INSULATION MONITORING DEVICES

INSULATION MONITORING DEVICE



Introduction

Insulation Monitoring Devices (IMDs) continuously monitor insulation resistance in ungrounded AC and DC electrical systems. They provide real-time detection and early warning of insulation faults, helping ensure electrical safety and system continuity.

Suitable for industrial power systems, photovoltaic systems, energy storage, EV charging, and other ungrounded AC/DC applications.



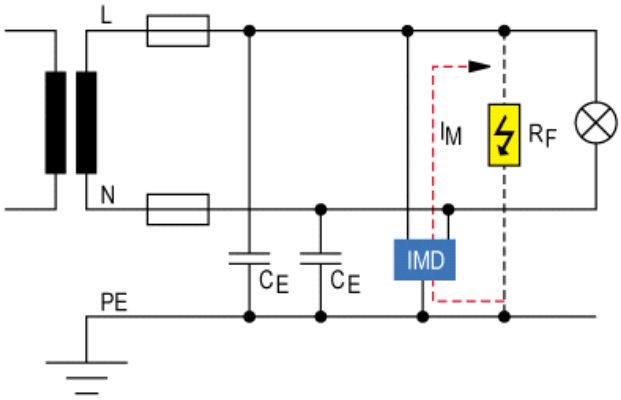
Main Features

- Insulation monitoring for AC/ DC ungrounded systems;
- Suitable for busbar systems up to 2000V;
- Insulation resistance range: 1kΩ…10MΩ;
- Adjustable alarm thresholds for fault detection;
- Selectable NC or NO relay operation;
- Compliant with IEC 61557-1/ IEC 61557-8;
- RS485 interface with Modbus RTU protocol;
- SOE event recording with timestamp;

Application

- EV/ HEV DC charging systems;
- DC power distribution and power supply systems;
- Rail transit and vehicle electrical systems;
- New energy generation and energy storage systems;
- Substation DC power supply systems;
- Medical and high-security power supply systems.

Working Principle



Ordering Information

Series name	Main feature	Special notes
ZJS-102	• DC voltage range: 0-300V • Insulation resistance detection: 0-300KΩ • RS485/ Ethernet communication interface • W*H*D: 350*180*130mm, Panel mounting	Balanced bridge principle Specially used for DC panel
ZJJ Series	• DC voltage range: 0-300V • Insulation resistance detection: 0-199.9KΩ • W*H*D: 72*100*67mm, Panel mounting	Adopt pure analog circuit signals
	• DC voltage range: 0-1000V • Insulation resistance detection: 0-1999KΩ • W*H*D: 115*105*40mm, 35mm Din-rail mounting	
BIM-4MS	• DC voltage range: 100-1000V • Insulation resistance detection: 10KΩ~10MΩ • RS485, Modbus RTU • W*H*D: 72 × 110 × 66mm, 35mm Din-rail mounting	With 2* virtual alarms, 1*DO, 1*DI
BIM-CH1	• With multifunction LCD display • DC voltage range:100-1000V • Insulation resistance detection: 10KΩ~10MΩ • RS485, Modbus RTU • W*H*D: 72 × 110 × 66mm, 35mm Din-rail mounting	With 8* virtual alarms, 1*DO, 2*DI
BIM-CH2	• Dual-channel independent insulation monitoring • DC voltage range: 100–1000V • Insulation resistance detection: 10KΩ~10MΩ • 2 relay outputs for alarm configuration • RS485, Modbus RTU • W*H*D: 108*110*66mm, 35mm Din-rail mounting	With 10* virtual alarms, 2*DO, 1*DI
BIM-M1000	• For 0-1000Vac/dc system • Insulation resistance detection: 0~30MΩ • RS485, Modbus RTU, optional CANbus interface • W*H*D: 108*110*66mm, 35mm Din-rail mounting	Signal injection method With 8* virtual alarms, 2*DO, 2*DI
JY1000-ST	• DC voltage range: 100-1000V • Insulation resistance detection: 1KΩ~10MΩ • RS485, Modbus RTU • W*H*D: 122.5*75.5*40mm, 35mm Din-rail mounting	With self-test function
JY1000 **JY1000-AL**	• DC voltage range: 100-1000V • Insulation resistance detection: 1KΩ~10MΩ • RS485, Modbus RTU • W*H*D: 98*49*62mm, 35mm Din-rail mounting	Single channel insulation monitoring With fault alarm function
JY1000-C2	• DC voltage range: 100-1000V • Insulation resistance detection: 1KΩ~10MΩ • RS485, Modbus RTU • W*H*D: 145*95*40mm, 35mm Din-rail mounting	Dual-channels insulation monitoring
JY2000-AL	• DC voltage range: 100-2000V • Insulation resistance detection: 1KΩ~10 MΩ • W*H*D: 145*115*40mm, 35mm Din-rail mounting • Fault alarm function • RS485, Modbus RTU	Wide DC system voltage range

