temperature of 2700K. It measures the atmospheric transmittance intensity of the light beam after transmission over a baseline length. Through photoelectric conversion and signal acquisition, it calculates the Meteorological Optical Range (MOR) fully complying with standard definitions.

In addition, the device integrates an integrated forward-scatter background luminance visibility sensor, which can automatically measure corresponding data information.

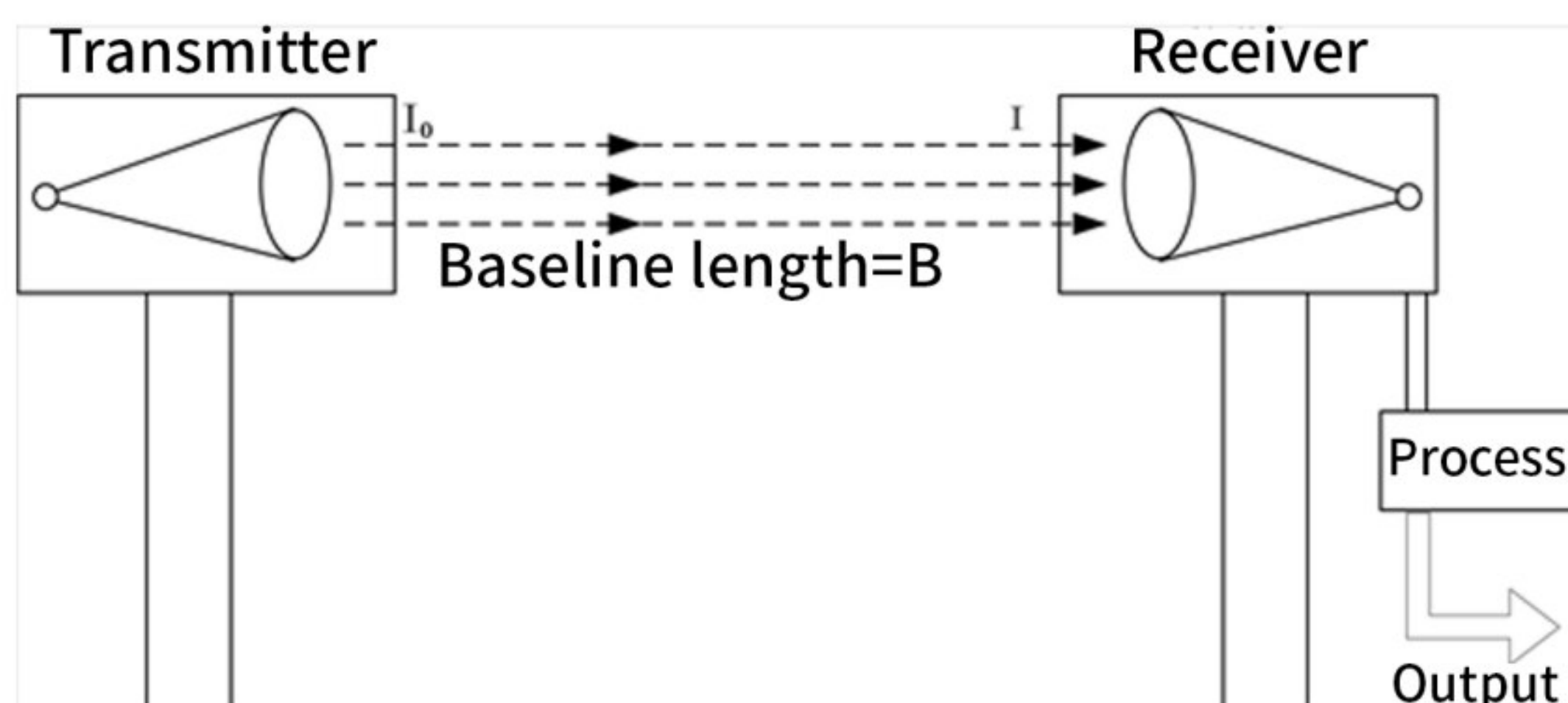
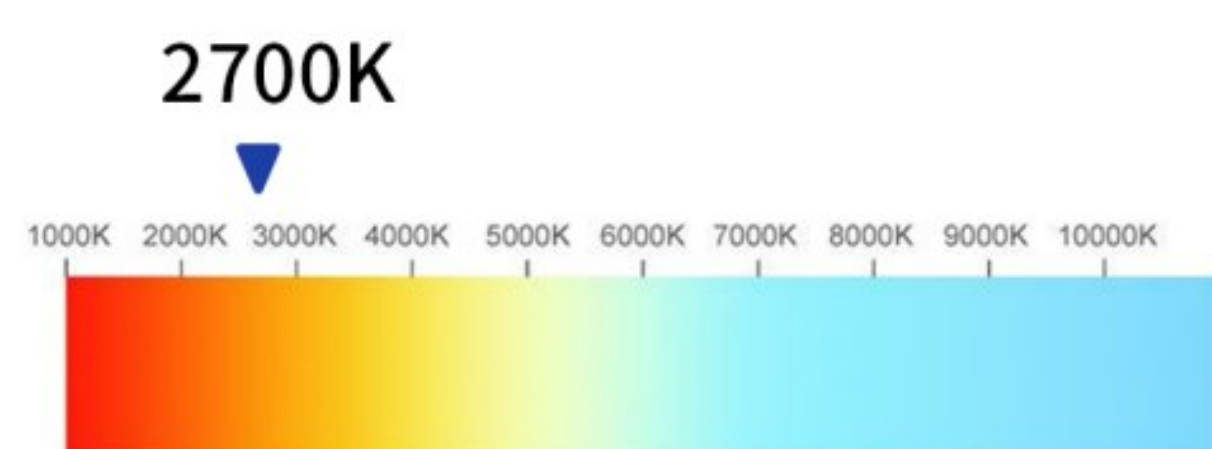
The supporting software automatically analyzes and outputs Runway Visibility (VIS) and Runway Visual Range (RVR).



