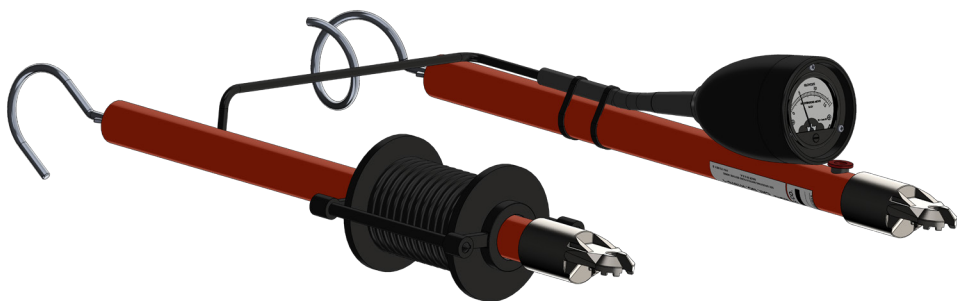


CHANCE® Analog Phasing Meters

Owner's Manual

Model No. H1876, H18761, H18767,
C4030457, C4030458



NOTICE: Before operating a CHANCE® Phasing Meter, thoroughly read, understand and follow these instructions. Keep these instructions with product for future reference.



Hubbell has a policy of continuous product improvement.
Please visit hubbellpowersystems.com to confirm current design specifications.

Guide to Warnings within Manual

The following is a list of warnings used within this manual and should be read in their entirety to ensure safe practices.

DANGER

A DANGER refers to operating procedures, techniques, etc., that, if not followed carefully, could RESULT IN DEATH.

WARNING

A WARNING refers to operating procedures, techniques, etc., that, if not followed carefully, could RESULT IN INJURIES OR DEATH.

CAUTION

A CAUTION refers to operating procedures, techniques, etc., that, if not followed carefully, could RESULT IN DAMAGE TO EQUIPMENT or LOSS OF SERVICE to customers.

NOTICE

A NOTICE refers to information that is considered important but not hazard related.

Product Safety

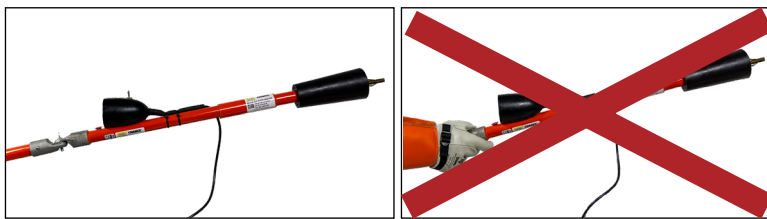
⚠ WARNING

Do not allow the universal coupling or housing to become grounded in any way, or to contact another phase, as this will cause erroneous voltage indication and could cause severe personal injury or damage to equipment.

When used on higher voltages, observe additional working clearance for the increased voltage from hands to line parts. Including Epoxiglas™ resistor housings, universal fittings, meter, and cable.

⚠ WARNING

Always use with an appropriate length insulated hotstick even when wearing rubber gloves. Contact with the universal coupling or other parts, even with rubber gloves, will cause erroneous voltage indication. Do not engrave on stick.



INCORRECT USE

⚠ WARNING

Before and after each use, always test the unit on a known energized voltage source or with an appropriate Voltage Indicator Tester.

⚠ DANGER

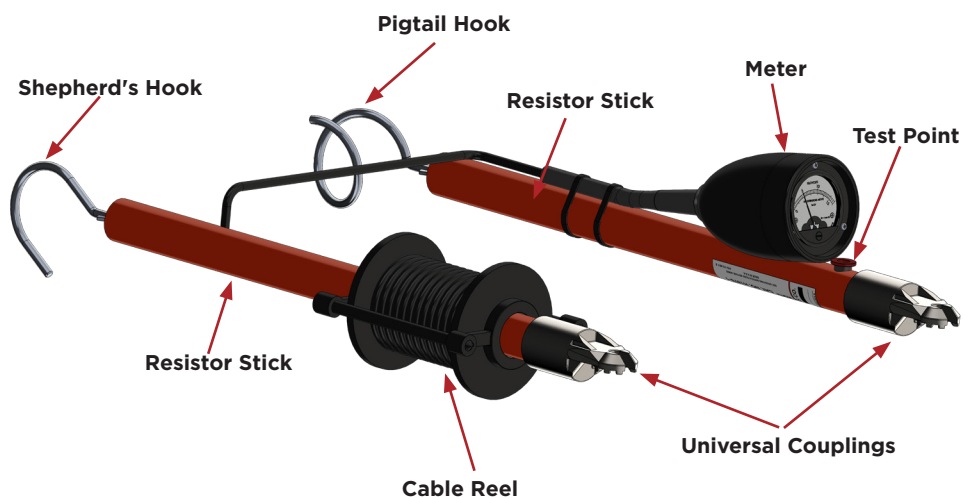
Minimum Approach Distances (MAD) should be adhered to at all times. For the latest information and charts refer to the official OSHA website: <https://www.osha.gov>

⚠ WARNING

The equipment covered in this manual must be used and serviced only by competently 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.

