Product Name	GAOTek DC Ground Fault Locator
Product SKU	GAOTek-GFL-136
Product URL	https://gaotek.com/product/gaotek-dc-ground-fault-locator-2/

Contents

▲Safety Information

For your protection, please read this safety information completely before operating the ground fault locator. Carefully observe all warnings, precautions and instructions.

WARNING: Service information described in this manual is to be done by qualified personnel only. To avoid electrical shock or equipment damage, do not service the instrument unless you are qualified and with GAOTek's instruction.

⚠DANGER	**Safety testing has been done on this instrument thoroughly before shipment. However, mishandling during use could result in injury or other bad consequences, as well as damage to the instrument. Make sure that you understand the instructions and precautions in the manual before use. We disclaim any responsibility for accidents or injuries not resulted directly from instrument defects.**

Safety Symbols

Description of symbols used in this manual.

NOTE	**Indicates advisory items related to performance or correct operation of the instrument.**
IMPORTANT	**Indicates important points to help you operate the unit on site effectively.**

▲Operating Precautions

To avoid electrical shock or fire, read these precautions first before using the locator:

- Except as explained in this manual, do not attempt to service this equipment yourself.
- Do not operate the equipment around explosive gas or vapor.
- Only use GAOTek's testing leads and other relative accessories with the locator.
- Before use, inspect the locator, testing leads and other accessories for mechanical damage and replace if necessary. Pay special attention to the insulation surrounding the

connectors.

- Remove all clamps, testing leads and accessories that are not in use.
- Do not apply the instrument in other purposes that are not described in this user manual
- Ensure the equipment is provided with adequate ventilation.
- This manual describes the general operation of the testing system. If your system has features or accessories not addressed in this manual, please contact your supplier.
- Only qualified technicians are allowed to use the equipment. For fast ground fault location, it will be very important and necessary to familiarize the tested environment, especially the wiring structure of the target site.

1. GAOTek DC Ground Fault Locator

GAOTek DC Ground Fault Locator is very big hazard in DC power system with bad insulation or grounding fault. And its cost could be very high to repair upon power break-off. Therefore, a quick elimination of this earth fault becomes very significant.

GAOTek DC Ground Fault Locator is the new model which is developed to fast detect, trace and pinpoint virtual ground faults in LIVE DC systems where electrical cables have breakage with current lost to ground. Without signal injection to tested circuit, GAOTEK DC Ground Fault Locator is safe during signal tracing. Signal comparison and direction indication make it fast to trace signal fault. Also, low frequency and low current measurement enable it a very high efficiency for LIVE (online) signal tracing to bypass the online interferences.

1.1. Features

- **Safe to use**
  For ground fault tracing, the device uses as low current as microamperes measurement signal and DC current clamp with high resolution. It has no interference to the tested systems.

- **High reliable designing**
  It adopts main system of 32-bit micro-processor. Hardware designing strictly follows EMC standard to ensure reliability of itself and its tested systems.

- **Precise measurement**
  It adopts high accurate current clamp for signal tracing and precise ADC for voltage sampling. This ensures the accurate measurement of voltage and resistance.

- **User-friendly interface**
  It has LCD display with vivid information indicating grounding status, waveform, insulation leveling, insulation resistance, leakage current, and direction of ground fault and so on. This user-friendly interface makes it easy and effective to use onsite.

  - **Intelligent measurement function**
  - Signal analyzer can automatically identify system voltage leveling.
  - When insulation resistance has any change, signal analyzer could quickly indicate the changes.
  - Distance will not affect the signal detection once the signal analyzer and detector are synchronized.
  - During fault location, current clamp could either clamp on single cable or multiple cables for faster and more effective signal tracing.
  - Signal detector will indicate the direction of ground fault on screen once it detects any insulation problem.
  - Complete measurement and trouble-shooting function
  - Signal detector and analyzer have wireless communication. Complete measurement and info displaying function could handle different types of insulation problem in DC system.
  - Signal analyzer has different working modes like amplitude adjustment and waveform view which are suitable for different complicated applications.
  - Railway and Transit: signal, communication, and locomotive electric equipment
  - Power Utility: DC system with faulty grounding

1.2. Application

- Industrial Facilities: electric safety equipment for general power distribution applications
- Telecommunication: electronic equipment with faulty grounding

1.3. Function

- Measures voltage between DC system and ground ranging from 0 to 300V.
- Measures grounding resistance up to 999KΩ for both busbars and each branch circuit
- It detects and measures AC voltage which interrupts in DC system. Detection range is from 0 to 288V.
- It performs the function as accurate current meter with resolution up to 0.01mA.
- Arrow indication effectively helps users trace the signal and pinpoint the ground fault.
- Waveform display for tested circuit, indicating insulation status and current changes in tested circuit, it help users fast and effectively locate the point with grounding fault.
- It tests and displays distributed capacitance in the system in real time.
- Fast signal positioning for the point of ground fault for both negative and positive busbars with the help of waveform and signal direction.
- Signal analyzer has different working modes like amplitude adjustment and waveform view which are very helpful for signal fault location in high resistance grounding.
- The analyzing function of signal frequency spectrum effectively helps extract the testing signal amplitude which makes measurement more accurate.