Structure



Principle



A 2700K color-temperature LED emits collimated light beams. After passing through the atmospheric baseline of length B, the receiver captures attenuated light intensity, and the processing unit calculates MOR, VIS and RVR from the received signal for data output.





 Specifications

Category	Parameter Item	Specification Details
Physical Specifications	Single Unit Dimension (L×W×H)	(480±15) mm × (260±15) mm × (320±15) mm
	Single Unit Weight	≤ 35 kg
Hardware Parameters	Light Source	White LED
	Color Temperature	2700K
Measurement Performance	Detection Baseline Length	30m / 50m
	MOR Measuring Range	50–30000 m
	MOR Measurement Error	±50m (50m ≤ MOR < 600m) ±10% (600m ≤ MOR ≤ 10000m) ±20% (MOR > 10000m)
	RVR Measuring Range	50–2000 m
	RVR Measurement Error	±10m (50m ≤ RVR ≤ 400m) ±25m (400m < RVR ≤ 800m) ±10% (800m < RVR ≤ 2000m)
	Background Luminance Measuring Range	2–20000 cd/m²
Electrical Performance	Power Supply	220V±10%, 50Hz
	Power Consumption	≤ 400W
	Communication Interface	RS485
Environmental Adaptability	Operating Environment	-45~55°C, 0–100% RH
	Storage Environment	-50~60°C, 0–100% RH
	Mean Time Between Failures (MTBF)	≥ 2500 h
	Mean Time To Repair (MTTR)	≤ 0.5 h

 Precautions

Data Interpretation: MOR and RVR measurement errors are defined in segments; absolute error applies to low visibility scenarios, while relative error applies to high visibility, reference shall be made based on actual scenes.

Environmental Adaptation: The operating temperature and humidity range covers condensation and icing scenarios. Ensure the installation position is well ventilated to avoid airflow blockage for the self-cleaning window.

Communication Configuration: The RS485 interface shall comply with industrial wiring standards, with a maximum transmission distance of 1200 meters.



Features

Automatic Visibility Calibration & Measurement

Delivers accurate readings under medium/low visibility; under high visibility, the forward-scatter sensor auto-calibrates the system for long-term stability without manual intervention.

Automatic Light Spot Alignment

The CMOS sensor monitors the light spot in real time. If drift exceeds the threshold, a servo mechanism adjusts the optical path to eliminate measurement errors.

Automatic Window Contamination Compensation

Transmit and receive units operate alternately, allowing the system to detect and calculate contamination on both windows and generate compensation parameters to correct measurement bias.

Constant Temperature Control

Built-in heating and cooling maintain all measurement modules within a stable temperature range, ensuring performance under varying ambient conditions.

Window Self-Cleaning

A built-in fan runs continuously after power-on, creating an air curtain to block dust and moisture. Minor contaminants are cleared to maintain transmittance and reduce manual cleaning.

Internal Parameter Auto-Detection

Monitors key parameters such as power supply, module current, temperature, and optical path status in real time, triggering alarms for abnormalities to reduce downtime.

Data Storage & Retrieval

Built-in storage records at least 240 hours of measurement and operation data. External devices can retrieve data via the communication interface without disassembly.