Generic Components of the Phasing Meter



Function and Design Overview

The CHANCE® Phasing Meters are portable devices which permit the checking of AC voltages on distribution and transmission circuits from 1 kV to 161 kV for the purpose of determining phase relationships and the approximate voltage line-to-line or line-to-ground of the circuits. When used above 15 kV, extra caution is required to maintain working clearance for the higher voltage.

The basic instrument, Model No. H18761, is designed for voltages up to 16 kV read directly on the analog scale of the meter. High impedance resistance units are encapsulated to protect them from mechanical damage and to prevent moisture penetration or accumulation around the resistors. The remainder of the handle is foam filled to prevent moisture accumulation.

Between the two resistor units there is a milliammeter and a connecting cable with 15 kV insulation. The resistors limit current values to less than 1.25 milliamperes at maximum voltage rating across the probes. Capacitive current to ground through the cable insulation depends upon area of ground contact. For example, a 4-inch contact pad induced a capacitive current of less than 40 micro-amperes (0.04 milliamperes) at full voltage. This is below perception levels. Current to ground resulting from cable insulation failure or damage is limited to less than 1.5 milliamperes by the resistors.

Extension Resistors

Extension Resistor Sticks are available to increase the voltage range above the instrument's base voltage. The Extension Resistor Sticks are installed with one on the meter stick and one on the reel stick. When installed, the scale of the meter will be changed by a factor determined by which Extension Resistors are used. The space surrounding these resistors is also encapsulated for mechanical and moisture protection.

For voltages above 16 kV up to 48 kV, add one pair of H18764 Extension Resistors. For voltages from 48 kV to 80 kV, add one pair of H18762 Extension Resistors. An alternative application for voltages from 48 kV to 80 kV is to use two pairs of H18764 Extension Resistors, installed with two on the meter stick and two on the reel stick. NOTE: Extension Resistors are only for use on 16 kV maximum Phasing Meters.

Overhead Operation

The Phasing Meter is equipped with a cable reel on which the cable between the two housings is stored.

CAUTION

During high voltage testing, only use the length of cable necessary to permit the contacts to reach between the points of measurement. Any remaining cable length should be kept wound on the reel.

There are two reasons for this:

1. Cable insulation is limited to 15 kV for light weight and ease of handling. This is adequate for momentary contact with ground of 15 kV conductors but damaged insulation may result in an uncomfortable shock if personal contact is made at a damaged area. At higher voltages, insulation puncture may result. KEEP CABLES FROM CONTACT WITH OTHER MATERIAL OR PERSONNEL.

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. RESISTOR ENCLOSURE PORTION CAN PUNCTURE ABOVE 40 kV. KEEP THIS PORTION CLEAR OF CONDUCTORS, STRUCTURES, AND GROUNDS.

CAUTION

This tool is not intended for continuous contact application. Tests at full voltage for 30 minutes produced no damage, although heating of resistors did occur. Contact should be limited to the time required to note the meter indication.

To measure line-to-ground voltage, the section 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 keeping connecting cable away from other conductors, grounded or metal structures, and isolated from contact with platforms or each contact. As noted before, 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 at the open point in remotely energized circuits and/or unequal voltage drop. Proper connections can readily be determined by the meter indications. Preliminary phase-to-phase measurements of each circuit are recommended to determine that proper voltages are being connected.

CAUTION

In substations, bus and switchgear cubicles, or other crowded areas where electrical fields are of greater intensity, extra precaution is recommended to avoid disturbing influences affecting meter indications.

Underground Operation

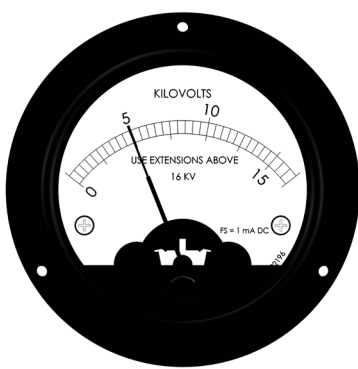
When using the Phasing Meter on underground systems, the same basic rules and procedures apply as with overhead, for example, maintaining proper working clearances to all parts of the tool, keeping tool clean and dry, keeping cable from contacting energized or grounded surfaces, etc. However, there are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

DANGER

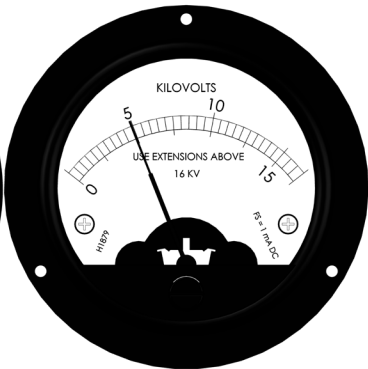
1. When testing dead-front URD equipment, use an appropriate Bushing Adapter on the Bushing Well. On Capacitive Test Points, use the Straight Probe. Never use the Shepherd Hook on URD equipment.

