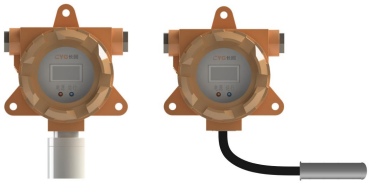
PCM-3110 Cable Channel Environment Integrated Monitoring Device



Introduction

Toxic gas monitoring sensors are installed in the tunnel to detect harmful gases including carbon monoxide, hydrogen sulfide, oxygen, methane, temperature and humidity, and water level. When the concentration of carbon monoxide, hydrogen sulfide, or methane exceeds the standard, the ventilation fan is activated. Temperature and humidity transmitters are distributed throughout the tunnel to monitor environmental conditions. Water level detectors in the cable trench monitor for water ingress. The collected data is centrally processed and uploaded to the backend system, while alarm events are generated to notify staff.

Functional characteristics

- Monitoring of environmental parameters in tunnel
- Real-time reflection of tunnel environment
- Automatic Alarm of Tunnel Environment Parameter Exceeding Standard
- Multiple alarm and reminder methods
- integrated control of localizing device
- Device with millisecond-level response time
- Powerful self-diagnosis and self-healing capabilities
- unified management of downstream devices
- Supports multiple heterogeneous sensor devices to break down information silos
- Modular design with on-site functional customization support

Application scenarios

Technical parameter

Monitoring parameter	
Product material	aluminium die casting
Way to install	Wall-mounted/Bracket installation
Communication mode	4G communication/fiber ring network
Read analogue input	8 channels
Digital quantity input	4 channels
Digital quantity output	4 channels
Internet access	4
N. A	2
RS485	4
Normal working Temperature	-15℃~45℃
Working temperature limit	-25℃~70℃
Relative humidity	5%RH~95%RH
CO signal identification	Error ≤±3ppm
H2S signal recognition	Error ≤±3ppm
O2 signal recognition	Error ≤±0.5VOL
CH4 signal recognition	Error ≤±3LEL
Temperature and humidity signal recognition	Error ≤±1°C, Error ≤±3% RH
CO range ability	0-1000ppm
H2S measurement range	00-100ppm
O2 range	0-30%VOL
CH4 range	0-100%LEL
Levels of protection	IP68/IP67/IP66 (customizable)

PCM-3121 On-line Monitoring Device for Cable Grounding Current

Device Overview

The alternating magnetic field generated by the working current of the high-voltage cable will induce an electromotive force on the metal sheath. If an abnormality occurs in the sheath grounding system, a circulating current will be formed between the three-phase metal sheaths and the ground, resulting in additional losses, which will affect the current-carrying capacity of the cable. In severe cases, the cable may even overheat and burn out, greatly reducing the actual service life of the high-voltage power cable.

The on-line monitoring device for cable grounding current is suitable for power cables of all voltage levels. Through the data acquisition hosts installed in a distributed manner at cable tunnels, cable maintenance manholes, cable terminals and other locations, it can real-time monitor the magnitude and variation of the circulating current in the cross-connected sections of the metal outer sheath of the operating high-voltage cable. This device realizes the on-line monitoring of multi-point grounding faults of the metal sheath of high-voltage cables, which can effectively save manpower, improve work efficiency, and detect potential faults at an early stage.

Function and Features

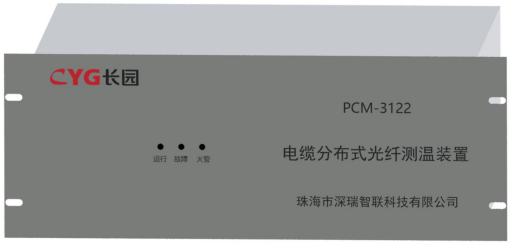
- Supports remote monitoring and sheath induced voltage monitoring function
- Gas sensor access function
- Temperature monitoring function
- 4G wireless communication function
- Supports transient recording waveform output to provide early warning of equipment status
- Supports remote monitoring and real-time viewing of cable operation status, enabling unattended operation
- Records and analyzes grounding current operation data to provide a decision-making basis for management personnel
- Monitors cable operation status in real time, detects potential faults, and avoids greater losses caused by fault expansion