1.4. Technical Specification

Signal analyzer specification:

- Operation environment
  - Working power: DC40V-300V
  - Temperature: -20℃—55℃
  - Humility:0—90%
- DC voltage measurement
  - Measurement range:0-300V
  - Resolution: 0.1V Accuracy: 0.2%
- AC voltage measurement
  - Measurement range: 0-300V
  - Resolution: 0.1V
  - Accuracy: 0.5%
- Insulation resistance measurement

Signal Analyzer

- Measurement range: 0-999.9KΩ
- Resolution: 0.1KΩ
- Accuracy: ≤±5%

- Measurement Bridge:
  - Adjustment range: 0mA, 0.25mA, 0.5mA, 1mA, 2mA & 4mA (Optional)
  - Frequency range: 0.25Hz
- Grounding detection range: up to 200KΩ
- Distributed capacitance measurement
  - Measurement range: 0-999uF
- Measurement waveform: square wave & sine wave
- Working mode: compulsory signal & automatic signal
- Display: 320x240 pixels TFT
- Power supply: powered by tested circuit
- Weight and dimension: 0.448kg, 200*145*75mm

Signal detector specification

- Grounding resistance measurement
  - Measurement range:0-500KΩ
  - Resolution: 0.1KΩ
  - Accuracy: ≤±10%
- Frequency spectrum analysis
  - Number of channel: 1
  - Frequency range: 0.125-12.5Hz
  - Resolution: 0.125Hz
- Display period of current waveform: 8s
- Measuring range for feeder: 0~2A
- Current measurement range: -100~+100mA
- Current resolution: 0.01mA
- Display: 320x240 pixel TFT
- Clamp jaw size: Φ30mm, Φ40mm and Φ10mm (optional)
- Power supply: 5V by 4 pieces of AA standard battery
- Weight and dimension: 0.303kg, 215*100*33mm

Signal Detector

Wireless communication specification:

- Speed: 2Mbps
- Multi-frequency: 125 frequency points, suitable for multiple points communication and frequency hopping communication
- Very small size: built-in 2.4GHz antenna with dimension of 15x29mm
- Low power consumption: in answer mode communication, quick data transmission and starting time will effectively lower power consumption.

1.5. Kit Includes

- GAOTEK DC GROUND FAULT LOCATOR Signal Analyzer
- GAOTEK DC GROUND FAULT LOCATOR Signal Detector
- Qty. (1) Signal Testing Leads with clips
- Qty. (1) 40mm AC Current clamp with cable
- Qty. (1) 30mm DC Current clamp with cable
- Qty. (4) Batteries
- Battery Charger
- Carrying Case

40mm AC clamp
Max opening: 70mm

30mm DC clamp
Max opening: 20mm

8mm AC clamp (optional)
Max opening: 17mm

1.6. Composition

The whole kits include the following parts:

 Signal Analyzer	 Signal Detector	 DC Current clamp with cable
 40mm AC Current clamp with cable	 4 Batteries for Signal Detector	 Battery Charger
 User manual	 Carrying Case	 8mm AC clamp with cable (optional)
 2 black measurement cable	 2 red measurement cable	 1 yellow measurement cable

2. OPERATION

2.1. Working Principle

Based in New York City & Toronto, GAO Tek Inc. is ranked as one of the top 10 global B2B technology suppliers. GAO ships overnight within the U.S. & Canada & provides top-notch support thanks to its 4 decades of experience.

