

Bierer Meters

Phasing Ranger ITM

Operating Instructions



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Limitation of Warranty and Liability

Bierer & Associates Inc. warrants this product to be free from defects in workmanship and material, under normal use and service conditions for a period of one year from date of shipment.


Due to continuous product improvement and development, Bierer & Associates Inc. reserves the right to modify product designs and specifications without notice.


It is impossible to eliminate all risks associated with the use of high voltage electrical devices including this device. Risks of serious injury or death are inherent in working around energized electrical systems. Such risks include but are not limited to variations of electrical systems and equipment, manner of use or applications, weather and environmental conditions, operator mentality, and other unknown factors that are beyond the control of Bierer & Associates Inc.


Bierer & Associates Inc. do not express or imply to be an insurer of these risks, and by purchasing or using this product you **AGREE TO ACCEPT THESE RISKS**. IN NO EVENT SHALL Bierer & Associates Inc. BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.


SAFETY MESSAGE DEFINITIONS per ANSI Z535

These instructions contain important safety messages to alert the user to potentially hazardous situations, how to avoid the hazard, and the consequences of failure to follow the instruction.

The safety alert symbol  identifies a safety message. The signal word following the symbol indicates:

 **DANGER** A hazardous situation which, if not avoided, **will** result in death or serious injury and equipment damage.

 **WARNING** A hazardous situation which, if not avoided, **could** result in death or serious injury and equipment damage.

 **CAUTION** A hazardous situation which, if not avoided, **could** result in minor or moderate injury and equipment damage.

NOTICE Important safety message relating to equipment damage only.

PRODUCT SAFETY INFORMATION



WARNING

1. Meter assembly and live line tool adapters shall be considered **non-insulating**. Do not let live line tool fittings come in contact with energized or grounded conductors. **The live line tool adapters, fittings, and handles supplied with meters shall not be used on any other devices.**
2. Use appropriate length live line tools for voltage being worked and maintain minimum approach distances as outlined in OSHA 1910.269, Table R-6.
3. All Phasing Meters and Voltage Detectors manufactured during and after 2007 will have a limit mark engraved on the high voltage probe(s) 2.5 inches from the tip to indicate to the user the physical limit that should not be exceeded when approaching and contacting an electrical conductor or other electrical test points. Zero Ohm insulated adapters (81280IE) should be used if limit mark will be exceeded.
4. This equipment should be used only by qualified employees, trained in and familiar with the safety-related work practices, safety rules and other safety requirements associated with the use of this type of equipment.
5. These instructions are not intended as a substitute for adequate training, nor do they cover all details or situations which could be encountered when operating this type of equipment.
6. Before operating this equipment, read, understand and follow all instructions contained in this manual. Keep instructions with equipment.

INSPECTION & MAINTENANCE BEFORE USE



WARNING

1. Prior to using any high voltage test equipment a careful inspection should be made to ensure the unit is free from any contaminants such as dirt, grease, etc. and that there are no apparent physical damages.
2. High voltage probe assemblies shall be wiped clean prior to each use with a silicone impregnated cloth and kept clean and free of contaminants. This will prevent tracking on the outside of the probe and meter. Always confirm internal battery voltage before and after use.

DESIGN and FUNCTION



WARNING

-see “Product Safety Information”, item 3, page 3.

The Phasing Ranger is designed to operate in conjunction with the cordless PD800W meter probe only. The unit consists of two devices; a send unit and a receive unit. The send unit plugs into a standard 115V AC wall outlet and a telephone outlet via standard telephone cord (provided). The receive unit plugs into a 12VDC “cigarette lighter” and a cell phone using a 2.5mm headphone cable (also provided). The receive unit talks directly to the meter probe to provide the correct phase angle. The phasing ranger is useable from 120/208 V to 800kV at a tested distance of 1000 miles.

Each unit has an off-on switch with a red light and a white light.

A solid red light indicates power supply voltage is good, a blinking red light indicates power supply voltage is deteriorating, and no red light indicates too low or no power supply voltage.

A rapidly blinking white light indicates satellite data and phase angle data is good, a slow blinking white light indicates satellite data is good but phase angle data is not present, and no white light indicates data is not available.

PD800W Meter Probe (DEG Position ONLY)

DEG– Phase angle measurement in degrees for use on Secondary, URD and Overhead. Direct contact from 240V to 69kV (**including capacitive test points**). Non-contact from 69kV to 800kV (without the use of extension resistors).

T – **Tests** basic meter function and displays the internal 9V battery voltage.

White - indicates an in-phase condition relative to send unit

Blue - indicates out-of-phase condition of 120 degrees.

Red - indicates an out-of-phase condition of 240 degrees.

Yellow “DY”- blinking light indicates a Delta/Wye transformation (30 degree phase shift) in conjunction with one of the other three phase indicator lights.

Note 1: For best results, always position the Meter Probe perpendicular to the conductors being tested and away from all other conductive surfaces such as adjacent phases, neutrals and grounded structures. Maintain a minimum distance of two feet between the body of the probes and all other conductors or grounded surfaces. Maintain a minimum distance of two feet between your hands and the body of the probe regardless of the voltage being tested. Never hold the tester with rubber gloves when in use.

Note 2: When phasing on **URD** transformer bushings use 8128TBALB Bushing Adapters on the Meter Probe.

BATTERY REPLACEMENT

The threaded live line tool fitting on the face of the meter probe is furnished with two flat edges for use with a wrench or slip joint pliers to remove and install the fitting from the meter housing. To remove, turn the live line tool fitting in a counterclockwise direction and install in a clockwise direction.

