# Operating Instructions for

# CHANCE®

# Digital Transmission Phasing Testers

| Catalog No. | Voltage |
|---|---|
| PSC4033465 | 10 - 120kV |
| PSC4033466 | 40 - 240kV |

**⚠ CAUTION**

**The equipment covered in these instructions must be used and serviced only by competent, trained personnel familiar with and following approved work and safety practices. This equipment is for use by such personnel and these instructions are not intended as a substitute for adequate training and experience in safe procedures for this type of equipment.**

**These instructions neither cover all details or situations in equipment use, nor do they provide for every possible contingency to be encountered in relation to installation, operation or maintenance. Should additional information and details be desired or if situations arise which are not covered adequately for the user's purpose, the specifics should be referred to Hubbell Power Systems, Chance®.**

**NOTICE**

**Before operating a Chance Digital Phasing Tester, thoroughly read, understand and follow these instructions. Keep these instructions for future reference.**

## Basic Function and Design

The CHANCE® Digital Phasing Testers are portable tools which permit the measuring of AC voltage on distribution and transmission circuits ranging from 10kV to 240kV for determining the voltage line-to-line or line-to-ground. Each unit consists of two sections of Epoxiglas® poles with internal resistors encapsulated to prevent moisture penetration and mechanical damage. A housing enclosing electronic circuitry and a digital meter display is mounted on one pole and a cable reel is mounted on the second pole. The resistors in the meter-stick and reel-stick are connected with a cable having insulation rated at 15kV. When used above 15kV extra caution is required to maintain working clearance for the higher voltage.

Catalog No. PSC4033465 is designed for voltages up to 120kV, which read directly on the digital display. Each Epoxiglas® pole contains internal resistance.

Catalog. No. PSC4033466 is designed for voltages up to 240kV, which read directly on the digital display. Each Epoxiglas pole contains internal resistance.

The resistors limit current values to less than 1½ mA of current at maximum voltage rating across the inputs. Capacitance current to ground through the cable insulation depends upon area of ground contact.

## Operation — General

**⚠ WARNING**

**Keep instrument clean and dry.**

**Use Phasing Voltmeter Tester (PSE4033473) before each use to verify unit is working properly.**

**Always maintain proper working clearance between operator and all parts of the Digital Phasing Tester by using proper length insulated universal poles.**

Digital Phasing Testers are equipped with a cable reel on which the cable between the two housings is stored. Only the length of cable necessary to permit the contacts to reach between the points of measurement should be used. Any remaining cable length should be kept wound on the reel. The reasons for keeping excess cable retracted are:

1. Cable insulation is limited to 15kV for lightweight and ease of handling. This is adequate for momentary contact with ground or 15kV conductors but damaged insulation may result in an uncomfortable electric shock if personal contact is made at a damaged area of the cable insulation. At higher voltages, insulation puncture may result.
2. Meter indications will be affected and error introduced by the capacitance to ground between the cable and grounded structure, moist concrete or the earth. Other conductors will also influence meter indications if the cable is allowed to touch or come in close proximity to these conductors.

**⚠ WARNING**

**Keep cables, resistor housings, meter, and universal fitting from contact with other conductors, structures, switch cabinets, grounds, and personnel. Always maintain proper working clearance between operator and all energized parts of the unit by using proper length universal poles. Failure to follow these warnings could result in severe personal injury or damage to equipment.**

This tool is not intended for continuous contact applications. Contact should be limited to the time required to note meter indication.

## Power-Up/Power-Down/Backlight/Hold/Reset

- **Power-up:** To turn the unit on, press and release the push button labeled “Power”. Upon power-up the Hold light will light momentarily and all segments of the display will be displayed briefly and then display 00.0 or 0.01 when in the operational mode.
- **Power-down:** Unit powers down automatically after approximately 15 minutes, or can be turned off manually by pressing and holding the power switch for approximately 2 seconds.
- **Backlight:** The display can be lighted for reading in dim or dark conditions. To turn on the display backlight, press and release the button labeled “Backlight”. The backlight will stay on for approximately 5 minutes and then turn off. To turn off the backlight manually, press and release the backlight switch.
- **Hold:** The unit has a hold feature that permits a reading to be held on the display until reset. To turn on the hold feature, press and release the “Power” button. The “Hold” light will begin blinking, indicating it is in hold mode. The light will continue to flash for approximately 15 seconds at which time the light will become solid and the reading will be held until reset.

**⚠ WARNING**

**Do not attempt to reset the display until both the meter-stick and reel-stick are removed from all voltage sources. Failure to follow this warning could result in serious injury of death.**

- **Reset:** After voltage measurement has been made and the reading is noted, remove both the meter-stick and reel-stick from all voltage sources, then press and release the “Power” button to reset.

**⚠ CAUTION**

**Once in the Hold mode, the Digital Phasing Tester must be reset for the meter to measure higher or lower voltages.**

## PHASING VOLTMETER TESTER TRANSMISSION UNITS PSE4033473

The tester utilizes a 45-volt battery and an amplifier to verify that every component of the phasing voltmeter is in working order. To do this without a high voltage source requires that a 2 conductor phone jack be inserted in the meter housing of the phasing voltmeter and connected permanently to the rectifier circuit of the meter.