BIM SERIES DC INSULATION MONITORING

INSULATION MONITORING DEVICE



Introduction

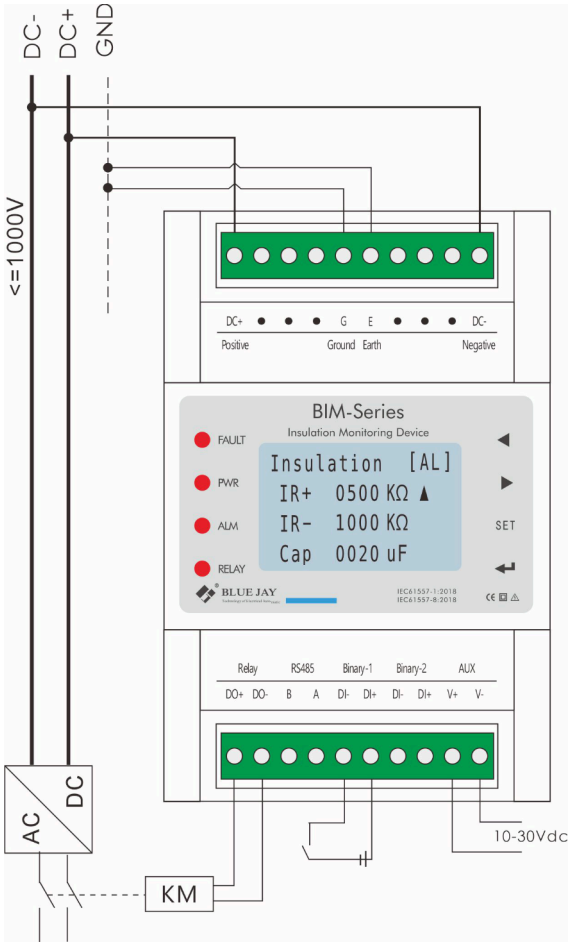
BIM-series insulation monitoring devices provide continuous insulation supervision for 100-1000 Vdc unearthed systems. Single-channel options include cost-optimised BIM-4MS (no screen) and feature-rich BIM-CH1 (LCD). BIM-CH2 dual-channel version monitors two independent DC circuits in one device, perfectly suited for dual-port DC charging piles.

All units support automatic adaptation to system stray capacitance up to 5 µF, configurable insulation alarm thresholds and selectable NO/NC relay outputs for reliable DC system earth fault protection.

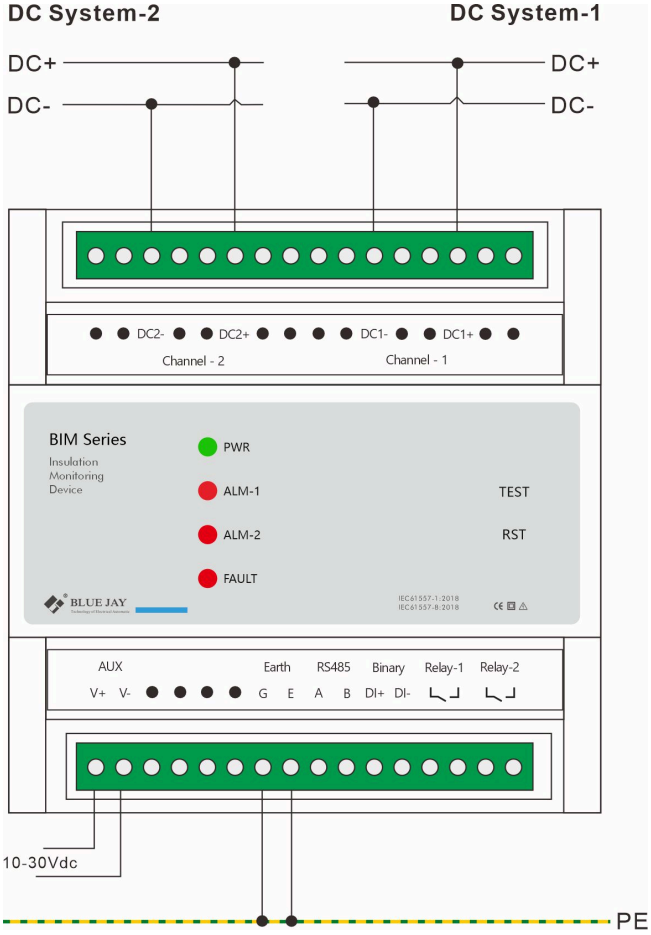
Main Features

- For unearthed (IT) 100-1000 VDC systems;
- Auto adaptation to system leakage Y-capacitance;
- Adjustable insulation alarm thresholds 10kΩ …10MΩ;
- Dual-channel monitoring for two independent DC circuits,
- Ideal for dual-gun DC charging stations;
- Built-in DI / DO terminals for control and alarm output;
- Local self-test & wiring connection fault supervision;
- RS485 communication with Modbus-RTU protocol;

Wiring of BIM-CH1/ BIM-4MS



Wiring of BIM-CH2



Technical Characteristics

	BIM-4MS	BIM-CH1	BIM-CH2
Parameter			
Channel	Single channel		Dual channel
Working principle	Bridge circuit		
Application system	DC system		
Power supply	10-30Vdc, power 3W		10-30Vdc, Power 5W
Voltage range	100V~1000Vdc		
Insulation resistance measurement range	10KΩ~10MΩ		
Insulation resistance measurement accuracy	**CY= 0~0.8μF:** ≤60kΩ, accuracy ≤3kΩ ; 60kΩ<R<1MΩ, accuracy≤5% **CY= 0.8μF ~3μF:** ≤60kΩ, accuracy ≤6kΩ; 60kΩ<R<1MΩ,, accuracy ≤20%		
Max system leakage capacitance	≤5μF		
Digital output (DO)	1*DO, passive dry contact, SPST, 4A@250Vac/ 30Vdc		2*DO, passive dry contact, SPDT, 5A@250Vac
Digital input (DI)	1*DI, 0.25mA@short circuit	2*DI, 0.25mA@short circuit	1*DI, NO, active dry contact, with internal 15Vdc pull-up voltage Load capacity: Ri<500Ω turn on, Ri> 100KΩ turn off
Virtual alarm	2* virtual alarms	8* virtual alarms	10* virtual alarms
Screen	/	LCD display	/
Dimension (W*H*D)	72*110*66 mm		108*110*66mm
Installation	Standard 35mm Din-rail mounting		
Communication	RS485/ Modbus RTU		
Standards	IEC 61557-1: 2018; IEC 61557-8: 2018		