2.1.1. Principle of Ground Fault Location

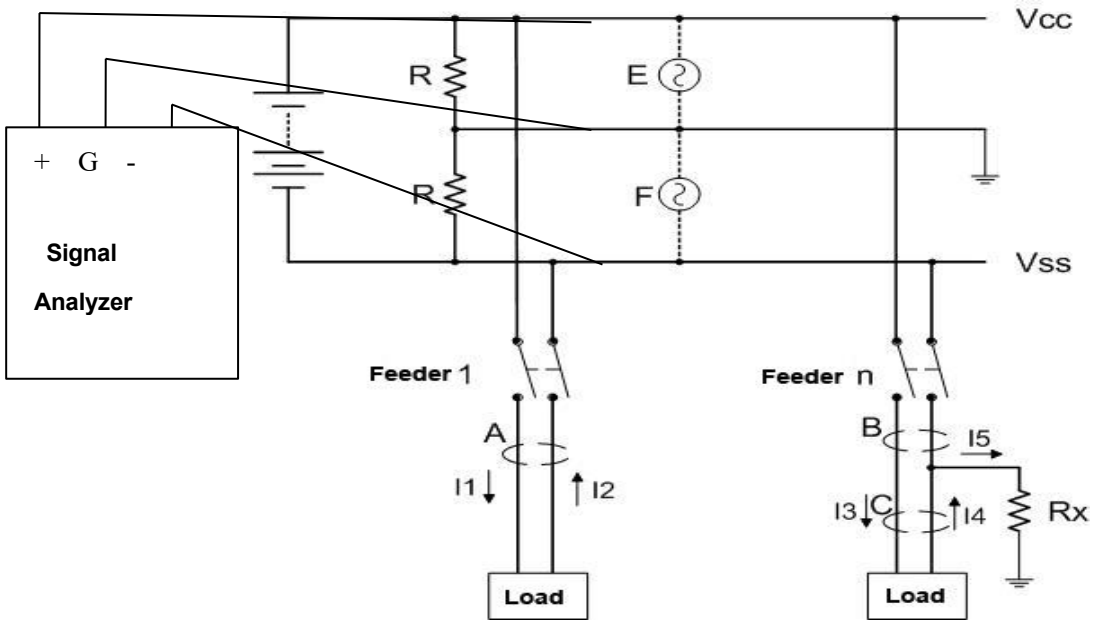
DC or AC power systems are generally insulated to the ground in railway electric works, power substation, telecom base station and the alike. There are also clear and strict rules for insulating resistance in different voltage levels of DC or AC power systems.

And it is generally considered as the phenomenon of faulty "Grounding" when grounding resistance of one point or multi-points becomes lower than tolerance value.

Working Principle with balancing bridge and Measurement Bridge: There is built-in "balancing bridge" with equivalent resistance of 30k ohm and Measurement Bridge with switchable resistance inside the Signal Analyzer.

In ground fault location in the field, Signal Analyzer is connected to tested busbars. It will test grounding resistance of both busbars with the help of built-in balance bridge of Signal Analyzer. If there is insulation fault in the tested DC system, the measurement bridge will be involved with certain frequency and current. Then we will use Signal Detector to test current signal of different circuit branches so as to pinpoint the signal fault.

We will use the diagram below to illustrate its working principle:



In this diagram, Feed 1 is normal feeder without signal fault while Feed n has signal fault on negative. Rx is the grounding resistance for this fault. R is the balancing bridge between two busbars after wire connection of Signal Analyzer.

If there is insulation fault, the Signal Analyzer will get Measurement Bridge involved. It is indicated as E and F in the diagram. When Measurement Bridge is connected, there will be a periodical variation of voltage with certain frequency between busbar and ground. Its frequency is indicated as f. The Variation amplitude of this voltage will be △V. Therefore, current variation amplitude flowing on Rx will become x. Frequency of the variation is same as that of measurement bridge.

We will use Signal Detector with current clamp to trace signal in different points in the DC system like A, B and C. There is no current variation in Point A, which indicates that there is no ground fault in Feeder 1. In Point B, there is current variation, indicating that there is ground fault in Feeder

n. While in Point C, there is no current variation. Therefore, we could judge that the point of ground fault is between Point B and C.

Where is the point of fault?

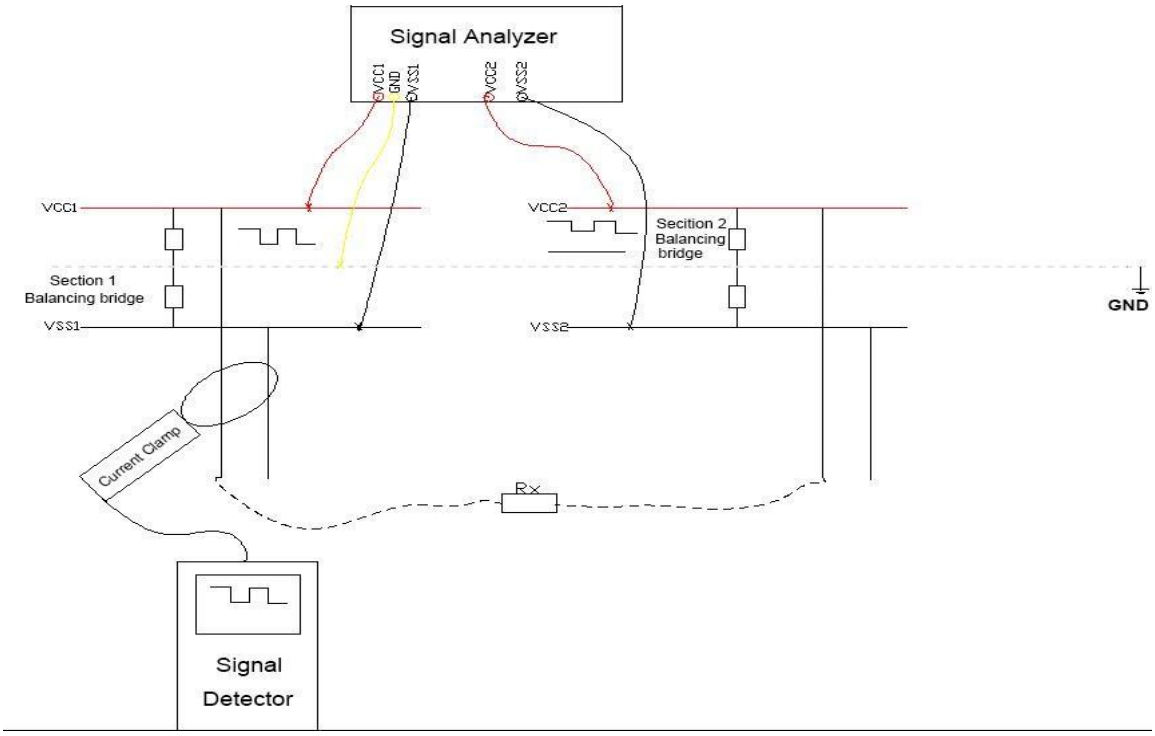
Before the point of ground fault, there is insulation signal. While after the point of ground fault, the insulation signal is normal.