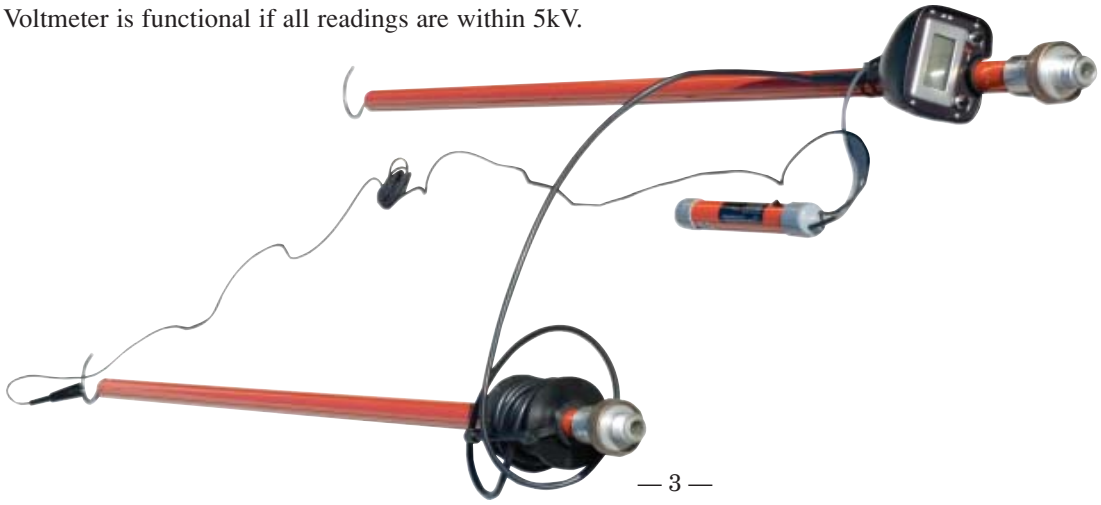
1. Insert plug of Voltmeter Tester into Phasing Set.
2. Attach clip to input of meter stick, note reading on Phasing Set.
3. Attach clip to input of reel stick, note reading on Phasing Set,
4. Change position of slide switch on Voltmeter Tester, and repeat steps 2 & 3.
5. Voltmeter is functional if all readings are within 5kV.

This procedure checks:

1. The meter itself.
2. Continuity of the resistor circuit in each stick.
3. Meter rectifier circuit is working on either polarity.

When the readings decrease appreciably, the battery should be replaced. The plastic cap on end opposite of leads can be slipped off the end of the stick to remove the battery.

Repair: If repair/calibration or parts are required, please contact: M.W. Bevins Co., 9903 E. 54th St., Tulsa, OK 74146, Phone (918) 627-1273, Fax (918) 627-1294, mwbevinsco.com.



## Operation — Overhead

To measure line-to-ground voltage, the handle on which the meter is mounted should preferably be used at the ground potential contact to minimize stray capacitance influence on the meter. On line-to-line measurements contact is made to each phase conductor. Keep the connecting cable as far as possible from the subject conductors, other conductors, and grounded or metal structures and platforms. As before noted, this is to avoid influence which may distort meter indications.

In tying two energized 3-phase feeders together where it is necessary to match phases, voltage measurements must be made between a conductor of one circuit and each of the conductors of the second circuit. This procedure is followed for each phase to avoid connecting phases in reversed rotation. Re-check the third phase just before making the final connection to assure proper phase relationship. With matched phases one may expect the voltage indication to be near zero. More often a voltage will be indicated due to phase shift and/or unequal voltage drop at the junction point of remotely energized circuits. Proper connections can readily be determined by the meter indications. Preliminary phase-to-phase measurements of each circuit are necessary to determine proper voltages are being joined.

## Battery Replacement

When the battery symbol is displayed in the upper left side of the display the batteries must be replaced. To replace batteries, remove the four screws holding the front panel on, then carefully remove panel. If it is necessary, disconnect the connector being careful not to damage the wires. Replace the four "AAA" batteries noting proper polarity. Replace the connector making sure that it locks into place. Reinsert the panel into the housing ensuring that the wires are not pinched; replace the four mounting screws. Test the function of the unit on a known energized voltage source or with a Phasing Voltmeter Tester, PSE4033473.

## Care

The Digital Phasing Tester is an electronic instrument and, if properly cared for, will provide many years of trouble-free service. Keep all parts and cable clean and dry. Abuse or misuse will damage the unit. Store in a dry location, do not drop, and protect from jostling and impacts when carrying or using. The insulated cable must not touch any grounded or energized object because accuracy of readings will be affected and cable insulation may be impaired or damaged.

| Catalog No. | Description |
|---|---|
| PSC4033465 | 10-120kV Digital Phasing Tester includes<br>- 2 ea. Straight hook probe<br>- 2 Extension handles and bag<br>- Operating Instructions<br>- Phasing Voltmeter Tester<br>- Bag |
| PSC4033466 | 40-240kV Digital Phasing Tester includes<br>- 2 ea. Straight hook probe<br>- 2 Extension handles and bag<br>- Operating Instructions<br>- Phasing Voltmeter Tester<br>- Bag |

**PSE4033473**
**Phasing Voltmeter Tester for All Transmission Models**

## Specifications

Meter sampling rate: 3 per second
Operating temp: -25°C to +80°C
Unit power: Four (4) "AAA" batteries

## Repair

If repair/calibration or parts are required, please contact:

M.W. Bevins Co., 9903 E. 54th St., Tulsa, OK 74146
(918) 627-1273, (918) 627-1294 (FAX), mwbevinsco.com

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