BIM SERIES AC/DC INSULATION MONITORING

INSULATION MONITORING DEVICE



Introduction

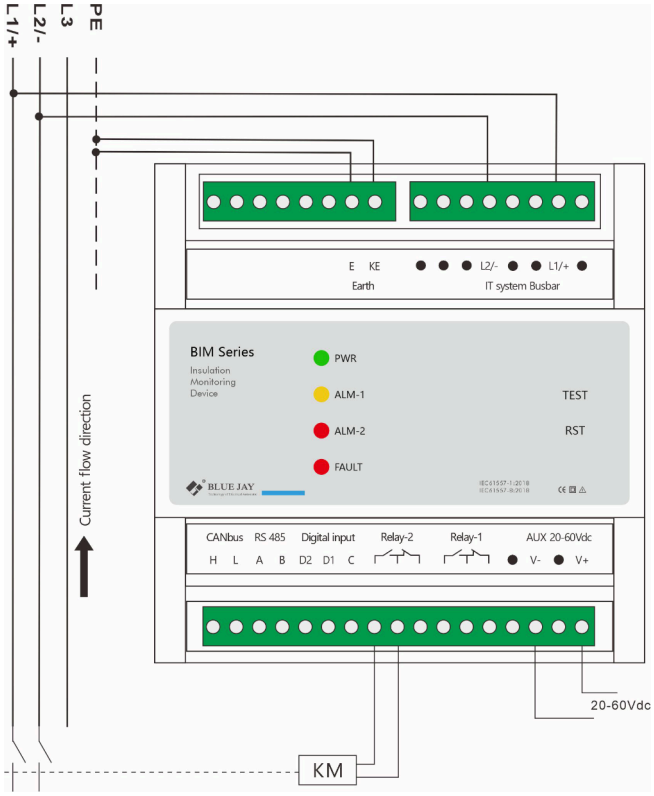
The BIM-M1000 insulation monitoring device provides continuous insulation resistance monitoring for unearthed AC/DC IT systems up to 1000 V. Using active signal injection technology, it detects insulation degradation and ground faults, with two independently adjustable alarm thresholds for early warning and fault indication.

Designed for industrial power distribution, battery energy storage systems, and EV charging facilities, the BIM-M1000 supports RS485 Modbus RTU communication and optional CAN bus integration. With automatic adaptation to system leakage capacitance up to 20 μF, it enables reliable insulation monitoring and system integration.

Main Features

- Active signal injection technology;
- Insulation resistance: 0–30MΩ;
- Nominal system voltages: AC, DC,or AC/DC up to 1000V;
- Monitoring for single-phase AC,three-phase AC, and DC systems;
- System leakage capaditances:up to 20uF;
- Adjustable alarm thresholds and response delays;
- Communication:RS485 Modbus RTU/ optional canbus;
- Compliant with IEC 61557-1/ 61557-8 standard;

Wiring of BIM-M1000



Application

- AC and DC IT power distribution systems;
- Industrial power and automation;
- Battery packs and energy storage systems;
- Electric vehicles and transportation;
- Renewable energy generation systems;
- DC charging stations for electric vehicles;

Technical Characteristics

Supply voltage	
Power supply	20-60Vdc, power consumption ≤ 5W
Frequency range	40~65Hz
Monitored IT system	
Nominal system voltage	0…1000 Vac/dc
Insulation resistance measurement range	0~30MΩ
Insulation resistance measurement accuracy	0~100 KΩ, CY≤ 2μF, Bus voltage stability: ±12 KΩ 100 kΩ~1 MΩ, CY≤ 2μF, Bus voltage stability: ±10 % 1 MΩ~30 MΩ, CY =0μF, Bus voltage stability: ±10 %
Measuring circuit	
Measuring principle	Active signal injection
Injection measuring voltage	±15V
Injection measuring current	<100μA
Permissible system leakage capacitance	≤20μF
Alarm relay output	
Quantity	2* SPDT relay
Max. switching current	>100mA
Max. withstand voltage	12Vdc
Load capacity	5A@250VAC
Alarm-1 (IR pre-alarm)	Default 500KΩ
Alarm-2 (IR alarm)	Default 250KΩ
Relay input	
Quantity	2*DI for reset/ test, NO, active dry contact, with internal 15Vdc pull-up voltage
Load capacity	Ri<500Ω turn on, Ri> 100KΩ turn off
Communication	
RS485 interface	Modbus RTU protocol
Canbus interface (optional)	Custom protocol
Others	
Standards	IEC 61557-1:2018 and IEC 61557-8:2018
Installation and dimension	Standard 35mm Din-rail mounting, W*H*D: 108*110*66mm

