Allied Edison

ZX3 Ungrounded DC System Fault Detection and Location Equipment designed for the 21st century

How do you choose the best Ungrounded DC System Fault Detection and Location Equipment? Simply ask yourself, does my current equipment offer the features and capabilities listed below:

- The ZX3 can find faults that are on the positive rail, the negative rail, on both rails simultaneously, in a field device, battery bank or solar array, regardless of whether they are high resistance, low resistance or in a capacitive environment.
- With a single touch of a button (no knobs, switches, to adjust), the ZX3 provides the operator with all pertinent information related to the system and fault conditions to maximize fault analysis capabilities. This includes checking for any AC contamination onto the DC system also.
- The ZX3 has numerous built-in safety features and controls, it provides the operator with various operating status messages as well as warning messages when set points are approached.
- Designed with AE patented 21st century digital technology and built in the United States.
- It has three (3) primary location modes built into one machine, which allows the ZX3 to find faults under any conditions (single ground faults, multiple ground faults, double ground faults and intermittent ground faults.
    - A **Fast Locate Mode** that can find faults in a typical 135 Vdc low capacitive (≤ 2 µF) system that are from 0 Ω to >100 kΩ very quickly and accurately.

- A **Precise Locate Mode** that can find faults in a typical 135 Vdc low to high capacitive (≤ 50 µF) system that are from 0 Ω to >100 kΩ quickly and with extreme precision.

  One location mode can be used to locate the ground fault while the other can be used to confirm it.!

- An **Intermittent Locate Mode** that can find an intermittent or cycling fault in a 135 Vdc system where system capacitance is zero and the fault is ≤ 8 kΩ or where system capacitance is 2 µF and the fault is ≤ 25 kΩ.

  The ZX3 is the only machine available that offers a way to locate an Intermittent Ground Fault.

  It also supports extended system monitoring for ground faults and logging ground fault data onto a flash drive. Data Logging can be used in many ways – to provide a historical account of the ground fault, ground fault search, training purposes etc.

- Plus two (3) additional operational modes:

  - **Detect/Analyze Mode** where voltage on each rail, the fault resistance and the system capacitance are calculated and displayed.

  - **Self-Test Mode** which will perform diagnostic and functional tests each time the equipment is turned on to ensure it is operating properly and display a system ready message for the operator upon successful completion of the self-tests.

  - **Branch Analysis sub-mode whereby the operator can identify individual branches for branch capacitance and/or ground resistances.**

- Even one more additional mode: The Demo Mode.
    - The Demo Mode can be used for training purposes for a quick training session.

This like getting a Swiss Army Knife with multiple built in methods for any condition that may be encountered. Instead of being dead in the water with a single method, there are options!

- Provides the operator with all pertinent information related to the system and fault conditions, as well as provides the operator with warning and ZX3 status messages. All, with just a single touch of a button, what could be simplier!
- Works on ungrounded systems from 24 to 600 volts, including Solar Generation.
- The ZX3 operates within the normal parameters of the users existing system.
- The Base Unit is connected to the system by three wires, the Red positive wire, the Black negative wire, and the Green ground wire. These connections will always remain the same. The user never has to determine whether the ground is more positive or more negative in order to connect.
- The ZX3 uses the existing ground current that is naturally flowing in the DC ground circuit, to trace the fault.
- Can be specially programmed for any major language such as; Espanol, Portugues, Francis, Deutsch, etc.
- Allied Edison offers a variety of training options including virtual and “On Site” training.

- **What the ZX3 Does Not Do:**
  - Inject or transmit a foreign signal such as an AC signal into the existing DC system (DC components such as protection or control devices are typically NOT designed to tolerate signals other than strictly DC).
  - Utilize an AC signal generator, or require any AC frequency to be imposed on the existing system.
  - Require manual synchronizing of the base and tracer.
  - Require phase angle measurements or amplitude comparisons of multiple sensors.