2.1.2. Principle of DC Signal Invasion

If one post or two posts of two different circuits are accidentally connected, it will become a new loop which we call it as “ring circuit” or “signal invasion” from one circuit to another.

In this phenomenon of signal invasion, there are signal faults in both DC systems. If you could locate one fault in one circuit, it could be simpler for trouble shooting of the other.

Its principle of signal tracing could be exemplified through the diagram below



Extra wire connection:

For fault location of this type of fault, Signal Analyzer is connected with 2 different systems with extra wire connection. And measurement bridge will be connected to one DC system and it will compare the voltage and waveform of two systems. It will judge if the DC system has ring circuit or insulation fault. If so, Measurement Bridge will be continuously involved to help Signal Detector to pinpoint the fault.

Working principle:

The way of signal fault location is generally the same as that of common ground fault location. You could simply trace the signal in one of the two DC systems. If you could locate one fault in one circuit, it could be simpler for trouble shooting for the other which might be visual.

2.1.3. Principle of AC Signal Invasion

When Signal Analyzer is connected with tested DC system and the measured AC signal is higher than rated value, we call it as AC signal invasion. AC signal location is same as that of general DC ground fault location.

2.2. Operation Method

Before the operation for signal fault location, please check below for detailed indication of the connectors, LED indicators and other parts of both Signal Analyzer and Detector.

Indication of Signal Analyzer:

Fig 2.2A

Amplitude:

This button is for adjustment of measurement current signal during signal tracing. Current amplitude could be switched between 0mA, 0.25mA, 0.5mA, 1mA and 2mA. Defaulted current is 1mA.

For detailed info of changing frequency and current, please refer to “2.3.4.3 Change Analyzing Frequency and Current”.

RST

Reset function is to restart the test. It is just like restarting the signal analyzer without turning the On/Off switch.

Waveform：

There is two different waveforms, sine wave and square wave. Please change it as per the current clamp that is connected with Signal Detector. When it is AC current clamp, it is sine wave with indication of “S”. When it is DC clamp, it is square wave indicated as “Q”. Defaulted setting is sine wave.

Mode:

It is switchable between Automatic (A) and Compulsory (F) modes with different involvement of measurement bridge. Default setting is Automatic mode.

Please refer to “2.3.3.4 about working modes of Signal Analyzer” for more info of this term

Indication of Signal Detector

Test:

It is for testing or confirming selection in the menu. Menu:

It is for switching among each measurement function of the Signal Detector.

Power:

It is for turning on or off of the Signal Detector.

Note:

1) GAOTek DC Ground Fault Detector is coming with both DC and AC current sensors. For better measurement sensitivity, we will suggest use DC current sensor.
2) If the screen of Signal Detector is dim after power on, battery power might be low, you are suggested to charge the battery timely.

2.3. General Steps for Ground Fault Location

For ground fault location in DC system, we will generally follow the steps as below:

- Measurement preparation

Get battery of Signal Detector full charged and familiarize with the wiring structure of DC system.

It is very important to know the wiring structure on how the wires are connected in the DC system. This will help you fast trace the ground fault.

- Connect the Signal Analyzer with DC system and analyze the DC circuit.

Brown cable is connected with positive busbar, blue with negative and yellow with ground.

If there is DC signal invasion, please connect the invasion measurement cable as well.