ZJS-102 DC INSULATION MONITORING

INSULATION MONITORING DEVICE



Introduction

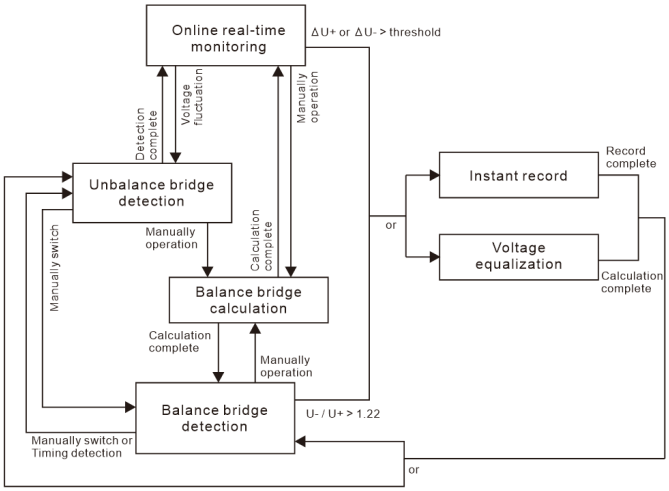
ZJS-102 DC system insulation monitor is a professional online monitoring equipment that uses balanced and unbalanced bridge detection technology to effectively eliminate the interference of distributed capacitance in the system. ZJS-102 can display the leakage current of each circuit in real time and has complete DC insulation fault monitoring functions, including single-point grounding, multi-point grounding, busbar two-pole grounding, etc.

ZJS-102 use transient alarm waveform capture and current synchronous detection technology, the insulation monitoring system records voltage and current fault curves, realizes instantaneous ground monitoring and ground fault location functions, and is an ideal choice for DC power system safety protection.

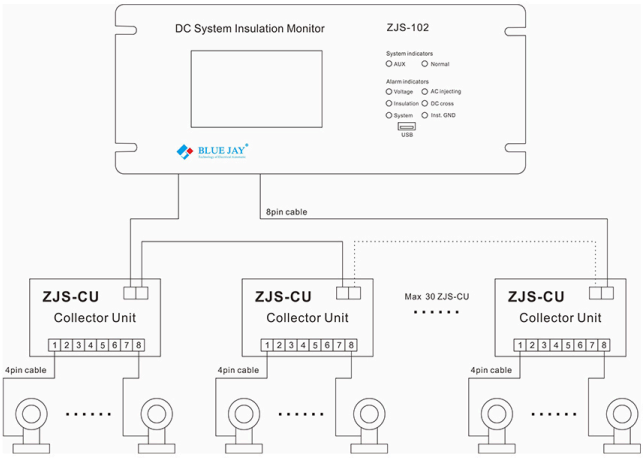
Main Features

- Circuit insulation classification alarm;
- Instantaneous ground event recording;
- Historical data analysis and download;
- Max support monitoring 240 branches;
- RS485 remote management and control;
- System distributed capacitance detection;
- Continuous insulation monitoring and alarm;
- Real-time monitoring and alarming of AC /DC voltage;
- High-precision 16-bit AD converter, PLC integrated digital output;

Working Principle



Wiring Diagram



Technical Characteristics

Monitoring range of system insulation resistance to ground	
Earthing alarm	0-199.9K
Pre-warning	100-999.9K
Monitoring and detect range of branch insulation resistance to ground	
0-300K	
Working voltage range	
Positive pole to ground	0-300V
Negative pole to ground	0-300V
System voltage	0-300V
AC injection voltage	0-280V
Busbar-II system voltage (DC cross detect)	0-300V
Battery bank insulation fault location error	±1 cell
Alarm history record	
Record list quantities	2000 lists
Each record alarm list volume	≤32 branches
Real-time leakage current measurement	
Screen display resolution	0.01mA
Current sensor range	10mA, 20mA, 50mA, 100mA optional
Each ZJS-102 port detect current volume	≤ 240 branches
Each ZJS-CU collector unit connected current sensor	≤8
Instant event record	
Capture sampling ratio	1KHz, 500Hz, 250Hz, 125Hz configurable
Record quantities	2000
Waveforms for each instantaneous event	8
Others	
Passive digital output	7
Fault alarm indicator	6
Distributed capacitance range of the system	0-200uF

ZJJ SERIES DC INSULATION MONITORING

INSULATION MONITORING DEVICE



Introduction

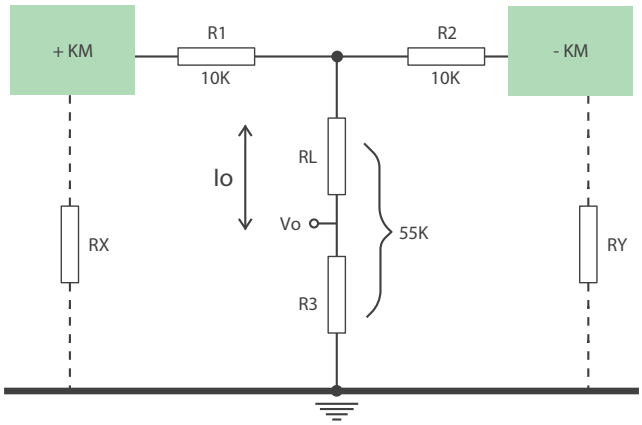
ZJJ Series DC Insulation Monitoring is an advanced solution for continuous monitoring of DC busbar insulation. Utilizing a precision voltage-divider circuit, it directly displays insulation resistance to ground, eliminating the limitations of conventional relays that only indicate leakage current or lack visualization. Its high-sensitivity monitoring capability enables accurate and quantitative evaluation of system insulation, ensuring reliable and safe operation.

The device performs real-time monitoring of bus insulation and grounding resistance of both positive and negative poles, with configurable alarm thresholds for early fault detection. When insulation falls below the preset value, an alarm signal is triggered. ZJJ-4SA is designed for panel mounting, while ZJJ-4SC supports DIN rail installation.