The ZX3 combines analog with digital technology, yielding the most innovative, advanced, ground fault detection and location machine in the world. The ZX3 contains more features than any other unit available and is comparable to having three ground machines built into one machine along with three other modes that work in concert with each other to provide the best location outcome.

It is currently being used throughout the United States and Canada by numerous utilities with Coal, Gas, Wind, Hydro, and Nuclear Power Stations! Please read the testimonials on the Allied Edison website.

Below is a list of features incorporated in the ZX3:

- The ZX3 is light, portable, hand held for easy and fast operation, much like a multimeter. There is no large case that sits on a table top or on the ground as with most other machines

- The ZX3 has a protective rubber boot around the Base and Tracer Units to make them rugged and durable.

- The ZX3 Base and Tracer Units each have magnetic straps so that the machines can be hung at eye level.

- The ZX3 uses a Radar like display.

- The Base and Tracer Units have fold out back stands that allow easy viewing when placed on a bench.

- The ZX3 Base Unit derives its power source from the actual switchgear, therefore no charging is required.

- The input is equipped with overcurrent and reverse polarity protection.

- The ZX3 Base Unit works on ungrounded DC voltage systems from 24 volts to 600 Vdc.

- The ZX3 illuminates very brightly in dark areas, making ground location as easy at night, as in the day.

- With a push of a single button, the ZX3 Base Unit automatically measures line to line voltage (Vll) and calculates the positive to ground (Vp) voltage and the negative to ground voltage (Vn) and displays the readings on the OLED screen to mimic what is normally displayed from the system ground detector.

- The ZX3 Base Unit will calculate the value of the resistance to ground, whether it is on the positive line (Rgp), negative line (Rgn) or both.

- The ZX3 Base Unit will also calculate the value of the Network Resistance (Rnet), useful in a multiple ground analysis.

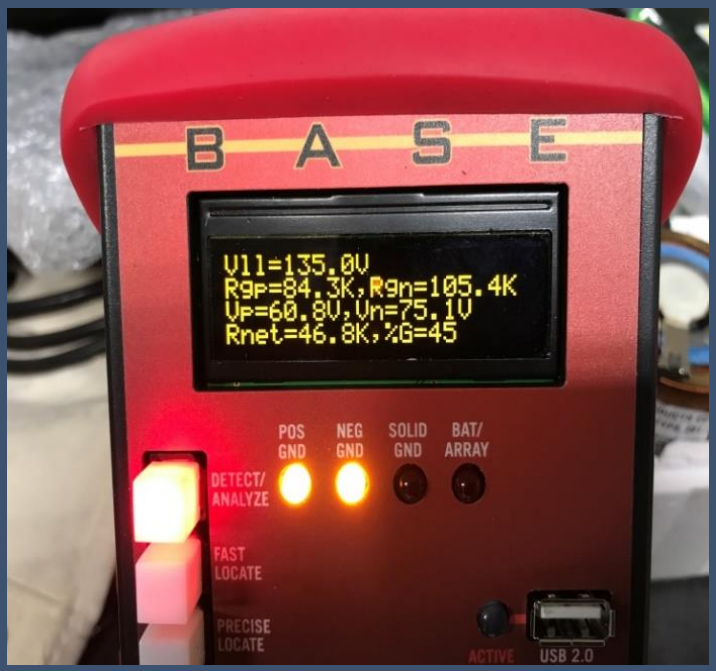
- The ZX3 Base Unit will calculate the “% grounded”, thereby allowing the operator to immediately know what potential cell could be cleaned if the source of the ground is at the battery bank or also useful in a multiple ground analysis.

- The ZX3 Base Unit will also measure and calculate the value of system capacitance (Cs), which is useful in determining which location mode will be fastest and most effective in locating the ground fault and also provides general information about a particular system.

- The ZX3 will also provide a rough measurement of branch circuit capacitance and even allow the user to tell which branch circuits have capacitance when there is not a fault on the system.

- All measurements, calculations, and messages are displayed on the OLED digital display.