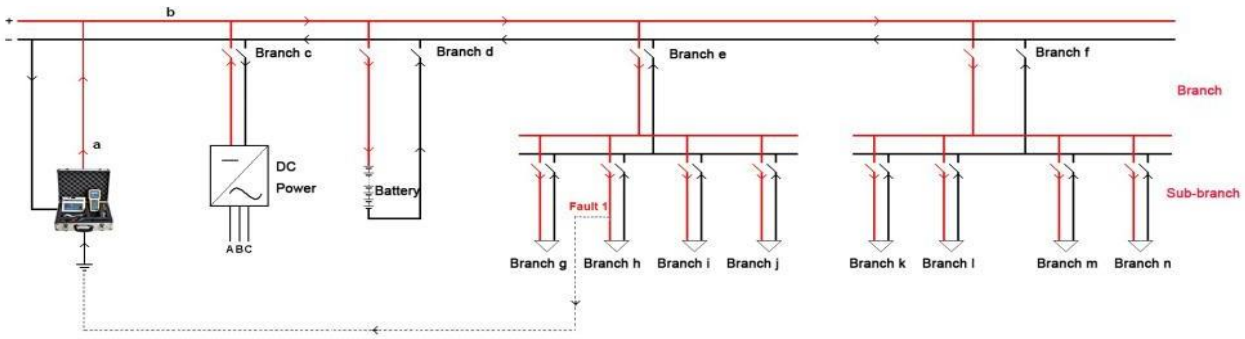
- Connect the Signal Detector with current clamp and have seft-check.
- Follow the theory of ground fault location to pinpoint the ground fault one by one.

Change the signal mode, current amplitude or frequency on Signal Analyzer during signal tracing if necessary.

- Solve the problem of faulty grounding as per requirement.

For detailed operation, please refer to the context below

2.3.1. Analyzer connection to DC system



Turn off the power on/off button of Signal Analyzer, connect one end of the testing leads (1-into-3) with the analyzer and the other ends connected respectively with positive busbar, negative busbar and the ground based on 3 different colors:

- Red: with positive busbar
- Black: with negative busbar
- Yellow: with ground

Important: What is the connecting point for signal analyzer? You are suggested to connect the signal analyzer near the output terminals of battery string, close to power supply.

There is balancing bridge (equals to 30kΩ) built in the signal analyzer. If you connect the signal analyzer at certain circuit branch, the signal detector will mistakenly judge it as faulty branch.

Signal detector is used to detect ground fault at the load side with different branches.

NOTE:

For wire connection of Signal Analyzer for DC signal invasion, please refer to Fig 2.1.2. Signal tracing could be done in one of two DC systems. Working principle is just the same as that of common ground fault location.

After all the testing leads are properly connected, turn on the on/off switch. The Signal Analyzer will be powered by its tested circuit. And you will see the screen display as below:

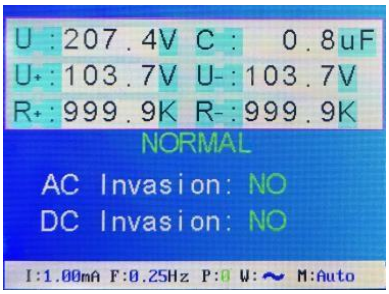


Fig 2.3.1B without ground fault

Fig 2.3.1C with ground fault

After the power on/off switch is turned on, power indicator in the analyzer will be on. Analyzer will automatically measure voltage range(U), distributed capacitance (C), busbar-to-ground voltage (U+ and U-) and grounding resistance of both busbars (R+ and R-). It will also indicate AC invasion and DC signal invasion.
Generally the busbar with lower voltage and grounding resistance has ground fault.

If there is no ground fault, the indicating LED of “Normal” will be on and display “NORMAL” on screen. If there is ground fault in the system, the indicating LED of “G (+)” or “G (-)” will be on for ground fault on positive busbar or negative accordingly. Screen will display with “FAULT”.

To avoid interruption by distributed capacitance, test and display of ground fault indicator may take a few seconds. Please keep the testing leads stable during measurement.

NOTE:

After Signal Analyzer is turned on, you could leave it alone and use Signal Detector to trace the earth fault. If you restart the Signal Analyzer during signal tracing, please synchronize the communication with Signal Detector before continuing the signal tracing.

2.3.2. Detector Self-check

This is ensuring that both Signal Analyzer and Signal Detector are functioning well. To do this please follows the steps below:

Install the 4 rechargeable batteries at the back of Signal Detector and switch on the unit. You will see its main menu as below:

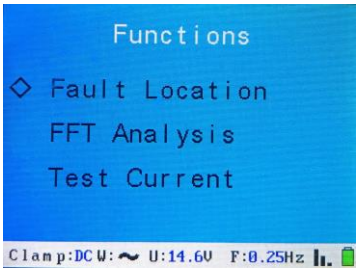
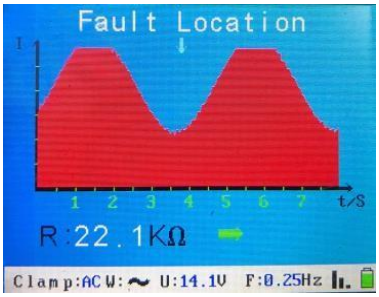
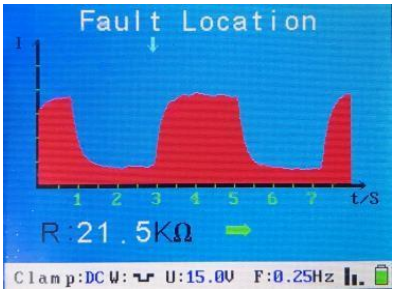


Fig 2.3.2A

When Signal Analyzer indicates ground fault, connect current clamp with Signal Detector and clamp it around grounding line of Signal Analyzer.