Application Scenarios

Technical Parameters

1	**Signal Acquisition Unit**	
1.1	Sheath Current Monitoring Channels	≥4 Channels
1.2	Main Cable Current Monitoring Channels	≥1 Channels
1.3	Data Collection and Upload Cycle	Configurable, 30 min by default
1.4	Protection Level	IP68(Manhole Installation) ≥IP66(Non-Manhole Installation)
1.5	Power Supply Mode	CT Inductive Power Taking / Solar Power Supply
1.6	Insulation Impedance	≥100MΩ
1.7	Communication Mode	Upward Communication: All-Network 4G Wireless
		Downward Communication: RS485 / Low-Power Wireless Sensor Network
1.8	Water Level Monitoring	0-5 metres
1.9	Temperature Sensor	-40~125℃，4 Channels
1.1	Anti-theft and Anti-cutting Sensor	-16~+16g，4 Channels
1.11	Ambient Temperature	-40℃～70℃
1.12	Ambient Humidity	0-100%RH
2	**Sheath Current CT Parameters**	
2.1	Sampling Range	0～300A
2.2	Sampling Accuracy	±0.5%+0.5A
2.3	Sampling Resolution	0.1A
2.4	Installation Method	Clamp-type Open Design
2.5	Protection Level	IP68
3	**Main Cable Current CT Parameters**	
3.1	Sampling Range	0～1500A
3.2	Sampling Accuracy	±0.5%+0.5A
3.3	Sampling Resolution	1A
3.4	Installation Method	Clamp-type Open Design
3.5	Applicable Cable Voltage Level	35~500kV
3.6	Protection Level	IP68

PCM-3122 Cable Distributed Optical Fiber Temperature Measuring Device



Introduction

The distributed optical fiber temperature measurement system for cables utilizes Optical Time Domain Reflectometry (OTDR) technology and Raman scattering effects to measure temperature variations along the fiber. Integrating advanced technologies such as optical, electrical, mechanical, computer, and weak signal detection, it enables real-time, large-scale spatial temperature distribution measurement. Key advantages include extended measurement range, no measurement blind spots, real-time monitoring, precise positioning, and timely alerts.

Functional characteristics

- Distributed real-time measurement, covering 100% of the detection area, accurately locating the fire location;
- The measuring distance is long and the measuring information is rich;
- The measurement accuracy is high and the response speed is fast.
- High reliability and low false alarm rate;
- The alarm method is flexible, and multi-level alarm with differential temperature can be realized to ensure reliable alarm in the early stage of fire.
- The detection optical cable is not only the signal transmission carrier, but also the temperature sensing element, which is easy to install.
- Optical signal measurement, intrinsically safe, resistant to battery interference, suitable for long-term operation in flammable and explosive environments;
- The detection optical cable has long life and low maintenance cost in later period.

Technical parameter

Monitoring parameter	
Sensor fibre	GI62.5/125，GI50/125
Measured range	0~16km
Temperature measurement time	5s
Temperature Resolution	0.4m/0.8m
Sample space	1-2m
Spatial resolution	1-2m
Positioning accuracy	<1m
Measurement channel	1~16 (optional)
Fibre optic splice	FC/APC, E2000/APC (optional)
CI	Ethernet、USB、RS232
Going	-10℃~50℃,0~95%R.H. (no condensation)
Working power supply	DC24V, AC220V (optional)
Temperature measuring fiber parameters	
Fiber mode	GI62.5/125 and GI50/125 multimode fiber
Number of threads	1-2 cores
External diameter	3mm
Outer sheath material	Low Smoke, Halogen-Free, Flame Retardant Thermoplastic Material
Tensile strength	≥600N during operation; ≥1000N during installation
Compression strength	The working force should not be less than 300N/10cm The laying force shall not be less than 1000N/10cm.
Permissible radius of curvature	A deformation of ~0.3mm is induced by 300 N/cm.
Temperature range	Long-term: -20°C to 85°C Short-term (60 min): -20°C to 120°C
Type of protective cover	Inbuilt stainless steel threaded armored sheath

