

Portable Multispectral Imaging System

DL2000

Features

- Integrated UV, IR, and visible light fusion
- Image fusion from different sensors
- Sunlight interference resistance
- Compact and lightweight
- Long-range telephoto imaging
- Ergonomic design for easy operation
- Multi-functional capabilities through sensor integration
- High reliability and stability
- High resolution with threshold alarms
- Precise localization of discharge and temperature anomalies

Description

The DL2000 Portable Multispectral Imaging System is an advanced detection device integrating ultraviolet imaging technology with infrared thermography. This system can capture and analyze the ultraviolet signals produced during electrical discharge, allowing for precise detection, fault localization, and thorough evaluation of the discharge conditions in electrical equipment. Additionally, the infrared detector captures the infrared radiation energy distribution of the target object, accurately representing the surface temperature distribution field.

The DL2000 Portable Multispectral Imaging System finds broad applications in the electric industry, rail transportation maintenance, and industrial manufacturing processes. It assists personnel in rapidly identifying fault points, assessing the severity of electrical discharge, predicting equipment service life, and formulating more effective maintenance plans.

Application

The application scenarios for ultraviolet and infrared imaging devices are extremely broad, encompassing almost all fields that require discharge detection, maintenance, and monitoring of electrical equipment.

- Transmission line inspection
- Electrical equipment inspection
- High-voltage substations
- High-voltage research institutes
- High-voltage electrical component inspection
- Condition monitoring of power equipment
- Fault diagnosis and prevention

**Tri-band fusion****Multi-frame counting****Threshold alarms****Secondary analysis****Automated reporting**



1. Principle

The DL2000 Multispectral Imaging System partially utilizes an optical system to split visible light and ultraviolet light, allowing the ultraviolet detector to capture the UV photons generated during corona discharge. These UV photons are converted into electrical signals, processed, and ultimately displayed as a visible light-ultraviolet composite image, enabling precise detection of the discharge location and intensity.

The infrared imaging component uses an infrared detector to receive the infrared radiation energy distribution from the target, converting it into electrical signals to generate an infrared thermographic image. This thermographic image corresponds to the thermal distribution on the surface of the object, enabling real-time monitoring of surface temperature changes, which is crucial for early fault detection in power supply equipment.

The visible light detection component identifies defects such as missing or damaged image features. These three technologies—UV, IR, and visible light—complement and validate each other, allowing for integrated multi-technology diagnostics. This approach enhances diagnostic accuracy and detection efficiency while reducing false alarm and missed detection rates.

2. Characteristics

Tri-band Fusion

Six modes of fusion, including UV (ultraviolet), IR (infrared), VIS (visible light), UV+VIS, IR+VIS, and UV+IR+VIS, providing clear images and video streams without trailing.

Multi-frame Counting

Five photon counting frames are available, enabling multi-frame counting and quantitative analysis of different corona discharge regions on the same equipment.

Threshold Alarms

Set different photon count and temperature anomaly alarm thresholds based on the testing environment, ensuring that defects like discharge and temperature anomalies are detected during on-site testing.

Secondary Analysis

The infrared function supports point, line, and area temperature measurement, with settings for emissivity, pseudo-color, and environmental parameters. RAW images can undergo secondary analysis via software.

3. Parameter

Ultraviolet Channel	
Wavelength Range	240~280nm
Discharge Sensitivity	1Pc@10m
RIV Sensitivity	3.6 dBμV(RIV)@1MHz@10m
UV Sensitivity	2.0×10 ⁻⁹ watt/cm ²
Focus	Autofocus 1.5m to infinity
Field of View	10° × 8°
Infrared Channel	
Wavelength Range	8-14μm
Infrared Pixels	640 × 480
Temperature Accuracy	±2°C/±2%
Focus Method	Automatic/Manual
Temperature Range	-20°C to +600°C
Field of View	12.4° × 9.9°
Visible Light Channel	
Focus	Autofocus 1.5m to infinity
Sensitivity	0.1 Lux
Optical Zoom	10x Optical Zoom
Digital Zoom	12x Digital Zoom
Display	
Image Display	UV, IR, Visible Light, Fusion Image, 6 modes
Overlay Accuracy	≤ 1mrad
Screen Type	5.7-inch LCD screen
Screen Brightness	800cd/m ²
Resolution	720 × 576
Corona Colors	Red, White, Blue, Yellow, Cyan, Green, Magenta
Screen Information	Battery, Gain, Photon Count, Temperature, Date, Function, Focus Mode, Alarm Information
Storage and Playback	

Photo/Video Capture	One-touch photo and video recording
Playback Function	Supports image and video playback
Image Format	JPG, RAW
Video Format	MP4
Physical Characteristics	
Weight	2.8 kg
Dimensions	22.9 cm × 13.7 cm × 10.5 cm
Power Consumption	DC14.8V, 18.5W
Operating Temperature	-20°C to +55°C
Protection Level	IP54
Battery	Lithium Battery ≥2h
Standard Configuration	Main unit / 64G memory card / Card reader / Lens cover / 4 batteries / Adapter / Charging dock / Hand strap / Carrying case / Tripod / Software / Manual