Main Features

- Bridge balance method for resistance measurement;
- Smaller short-circuit grounding current for safe operation;
- Alarm resistance threshold online display and direct setting;
- Terminals are pluggable for easy maintenance and replacement;
- Monitoring the DC circuit bus bar's RF to earth insulation resistance;
- Direct LCD busbar grounding resistance values, positive and negative;
- Reinforced shell, modular structure, high reliability;
- Wide monitoring voltage, 48-1000V, working voltage 24-220V can be customized, adjustable response value ranges of 0-100kΩ;

Working Principle



Main Features

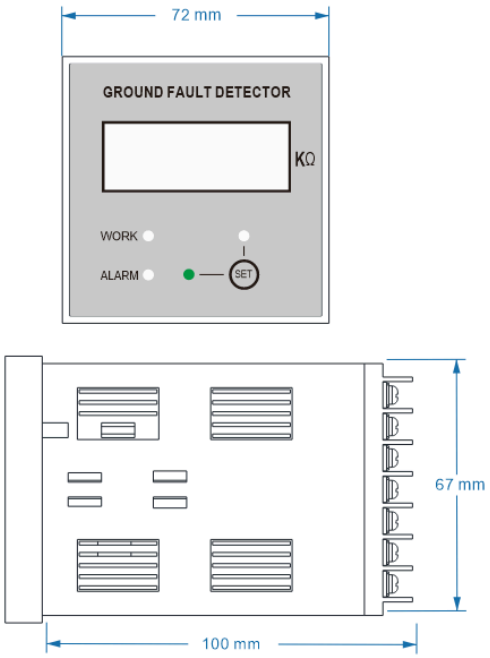
- DC main circuits measurement;
- UPS systems, battery systems;
- IT systems with high leakage capacities;
- DC charging stations for electric vehicles;
- Monitoring the insulation of electrical equipment;
- Supporting use of power transformers, generators, and motors;
- Remote monitoring system, real-time monitoring of insulation conditions;
- Substations, power plants, transmission lines, distribution lines;

Technical Characteristics

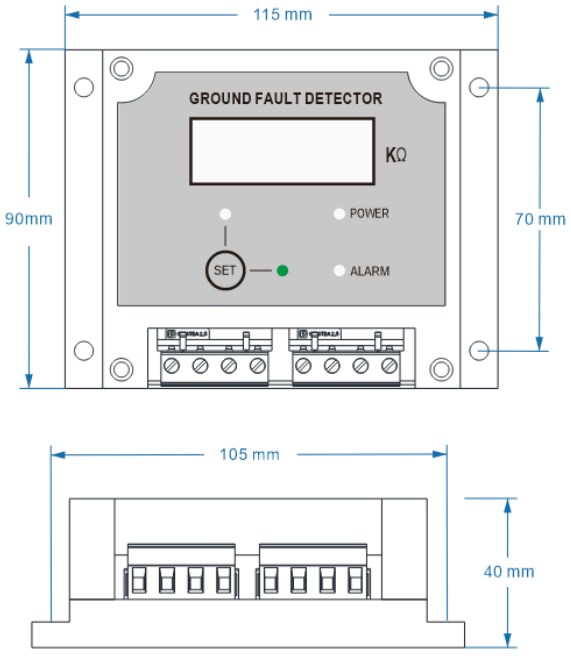
Basic parameters	ZJJ-4SA	ZJJ-4SC
Input voltage	0-300VDC	0-1000VDC
Power supply voltage	Self-powered	85-265 VAC/DC
Power supply current	7-20mA	
Measuring resistance	0~199.9KΩ	0~1999KΩ
Relay capacity	10A@250VAC / 30VDC	2A@250VAC
Measurement accuracy	V=220V (5%)	V=1000V (5%)
Alarm setting range	0~100KΩ	0~990KΩ
Short circuit ground current	V=220V (2mA)	
Action return factor	Rs=50KΩ(95%-98%)	
Output contact capacity	Sensitive load=5mS(DC220V0.2A) Resistive load(DC220V 2A)	
Installation type	Panel mount	Din-rail mount
Operating temperature	-40°C ~ 70°C, RH 85%	

Dimension

ZJJ-4SA Panel Mounting



ZJJ-4SC Din-rail Mounting



JY1000-ST DC INSULATION MONITORING

INSULATION MONITORING DEVICE



Introduction

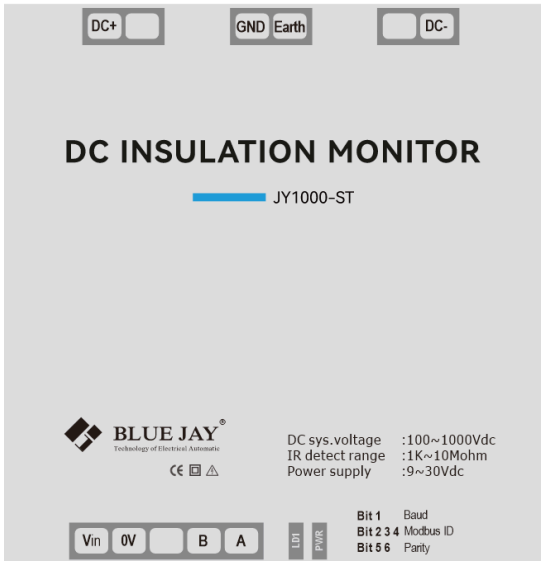
JY1000-ST is a DC insulation monitoring device based on MODBUS protocol, including DC to ground insulation impedance monitoring, DC voltage monitoring, DC voltage reverse connection alarm and other safety monitoring functions. It can be used for electric vehicle DC charging system, photovoltaic system, energy storage system, DC grid and other DC systems below 1000V.