Application scenarios

PCM-3221 Dual Light Fusion Thermal Imaging Monitoring Device

Introduction

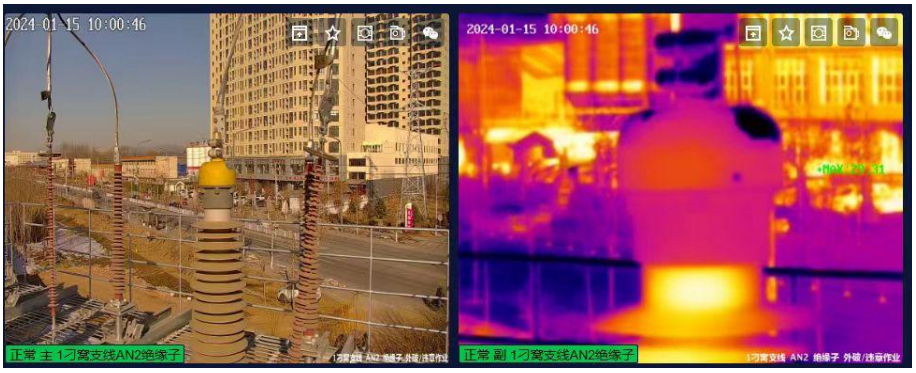
The cable tunnel dual-light fusion thermal imaging online monitoring device is a high-precision temperature measurement tool for short distances. It utilizes a vanadium oxide (V2O5) non-cooled infrared detector paired with a starlight-grade visible camera, and through dual-light fusion technology, it delivers superior local thermal imaging details.

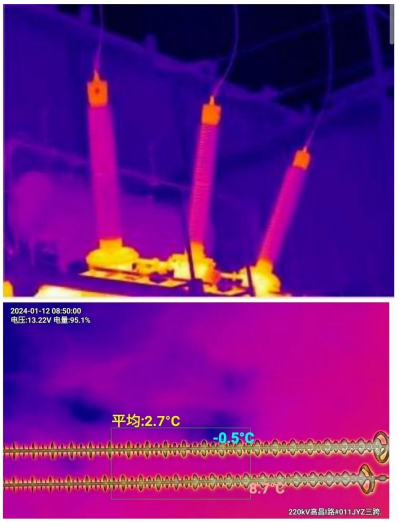
The device features alarm functions including area intrusion, boundary crossing detection, smoke and fire detection, smoking detection, and temperature anomaly. Through precise temperature measurement and AI algorithms, it enables real-time security monitoring and temperature visualization of cable joints, promptly identifying potential hazards and defects to ensure the safe operation of transmission lines

Functional characteristics

- Support smoking detection, ignition detection, smoke detection, and temperature anomaly alarm.
- It supports the functions of area intrusion detection, boundary detection, entering area detection, leaving area detection, and audio anomaly detection.
- Temperature measurement support: Supports standard and expert temperature detection. Expert mode allows drawing up to 10 points, 1 line, or 10 areas for temperature detection.
- Supports AI algorithms.
- Supports linear, histogram, adaptive, and other thermal imaging AGC modes, including DDE and 3D DNR.
- It supports intelligent algorithms such as dual-light fusion and solar reflection de-missed.

Application scenarios





Technical parameter

Camera lens	
Resolution ratio	Infrared: 256*192 Visible light: 2688*1520
Temperature measurement range	-20~150℃
Temperature measurement accuracy	±2°C or ±2% of the reading
Temperature measurement distance	Target object 0.1m*0.1m 0.1m~ 3m
Angle of field	Thermal imaging: 90°×64.2° Visible light: 96.9×77.2°
Expert temperature measurement	10-point temperature measurement, 10-frame temperature measurement, 1-line temperature measurement
Visible light	
Operating system	Android operating system
Data storage	Cache data for 1 month
Edge computing	AI recognition computation for 6-channel infrared or visible light images
Upload interval	30 minutes (default), configurable
Downlink communication	6-port 100M Ethernet interface
Uplink communication	2-channel 1000M optical port

CYG长园
Changyuan SmartLink Technology (ZhuHai) Co.,Ltd.
Address: 3rd Floor, Building 6, No.89, Jinfeng North Road, High-tech Zone, Zhuhai City
Tel: 0756-3689267

PCM-3123 Cable Partial Discharge Monitoring Device

Introduction

During the operation of the cable, the local electric field stress concentration caused by the impurities, the semiconductor protrusion, the accumulation of space charge under the voltage and other factors will cause the partial discharge, which will affect the operation of the cable.