Select “Fault Location” in Signal Detector.
Please keep the Signal Detector close to Signal Analyzer and leave the current sensor stable. After the test is started, you will see the waveform and signal indication for ground fault (if any) like the screens below





The down arrow in Fig 2.3.2B and Fig 2.3.2C indicates the point for bridge switch. It is at the transition point from high to low in the waveform. In normal self-check with Signal Detector, there will be 2 cycles of signal waveform. If you could see full waveform, that means that the unit is functioning well.

NOTE:

If there is no ground fault in the DC system, Signal Analyzer will not send out any signal to the DC system. It will also not send out synchronization signal to Signal Detector.

IMPORTANT:

During self-check and ground fault location later on, please make sure that there is no any other signal source (including insulation monitoring system) that is injecting signal to the tested DC system.

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2.3.3. Ground Fault Detection

After self-check is done, you could start the signal tracing for each branch in the circuit. To ensure consistent signal tracing, please DO NOT turn off the Signal Detector during fault location.

There are 3 functions including fault location, spectrum analysis (FFT) and current measurement in the Signal Detector. You could switch among these functions by pressing the button “Menu”. We will go one by one.

2.3.3.1. Ground fault detection

For ground fault location, please select “Fault Location” in the menu which is same as that of self-check. And connect the current clamp on the faulty branch.

Signal detector will display grounding resistance, waveform, and direction of ground fault for the tested circuit. Green arrow at the bottom screen indicates same direction while red arrow indicates opposite direction to arrow direction of current clamp. For details, please refer to "2.3.4.4 Judge Ground fault based on direction indication".

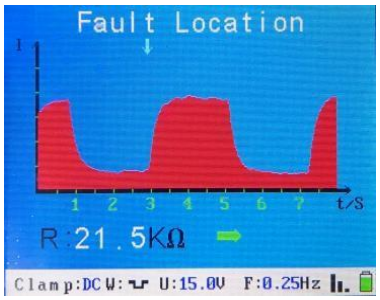


Fig 2.3.3.1A

Same screen will also display info at the bottom including clamp type, waveform type, measurement current, frequency and communication status between Analyzer and Detector.

During signal tracing, you might need to change the setting on Signal Analyzer for current, frequency and working mode if necessary. When measurement current signal and frequency are changed on Signal Analyzer, it will also be changed automatically on Signal Detector. When signal working mode is changed, the Signal Analyzer will retest the DC circuit, this may take a few seconds before reflecting on the Signal Detector.

You could follow the arrow direction to trace the faulty signal to the next branch in the circuit. For detailed operation on how to trace a grounding fault, please refer to "2.3.4 Tips for Ground Fault Location".

2.3.3.2. Analysis of fault signal spectrum

Signal spectrum analysis is composed of 2 different waveforms, original waveform and spectrum after FFT (Fast Fourier Transform Algorithm). And it will show frequency with maximal signal and its current amplitude. This function will help you judge if the signal in the circuit is interference or measurement signal with Signal Analyzer

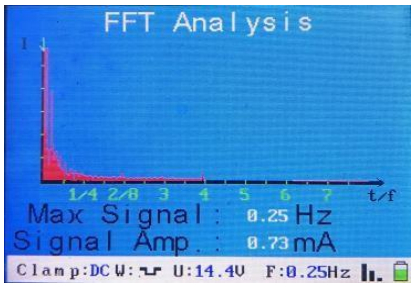


Fig 2.3.3.2A

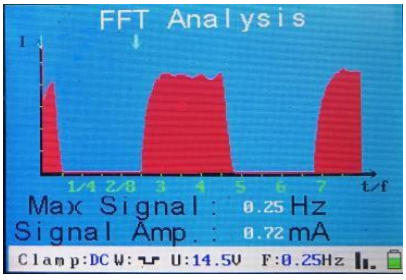


Fig 2.3.3.2B

2.3.3.3. Current Measurement

This function is to measure leakage current for tested branch. It is only applicable when DC current clamp is used. Please follow the methods below for measurement:

Keep the current clamp in natural status with clamp jaw completely closed without clamping on any circuit. Leave the clamp still for some seconds until the data on screen is stable. Then select "Test Current" function in the menu and press button "Test" to reset the value.

Clamp it around tested circuit; Signal Detector will display leakage current and its grounding resistance of target circuit like screens below

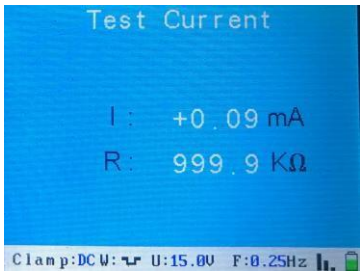
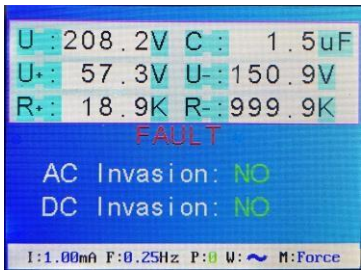


Fig 2.3.3.3

In the same screen, press button "Test", it will reset the current reading. Before testing leakage current of next circuit, please keep the current clamp in natural state and press button "Test" to reset current reading to around zero Amp when resistance will become 999.9kΩ.