JY1000-ST has the function of starting and stopping insulation monitoring. After insulation monitoring is started, the insulation resistance of positive and negative poles to ground can be monitored in real time. The monitoring result is not affected by DC voltage fluctuation, and is not affected by the symmetry of insulation resistance of positive and negative poles.

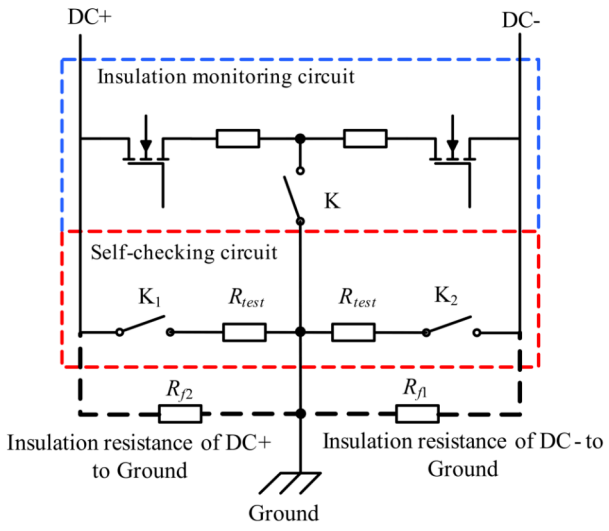
Main Features

- Rail mounting or screw fixing;
- Voltage reverse polarity alarm;
- High voltage grounding switch;
- Convenient parameter setting;
- Adaptive capacitance to ground;
- Monitor positive and negative poles;
- Insulation monitoring equipment self-test;
- RS485 remote monitoring and management;
- Widely insulation monitoring range (100V~1000VDC);

Terminal Definition



JY1000-ST Working Principle



Technical Characteristics

Basic parameters			
Power supply	9-30VDC, power 3W		
DC voltage range	100V~1000V		
DC voltage measurement accuracy	≤2V+0.3%		
Insulation resistance measurement range	1KΩ~10MΩ (DC System voltage:100V~1000V)		
Insulation monitoring accuracy (When :DC voltage:100V-1000V)	**CY range**	**Resistance range**	**Accuracy**
	0~0.8μF	≤60KΩ	≤3KΩ
		60kΩ<R≤1MΩ	≤5%
	0.8μF ~3μF	≤60KΩ	≤6KΩ
		60kΩ<R≤1MΩ	≤20%
Off-line pressure test	<2mA		
Maximum relay switching voltage	250VAC/30VDC		
Maximum relay switching current	3A		
Relay contact resistance	<100mΩ		
Relay insulation resistance	100MΩ		
Communication	RS485,modbus RTU		
Dimension	122.5*75*40mm,Din-rail:35mm		
Standard	IEC 61851-23 (2014-03):2014-11		
Humidity	85%		
Storage environment	- 40°C ~125°C		
Operating environment	- 40°C ~75°C		

Other parameters		
Pressure point	**Maximum voltage rating**	**Time**
DC+/DC- to GND	4200VDC/3000VAC	≤1min
Power supply +/- to GND	3500VDC/2500VAC	≤1min
RS485 A/B to GND	3500VDC/2500VAC	≤1min
DC+/DC- to power supply +/-	3500VDC/2000VAC	≤1min
DC+/DC- to A/B	3500VDC/2000VAC	≤1min

JY1000 DC INSULATION MONITORING

INSULATION MONITORING DEVICE





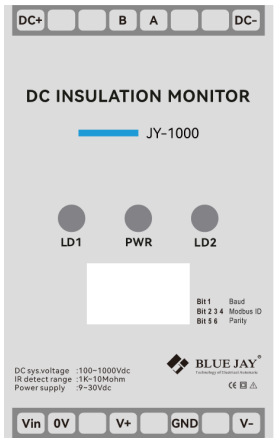
Introduction

JY1000 is an efficient insulation monitoring device specially designed for car charging piles. It can monitor the insulation status of the DC power supply system of charging piles in real time, detect potential insulation faults in time and alarm, effectively preventing fires and safety accidents. Users can realize start-stop and data collection of insulation monitoring through RS485 communication.

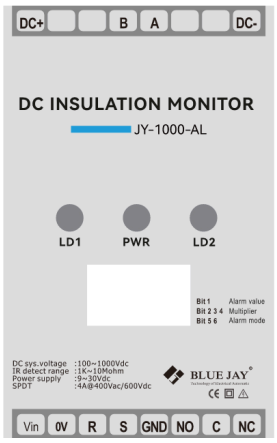
JY1000-AL is a DC to ground insulation monitoring module based on the unbalanced bridge principle, integrating monitoring and protection functions. It can monitor the insulation resistance value of the positive and negative poles of the DC floating system to the ground, ranging from 1KΩ to 10MΩ, and detect the DC voltage value, ranging from 100V to 1000V. In addition, JY1000-AL is equipped with a high-voltage grounding switch to realize online on-off function to ensure complete isolation from the ground when the module is powered off, reset or stops working.