METER PROBE SET-UP & TESTING:

The Meter Probe completes a self check each time the selector switch is moved from one position to another. It displays the number 510 +/- 5 (full scale) and blinks 0, 120, 240 phase sequence indicator lights followed by a blinking **D** (Delta/ Wye Transformation) indicator light.

The internal 9V battery voltage should be checked by turning the rotary selector switch to the **T** position and holding for several seconds until the indicator lights stop blinking. If the battery voltage displayed is less than 8 volts, shown on the meter as 080, the battery should be replaced. A standard 9 volt battery is located behind the live line tool attachment.



WARNING

- **When in operation the selector switch on the Meter Probe must be in the DEG position. Failure to do so could produce false readings, resulting in equipment damage and/or personal injury.**

SET-UP and TESTING



WARNING

- See “Product Safety Information”, page 3.
- See “Inspection & Maintenance”, page 3.

SEND UNIT SET-UP & TESTING:

1. Permanently place satellite receiver where there is a clear view of the sky, i.e. window sill (non tinted)
2. Attach auto answer device to send unit labeled “TO AUTO ANSWER DEVICE” via audio cable then attach auto answer device to telephone outlet.
3. Plug in wall adapter into any 115 VAC standard outlet and plug other end into send unit labeled “AC IN 15V MAX”
4. Turn switch to the ON position, both lights should blink momentarily and then the red light should remain on.
5. Within several minutes the white light should begin blinking rapidly indicating good data is available.

RECEIVE UNIT SET-UP & TESTING:

1. Plug unit into the 12VDC cigarette lighter using supplied cable.
2. Place unit in a location where there is a clear view of the sky (dashboard of automobile is suitable).
3. Turn switch to the ON position, both lights should blink momentarily and then the red light should remain on.
4. Within several minutes the white light should begin blinking slowly (1 blink per second).
5. Using a cellular phone, dial the number that is attached to the auto answering device. Once connected, use the supplied audio cable to attach the cell phone to the box. The white light should begin to blink rapidly indicating good data is being received.

PHASE ANGLE MEASUREMENTS

Direct Contact from 240V to 69kV including Capacitive Test Points



WARNING – see “Meter Set-Up & Testing”, page 5.

1. Attach the Meter Probe to the appropriate length live line tool for the voltage being tested. Minimum 2 feet (**See Note 1 Pg. 5**)
2. Set the selector switch to the **Deg** position.
3. Using the meter probe, contact the energized conductor.
4. If the conductor is in phase, the Meter Probe should indicate near zero degrees on the digital display and show a White zero degree indication light.
8. If the conductors are out of phase, the Meter Probe will indicate either of the following:
 - a. Nominal 120 degrees and a **Blue** 120 degrees indicator light or
 - b. Nominal 240 degrees and a **Red** 240 degrees indicator light.



WARNING – see “Meter Set-Up & Testing”, page 5.

Delta/ Wye Transformation

The meter probe provides an additional feature of flagging a Delta Wye Transformation with a blinking yellow indicator light labeled "DY".

Expected phase angles when phasing a three-phase system are 0 degrees, 120 degrees, and 240 degrees. The PD800W continuously monitors all phase angles between the Send Unit and the Meter Probe when used in the **DEG** position. If the phase angle deviates more than +/- 20 degrees from any of the three expected values of 0, 120, or 240 degrees the **Yellow "DY"** light will blink.

For mapping and tagging phases between distribution and transmission voltages, the operator may want to offset the phase angle displayed on the meter probe. Either unit features a DEGREES OFFSET permitting the user to set the phase of the field voltage signal to any phase between 0° and 360°.

PHASE ANGLE MEASUREMENTS

Non-Contact from 69kV to 800kV



WARNING – see “Meter Set-Up & Testing”, page 5.

1. Attach the Meter Probe to appropriate length live line tools for the voltage being tested. Minimum 2 feet (**See Note 1 on pg. 5**)
 2. Select the **DEG** position on the Meter Probe.
 3. Bring the Meter Probe to a distance from each conductor that is close to the minimum approach distance for the voltage being tested to verify all conductors are energized. (**See OSHA 1910-269, Table R-6 for a minimum approach distance**).
 8. If the conductor is the same phase, the Meter Probe should indicate near zero degrees on the digital display and show a **White** zero degree indication light.
 9. If the conductor is out of phase, the Meter Probe will indicate either of the following:
 - a) Nominal 120 degrees and a **Blue** 120 degrees indicator light
- or
- b) Nominal 240 degrees and a **Red** 240 degrees indicator light



WARNING – see “Meter Set-Up & Testing”, page 5.

FCC INSTRUCTIONS TO THE USER

This equipment (Receive unit) has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not used in accordance with this instruction manual may cause interference to radio communications. Operation of this equipment in a residential area is likely to cause interference in which case the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the equipment.
2. Increase the separation between the equipment and the radio service that is experiencing the interference.
3. Consult the dealer or an experienced radio technician for help.

The user is cautioned that changes or modifications made to the equipment or antenna could void the user's authority to operate this equipment.

FCC COMPLIANCE INFORMATION STATEMENT

Trade Name: Cordless Phasing Tester

Model Number: Bierer PD800W

Compliance Test

Report Number: B31202D2

Compliance Test

Report Dates: 12/01/03 & 12/02/03

Responsible Party: Bierer & Associates, Inc.

Address: 11142 Wilson Blvd., Blythewood, SC 29016

Telephone: 803-786-4839

This equipment (Meter Probe) has been tested and found to comply with limits for a Class B, RF Receiver pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular situation. If the unit does cause harmful interference to radio or television, please refer to the three steps listed above under "FCC Instructions to the User".

Bierer & Associates Inc.

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