2.3.3.4. About working modes of Signal Analyzer

There is built-in balancing bridge of 30k ohm and adjustable measurement bridge inside the Signal Analyzer. For different circuit, you might need to adjust the measurement mode with different involvement of Measurement Bridge by pressing the button "Mode" on Signal Analyzer. "M:Force" means compulsory mode while "M:Auto" indicates automatic mode in Signal Analyzer screen.



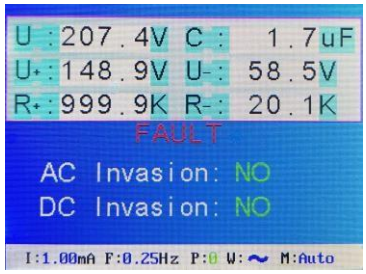


Fig 2.3.4A Compulsory mode Fig 2.3.4B Automatic mode

When the measurement mode is changed, the Signal Analyzer will retest the circuit and send this new measurement data to Signal Detector.

Compulsory mode:

Operation under this working mode, after Signal Analyzer is started, it will calculate grounding resistance of both positive and negative busbars. No matter there is ground fault or not, the analyzer will start its internal measurement bridge. It will connect a equivalent resistance to positive and negative busbars. In the measurement afterwards, no matter how the grounding resistance changes, measurement result displayed on Signal Analyzer will not change because the measurement bridge inside the analyzer is continuously working.

When do we use this mode?

This mode is used when insulation status of DC system is not stable, for example insulation is sometimes 10kΩ and sometimes 50kΩ. In compulsory working mode, the measurement bridge will be working so as not to affect the detection of Signal Detector.

Automatic mode:

After Signal Analyzer is started, it will measure the grounding resistance for both negative and positive busbars. When there is insulation fault, measurement bridge of Signal Analyzer will be activated. It will connect a equivalent resistance to positive and negative busbars. If DC system is normal, it will not activate the measurement bridge. In the measurement afterwards, if grounding resistance has big changes, measurement bridge will exit and recalculate grounding

resistance (repeat measurement of grounding resistance like measurement after analyzer startup). If DC system has insulation fault, it will activate the measurement bridge, otherwise, it will not.

When do we use this mode?

This mode is used when insulation status of DC system is pretty stable. Most DC systems have pretty stable insulation; therefore, default setting is Automatic mode during ground fault location.

What are the differences between these two modes?

In compulsory mode, Signal Analyzer measure grounding resistance once after startup. Measurement bridge is continuously working afterwards.

In automatic mode, when grounding resistance has big change, measurement bridge will exit and analyzer recalculates grounding resistance. Measurement bridge is activated depending on insulation status.

2.3.4. Tips for Ground Fault Location

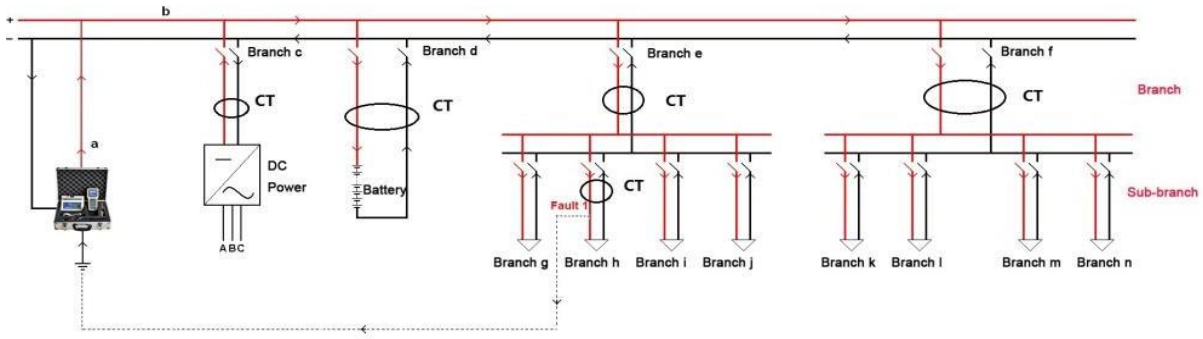


Fig 2.3.4

2.3.4.1. Clamp around one cable or two cables

Clamp around 2 cables

GAOTek DC Ground Fault Locator is used for ground fault location in LIVE (online) DC system. When it is online, there is always load current and distributed capacitance which become interference to our signal tracing. By clamping around 2 cables (positive and negative feeders of same load like Fig 2.3.4 Branch c, d, e, f and h), it could effectively cancel the interference. It will be much more effective for the location of ground fault.