JY1000	Standard model
JY1000-AL	With Fault alarm function

Terminal Definition



JY1000



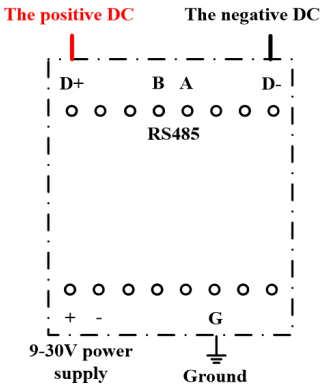
JY1000-AL

Main Features

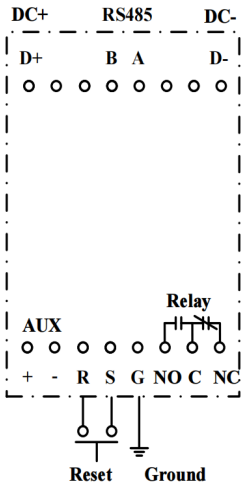
- Adaptive capacitance to ground;
- Simple device setting by DIP switch;
- Faster monitoring speed of turning on;
- Communicate with RS485 modbus;
- Equipped with high voltage grounding switch;
- Wider DC insulation monitoring range DC 100~1000V;
- Unbalanced bridge principle for resistance measurement;
- Monitoring the DC circuit bus bar insulation resistance RF to earth;

Wiring Method

JY1000



JY1000-AL



Technical Characteristics

Basic parameters			
Power supply	9-30VDC, power 3W		
DC voltage range	100V~1000V		
DC voltage measurement accuracy	≤2V+0.3%		
Insulation resistance measurement range	1KΩ~10MΩ (DC System voltage:100V~1000V)		
Insulation monitoring accuracy (When :DC voltage:100V-1000V)	**CY range**	**Resistance range**	**Accuracy**
	0~0.8μF	≤60KΩ	≤3KΩ
		60kΩ<R≤1MΩ	≤5%
	0.8μF ~3μF	≤60KΩ	≤6KΩ
		60kΩ<R≤1MΩ	≤20%
Off-line pressure test	<2mA		
Maximum relay switching voltage	250VAC/30VDC		
Maximum relay switching current	3A		
Relay contact resistance	<100mΩ		
Relay insulation resistance	100MΩ		
Communication	RS485,modbus RTU		
Dimension	98*49*62mm,Din-rail:35mm		
Standard	IEC 61851-23 (2014-03):2014-11		
Humidity	85%		
Storage environment	- 40°C ~125°C		
Operating environment	- 40°C ~75°C		

Other parameters		
Pressure point	**Maximum voltage rating**	**Time**
DC+/DC- to GND	4200VDC/3000VAC	≤1min
Power supply +/- to GND	3500VDC/2500VAC	≤1min
RS485 A/B to GND	3500VDC/2500VAC	≤1min
DC+/DC- to power supply +/-	3500VDC/2000VAC	≤1min
DC+/DC- to A/B	3500VDC/2000VAC	≤1min

JY1000-C2 DC INSULATION MONITORING

INSULATION MONITORING DEVICE



Introduction

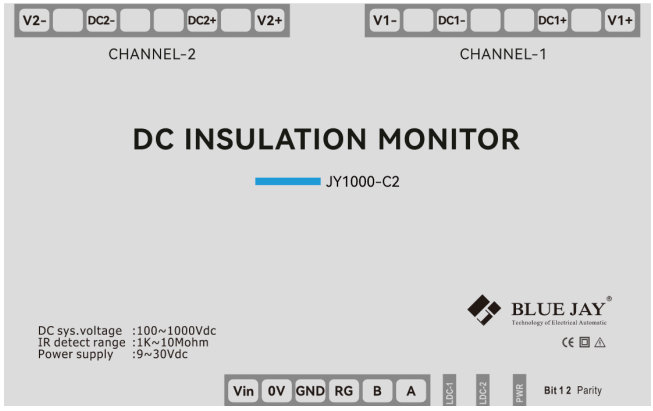
JY1000-C2 is used in on-line monitoring insulation resistance of the DC floating system (Dual DC system shared one ground). Dual DC channels are controlled independently, two DC insulation monitoring non-interference in each other. Users can enable or disable the insulation monitoring function of each DC channel and acquire insulation resistance values by RS485 communication.

JY1000-C2 adopts Dual-DC channels independent control scheme. Users can control dual-channel startup, close and data reading respectively according to the communication protocol.

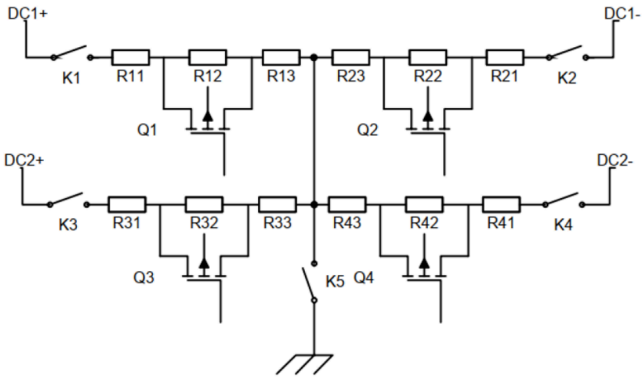
Main Features

- Dual-channels independent control;
- Remote monitoring and management;
- Monitor positive and negative poles;
- Ground insulation resistance;
- DC voltage monitoring;
- Vehicle side DC voltage monitoring;
- Voltage reverse polarity alarm;

