Operating Instructions for

CHANCE®
Digital Phasing Tester

Catalog No. Voltage
C403-3369 1 - 16kV
C403-3370 1 - 40kV
C403-3402 (Kit) 1 - 16kV
C403-3403 (Kit) 1 - 40kV

Extension Resistors
Catalog No. Voltage
For use with only 40kV Digital Phasing Testers:
C403-3371 1 - 80kV
For use with only 16kV Digital Phasing Testers:
H1876-4 1 - 48kV
H1876-2 1 - 80kV

CAUTION
The equipment covered in this manual 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 this manual is 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.

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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 1kV to 80kV for determining phase relationships and 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. C403-3369 is designed for voltages up to 16kV, which read directly on the digital display. Each Epoxiglas® pole contains internal resistance. For use on lines above 16kV and up to 48kV, one pair extension resistors, Catalog No. H1876-4, must be installed (one on meter-stick and one on reel-stick). Multiply the display reading by three (3) to obtain the actual voltage level. For voltages above 48kV and up to 80kV, one pair of H1876-2 extension resistors (or two pair of H1876-4’s) must be added. Multiply the display reading by five (5) to obtain voltage level.

Use only H1876-4 or H1876-2 extension resistors on the 16kV Digital Phasing Tester. Use of other extension resistors will result in a multiplying factor of some unknown fractional number and inaccurate voltage readings.

Catalog No. C403-3370 is designed for voltages up to 40kV, which read directly on the digital display. Each Epoxiglas® pole contains internal resistance. For use on lines above 40kV, a pair of extension resistors, Cat. No. C403-3371, must be installed which increases the voltage range to 80kV. Voltage levels with the extensions installed (one on meter-stick, one on reel-stick) will be the displayed voltage multiplied by two (2).

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Catalog No. | Description
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C403-3369 | 16kV Digital Phasing Tester includes
- 1 ea. Straight hook probe
- 1 ea. Pig-tail hook probe
- Instruction manual
- Plastic case
H1876-4 | 16kV DC Hi-Pot Adapter
T403-0856 | 15-35kV Elbow Adapter
T403-0857 | 15-35kV Bushing Adapter
C403-0838 | Phasing Voltmeter Tester
P643-6 | Bag for two 6’ universal poles

C403-3370 | 40kV Digital Phasing Tester includes
- 1 ea. Straight hook probe
- 1 ea. Pig-tail hook probe
- Instruction manual
- Plastic case
H1876-16 | 6’ Universal Pole
P643-8 | Bag for two 8’ universal poles

C403-3371 | 1 pair 1-80kV Extension Resistors
C403-3372 | Use with only 40kV Digital Phasing Tester C403-3370
H1876-4 | 1 pair 48kV Extension Resistors
C403-3369 | Use with only 16kV Digital Phasing Tester C403-3369
C403-0838 | Phasing Voltmeter Tester
T403-0856 | 15-35kV Elbow Adapter
T403-0857 | 15-35kV Bushing Adapter
C403-1762 | 16kV DC HiPot Adapter
H1760-6 | 6’ Universal Pole
P643-6 | Bag for two 6’ universal poles
H1760 | 8’ Universal Pole
P643-8 | Bag for two 8’ universal poles
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.

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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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.
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.

**Operation — Underground (URD)**

When using the phasing tester on underground systems, the same basic rules and procedures apply as with overhead, for example, maintaining proper working clearances to all parts of the tool, keeping tool clean and dry, keeping cable from contacting energized or grounded surfaces, etc. However, the following are two additional instructions when using the tool on underground equipment:

1. Due to the close proximity of energized parts and grounded surfaces, no probes must not be used when using the phasing tester on live-front URD equipment. Because probes could either bridge from phase-to-phase or phase-to-ground, or sufficiently reduce clearance to cause flashover. Therefore the probes must be removed from the tool. NOTE: A small hex-head machine screw (1/4-20 UNC x 3/8 long) could be inserted to protect the female thread.

2. Before the tool is used to test elbows or bushings on dead-front URD equipment, the overhead probes must be removed and the proper bushing adapter or elbow adapter substituted.

**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, C403-0838.