Clamp around 1 cable

- If positive and negative feeders are far away and hard to clamp them together, you could do in this way:
- On battery charger side, try to clamp around 2 feeders together like branch c in Fig 2.3.4. Then after the battery charger, you could use one clamp for one feeder only.
- If it is ground fault on positive side, connect the current clamp of Signal Detector around positive busbar and trace the signal afterwards. If it is ground fault on negative busbar, clamp around negative.

2.3.4.2. Clamp around multiple feeders

To make it more effective for ground fault location, you could also connect the current clamp around multiple feeders that are tied in the same wire slot. Make sure that the current jaw should be completely closed. For example, you could clamp around branch g, h, i and j of Fig 2.3.4 together to see if there is any insulation problem.

If the insulation of these feeders are normal, there is no ground fault for these feeders. If there is insulation fault for these feeders, one or several branches of these feeders might have ground fault. Then you should check these feeders one by one.

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2.3.4.3. Change analyzing frequency and current Frequency

When you have traced the signal fault but are not sure if it is real ground fault or just online signal interference, you could change the measurement frequency to verify. If it is real fault, the waveform detected by Signal Detector will be changed. If it is signal interference, the waveform will not change too much after changing frequency.

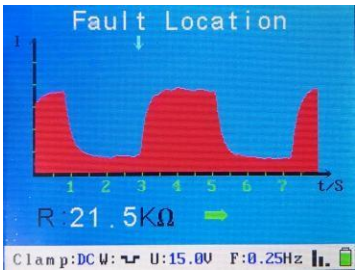
Current:

If grounding resistance is too high (example: higher than 50K ohm), you are suggested to change the measurement current on Signal Analyzer to higher level like 2mA.

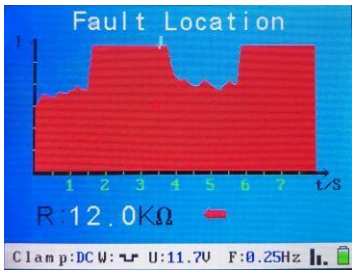
2.3.4.4. Judge ground fault based on direction indication

Direction of ground fault is decided by both arrow mark on the current clamp and arrow indication on Signal Detector. Direction of arrow mark on clamp is used as standard direction.

When there is green arrow on Signal Detector (Fig 2.3.4.4A), it means that the point of ground fault is in same direction with the arrow mark of current clamp. When there is red arrow in Signal Detector, the fault is in opposite direction to arrow mark of clamp.



Green direction



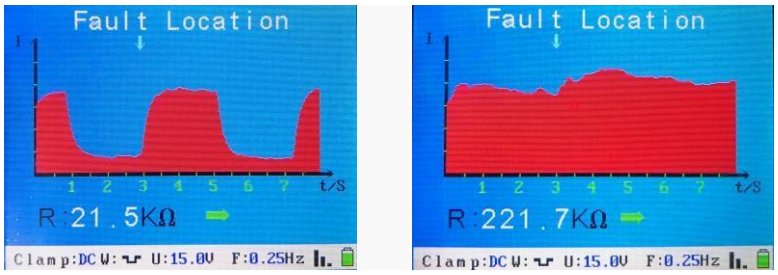
Red direction

Fig 2.3.4.4A

Green on Signal Detector Red on Signal Detector Fig 2.3.4.4B

2.3.4.5. Use waveform to judge ground fault

You could judge the grounding resistance based on the waveform. Big amplitude of waveform indicates small grounding resistance (bad insulation). Smooth waveform indicates high grounding resistance (good insulation).



Big amplitude waveform Smooth waveform

Fig 2.3.4.5

3. SERVICE & MAINTENANCE

1) GAOTek DC Ground Fault Locator is precision instrument. To make ensure its accuracy, please handle it with care during operation and transportation to avoid crash, fall down and other series vibration.
2) Before each measurement, please synchronize the signal between Signal Analyzer and Signal Detector in self-check. Keep their distance within 5 meters during signal synchronization. After synchronization, you could keep the Signal Detector beyond this distance for signal tracing. But please make sure Signal Detector is turned on during operation.
3) After operation, please remove the batteries from Signal Detector. You are suggested to fully charge the batteries before next operation. If power is low, you are suggested to change the batteries timely to continue operation.
4) Signal analyzer should be connected in the DC system before the tested branches. Make sure all the 3 measurement cables are well connected with positive busbar, negative busbar and the ground respectively.
5) The current clamp has high sensitivity. Therefore, during measurement, please keep it as stable as possible to obtain best measurement accuracy.

6) If you see clamp “over range” on Signal Detector screen, please make sure that leakage current in the circuit is not higher than 2Amp. If it is higher than 2Amp, you should clamp on both positive and negative feeder of same load for signal detection.
7) The current clamp jaw is using dentate blades. When you use the clamp to clamp around cables, please make sure the jaw could be closed naturally to avoid damage to the blades.

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