Terminal Definition



Working Principle



Technical Characteristics

Basic parameters			
Power supply	9-30VDC, Power 6W		
DC voltage range	100V~1000V		
DC voltage measurement accuracy	≤2V+0.3%		
Insulation resistance measurement range	1KΩ~10MΩ (DC System voltage:100V~1000V)		
Insulation monitoring accuracy (When :DC voltage:100V-1000V)	**CY range**	**Resistance range**	**Accuracy**
	0~0.8μF	≤60KΩ	≤3KΩ
		60KΩ<R≤1MΩ	≤5%
	0.8μF ~3μF	≤60KΩ	≤6KΩ
		60KΩ<R≤1MΩ	≤20%
Off-line pressure test	<2mA		
Communication	RS485,Modbus RTU/ Private protocol		
Dimension	145*95*40mm,Din-rail:35mm		
Standard	IEC 61851-23 (2014-03):2014-11		
Humidity	85%		
Storage environment	- 40°C ~125°C		
Operating environment	- 40°C ~75°C		

Other parameters		
Pressure point	**Maximum voltage rating**	**Time**
DC+/DC- to GND	4200VDC/3000VAC	≤1min
Power supply +/- to GND	4200VDC/3000VAC	≤1min
RS485 A/B to GND	4200VDC/3000VAC	≤1min
DC+/DC- to power supply +/-	4200VDC/3000VAC	≤1min
DC+/DC- to A/B	4200VDC/3000VAC	≤1min

JY2000-AL DC INSULATION MONITORING

INSULATION MONITORING DEVICE



Introduction

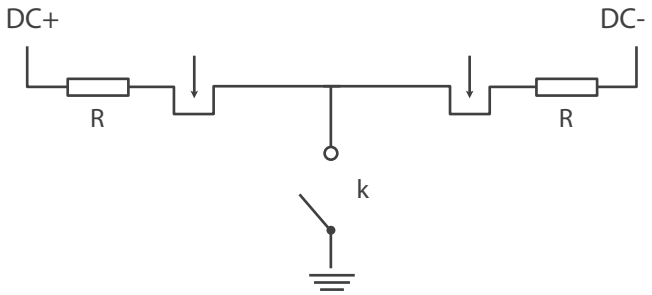
JY2000-AL is a DC to ground insulation monitoring module based on the principle of unbalanced bridge, which has monitoring and protection functions in one. It can monitor the insulation resistance value of the positive and negative poles of the DC floating system to the ground, ranging from 1KΩ to 10MΩ; at the same time, it can also detect the DC voltage value, ranging from 100V to 2000V.

After the insulation monitoring function is turned on, the product can continue to monitor the insulation resistance in real time, and user can read the insulation resistance value as soon as 1 second after the insulation monitoring function is turned on. For the DC to ground capacitance, module can realize self-adaptive monitoring the ground capacitance below 3μF (the positive and negative poles to the ground capacitance are respectively below 3μF, and the total capacitance is below 6μF).

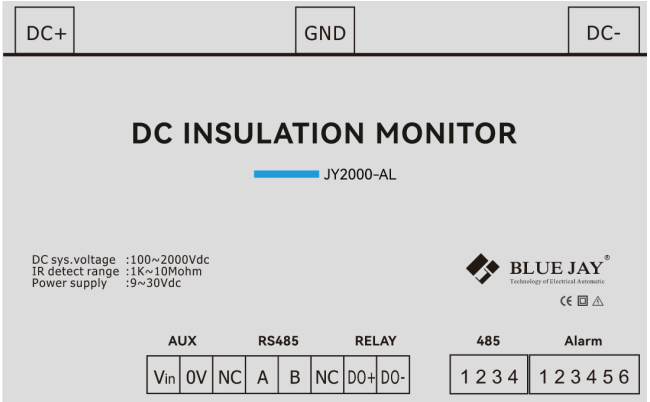
Main Features

- High voltage grounding switch;
- Widely power supply range;
- Widely insulation monitoring range (100V~2000VDC);
- Insulation monitoring equipment self-test;
- Adaptive capacitance to ground;
- Convenient parameter setting;
- Remote monitoring and management;
- Monitor positive and negative poles;
- Ground insulation resistance;
- Voltage reverse polarity alarm;

Working Principle



Terminal Definition



Technical Characteristics

Basic parameters		
Power supply	9-30VDC, Power 3W	
DC voltage range	100V~2000V	
DC voltage measurement accuracy	≤2V+0.3%	
Insulation resistance measurement range	1KΩ~10MΩ (DC System voltage:100V~1000V)	
Insulation monitoring accuracy	DC voltage:100V-300V	≤3KΩ+10%
	DC voltage:300V-2000V	≤3KΩ+5%
	CY>0.3μF, insulation resistance>1MΩ or CY>1μF	>10%
Off-line pressure test	<2mA	
Maximum relay switching voltage	250VAC/30VDC	
Maximum relay switching current	3A	
Relay contact resistance	<100mΩ	
Relay insulation resistance	100MΩ	
Communication	RS485,Modbus RTU	
Standard	IEC 61851-23 (2014-03):2014-11	
Dimension	145*115*40,Din-rail:35mm	
Humidity	85%	
Storage environment	- 40°C ~125°C	
Operating environment	- 40°C ~75°C	

Other parameters		
Pressure point	**Maximum voltage rating**	**Time**
DC+/DC- to GND	4200VDC/3000VAC	≤1min
Power supply +/- to GND	3500VDC/2500VAC	≤1min
RS485 A/B to GND	3500VDC/2500VAC	≤1min
DC+/DC- to power supply +/-	3500VDC/2500VAC	≤1min
DC+/DC- to A/B	3500VDC/2500VAC	≤1min