The online monitoring device for cable partial discharge employs high-frequency current sensors mounted on the grounding wire of cable joints. These sensors capture partial discharge pulse currents from both the cable body and joints, transmitting the signals through coaxial cables to a data acquisition system. The analog signals undergo amplification, filtering, and analog-to-digital conversion before being analyzed and compared by an intelligent database. Through data analysis and early warning systems, the device effectively assesses cable insulation aging, prevents power cable accidents, extends cable service life, and ensures long-term safe and stable operation of power cables.

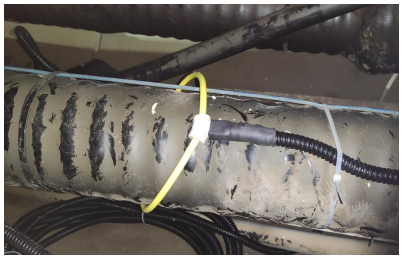
Functional characteristics

- Real-time display of partial discharge amplitude and frequency for each connector and cable segment
- Determine the relative position of the discharge point and issue an alarm if necessary
- Storage test: Spectrum analysis and discharge trend monitoring to promptly detect insulation defects in cables and connectors
- Aeroglass filters are employed to suppress field interference sources, ensuring the equipment accurately captures partial discharge signals.
- High-precision sensors and data processing technologies can accurately detect and identify partial discharge signals in cables, thereby reducing the probability of false alarms and missed alarms.
- Achieve precise location of cable fault points and reduce troubleshooting time
- Provide comprehensive data analysis and reports to help administrators assess line status

Technical parameter

1	**Signal Acquisition Unit**	
1.1	Number of HFCT Channels	3
1.2	Number of Power Frequency Phase Sensor Channels	1
1.3	Detection Range	5pC～5000pC
1.4	Sensitivity	5pC
1.5	Detection Frequency Band	1MHz～30MHz
1.6	Power Supply Mode	CT Inductive Power Taking / Solar Power Supply
1.7	Communication Mode	4G
1.8	Ambient Temperature	－40ºC～＋70ºC
1.9	Ambient Humidity	100%RH
1.1	Protection Level	IP68(Manhole Installation) ≥IP66(Non-Manhole Installation)
2	**HFCT（High-Frequency Pulsed Current Sensor）**	
2.1	Number of Channels	3
2.2	Housing Material	Flame-retardant, Corrosion-resistant, Non-magnetic
2.3	Mounting Method	Clamp-type Open Design
2.4	Bandwidth	1MHz~30MHz
2.5	Transmission Impedance	>5mV/mA
2.6	Protection Level	IP68
3	**Reference phase sensor**	
3.1	Number of Channels	1
3.2	Angle Error	≤±0.5°
3.3	Protection Level	IP68

Application scenarios



PRS-7165-C Cable Fault Location Monitoring Device

Introduction

The distributed fault diagnosis system for cables is designed for 35kV to 500kV voltage-level cable lines. By installing distributed fault monitoring devices at both ends of the cable line, it collects and analyzes traveling wave signals during fault events to achieve rapid fault localization. The system enables real-time monitoring, early warning analysis, and fault location for discharge signals caused by abnormal line conditions, thereby transforming fault repair into condition-based maintenance.

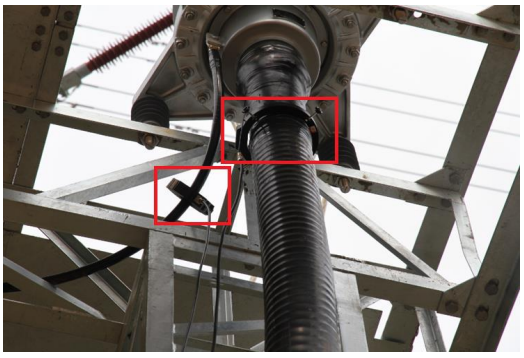
Product function

- Real-time acquisition of cable fault current
- Real-time acquisition of traveling wave of cable fault
- Beidou/GPS positioning function
- remote data communication function
- Multiple power supply modes and functions
- Real-time acquisition of initial traveling wave current and power frequency current at fault occurrence, precise sampling of fault waveform to assist fault analysis.
- The device enables rapid fault location, significantly improving the efficiency of cable fault diagnosis and reducing power outage duration for users.
- Ultra-precise positioning: <0.5%L+10meters, achieved through Beidou (GPS) high-precision timing and online traveling wave velocity calibration, enabling more accurate fault location.
- Positioning reliability:>95%; Fault identification rate:>95%;