- LED's on the ZX3 provide instantaneous indication if the ground is on the positive rail, negative rail, or both rails, in a battery bank or in a solar array string, whether or not the ground meets the criteria for a solid ground.



- A warning message is displayed once for 5 seconds when 6 mA of ground current has been exceeded.

Adjusting the current to below 5.0 mA resets the injection warning level to 6.0 mA.

- A “Signal Gain” control is provided that allows the operator to adjust the amount of ground current above the noise level. This control has a built in safety feature that will not allow the Unit to apply the ground current signal if the control is not first started at zero.

- There is a Self-Test mode that when pushed, the unit will test itself and provide indication of “pass” or “fail”.

- The ZX3 Base Unit is designed to support Data Logging via a flash drive to assist with troubleshooting intermittent grounds and to provide historical data. All data in any mode can be recorded on a flash drive.

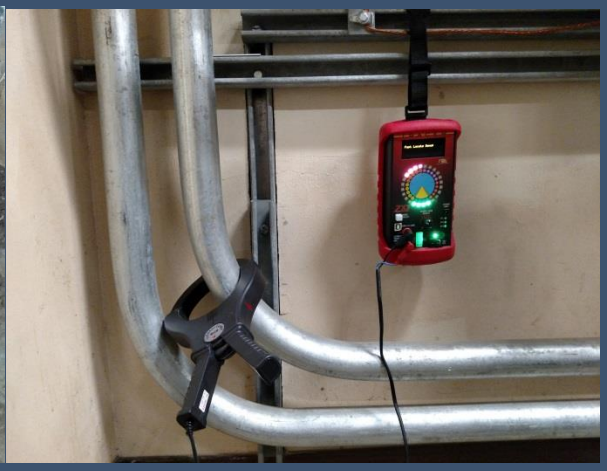
- The ZX3 Tracer Unit runs through a programmed functional test when the unit is first powered on that lets the operator know that all the LEDS are functional. The entire LED ring will light, then dim and then get brighter. This process will advance through three different base colors.

- The ZX3 Tracer ARC display is sectionalized in different colors to provide a sense of magnitude of ground current at the Tracer. A feature unique to the ZX3.

- The ZX3 Tracer offers a display that lets the user know what percentage battery life is left on the internal rechargeable batteries and when to plug in the charger. It also displays the Tracer software version installed on the machine.

- Both the ZX3 Base and Tracer units have remote software download capability to allow the users to download updated revisions of the software as they become available.

- The ZX3 Tracer has specially designed circuitry that will allow the sensor to detect ground current through a metal conduit, flexible conduit or other cable raceway without the need to have the actual wiring exposed. This is an immense time saving feature!



The ZX3 Portable DC Ground Detection and Location System includes the following:

- Certificate of Calibration (also proof of Origin and Compliance can be obtained)
- Technical Manual, Training and Training Videos contained on a Flash Drive
- Base Unit
- Tracer Unit
- 5” Precise Locate Sensor
- 2.5” Precise Locate Sensor
- Large Alligator Clips to banana – Red and BlackLarge size Current Transformer probe, for > 4” Cable Bundles
- Medium size Current Transformer probe
- Small size Current Transformer probe
- Base Unit Power Cable
- USBA to USBB Cable
- LIN Bus Cable
- Banana Adaptor Cable
- Black Pelican Carrying Case (ZX3 Components housed in this custom foam lined case)

- In summary, the ZX3 is an advanced tool by which a DC ground fault can be analyzed for station risk objectives and located without the need to de-energize live vital circuits critical to the station or system. The ZX3 assists in NERC PRC-002-6 compliance, whereby the Station Battery and DC power system must be inspected for inadvertent grounds every four months and aids to overall Nuclear Safety Risk reduction.

For pricing, additional information, training, contact Allied Edison at 800-307-0315, 307-773-7962,

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Also, come watch our videos at www.alliededison.com !

We have a video of an actual field ground location at a Premier Nuclear Generating Station:

https://www.youtube.com/watch?v=Ls5hdVqIcZo

Thank you