Application scenarios

Technical parameter

Monitoring parameter	
Scope of application	35kV-500kV cable line
Power supply mode	AC220V/Power Supply CT/Photovoltaic Power Supply
Positioning accuracy	L*0.5%+10 meter
Response time	≤10minute
positioning reliability	> 95%
Fault detection rate	> 95%
Fault location time	<5 minutes
Power frequency Sampling rate	20KSPS
Traveling wave sampling Rate	50/100MSPS
Levels of protection	IP66/IP67/IP68
Traveling wave sensor	
Operating frequency band	1kHz ~ 10MHz
Detection sensitivity	5%±2A
Measuring range	1A ~ 5kA
Terminal impedance	50Ω
Operating frequency band	0.1MHz ~ 60MHz
Faulty cable sensor	
Detection range	0.5 ~ 2000A
Sensitivity	85mV/KA@50Hz
Coil resistance	50 ~ 250Ω
Internal resistance Temperature drift Coefficient	calibration 50ppm/℃
Angular difference	≦0.5°
OA output (zero drift)	≦0.1mv
Tape width	1Hz ~ 50kHz (-3dB)



CYG长园
CYG Zhilian Technology (Zhuhai) Co., Ltd.
Address: 3rd Floor, Building 6, No.89, Jinfeng North Road, High-tech Zone, Zhuhai City
Tel: 0756-3689267

PRS-7165-G-A Intelligent Grounding Box

Introduction to the device

The intelligent grounding monitoring box can monitor the working status of cable metal sheaths and multi-point grounding conditions in real-time, enabling timely and accurate early warning and detection of grounding faults. This ensures safe and reliable operation, fundamentally preventing cable accidents and guaranteeing the secure and dependable performance of cables.

Product function

- Supports real-time local data display and remote queries
- Multi-dimensional comprehensive evaluation of line health status based on polymorphic isomeric sensor
- Supports access to sensors with different protocols and allocates access resources efficiently
- The structure is simple and compact, facilitating installation and maintenance, while intelligent management reduces the frequency and difficulty of manual intervention.

Application scenarios

Technical parameter

Monitoring parameter	
Ground current range	0～500A，4 channel
Current transformer ratio	500A：80mV
Accuracy of grounding current	Resolution: 0.1A, Accuracy: ±0.5% + 0.5A
Main cable current range	0～1000A，1 channel
Main cable current accuracy	Resolution: 0.1A, Accuracy: ±0.5% ±0.5A
Voltage monitoring range	0~2000V，3 channel
Collection method	direct contact type
Linear measurement range	0%~120% nominal input
Frequency response	50Hz、60Hz
Voltage monitoring accuracy	Resolution: 0.1V, Accuracy: ±1% ±0.5V
Temperature Monitoring (Optional)	-40~260℃,4 channels, accuracy ±1℃
Anti-theft cut (optional)	-16~+16g，4 channel
Partial discharge monitoring (optional)	3 HFCT channels + 1 power frequency sensor
Temperature Monitoring (Optional)	-40~260℃,4 channels, accuracy ±1℃
Anti-theft cut (optional)	-16~+16g，4 channel
Response time	≤5 seconds
Power Supply Voltage	Power CT, mains power, PV
Solar panel	DC 12V/20W*2 or DC 12V/30W
Outer protection rating	IP68
Accuracy of grounding current	Resolution: 0.1A, Accuracy: ±0.5% + 0.5A
Main cable current range	0～1000A，1 channel
Main cable current accuracy	Resolution: 0.1A, Accuracy: ±0.5% ±0.5A
Voltage monitoring range	0~2000V，3 channel