2. Use extreme caution when testing live-front URD equipment. Use applicable safe work practices and procedures. Do not use any Probe or Bushing Adapters on the Phasing Meter when testing live-front URD equipment. Only use a small hex head machine screw (1/4-20 X 3/8"long).

Dials of Individual Models



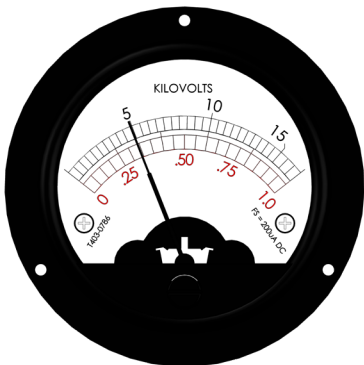
H18761
16 kV



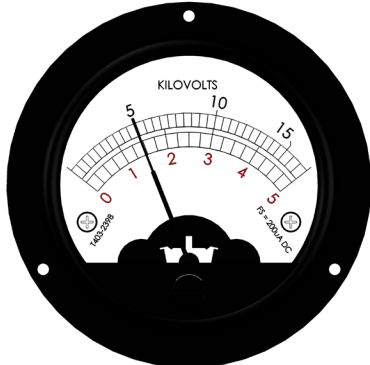
H1879
16 kV

NOTE:

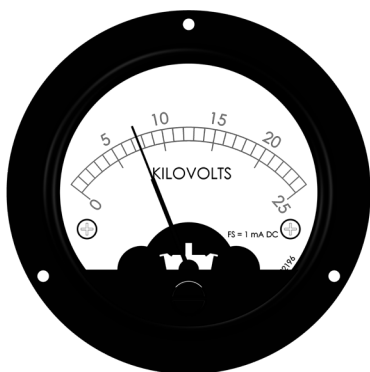
With no extensions, scale is direct reading.
With one PAIR of H18764 extension multiply by 3.
With two PAIRs of H18764 extension multiply by 5.



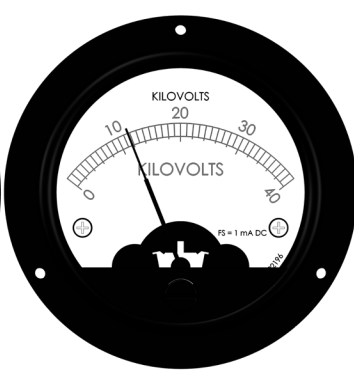
T4030786
1 & 16 kV



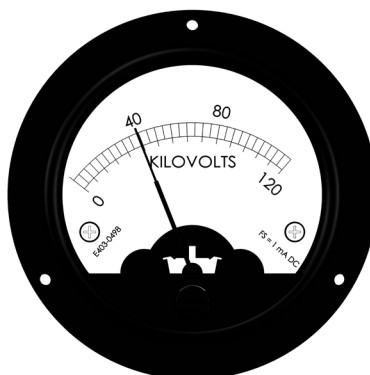
T4032311
5 & 16 kV



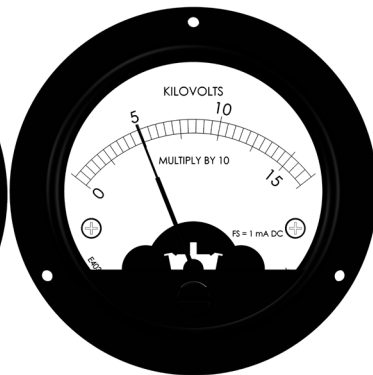
T4032261
25 kV



H18767
40 kV



E4030498
120 kV



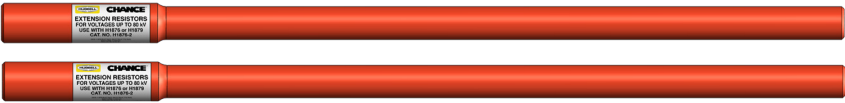
E4030499
161 kV

NOTE:
Multiply by 10

Extensions



H18764
48 kV Extension
Use **ONLY** with 16 kV models



H18762
80 kV Extension
Use **ONLY** with 16 kV models

DC Hi-Pot Adapters

C4031762
Up to 16 kV



C4031763
Up to 35 kV



Elbow Adapters

T4030856
Up to 35 kV



Bushing Adapters

T4030428
Up to 15 kV



T4030857
Up to 35 kV



Maintenance

The CHANCE® Phasing Meters are electronic instruments and, if properly cared for, will provide many years of trouble-free service. Keep all parts clean and dry. **Clean only with water or a mild soap & water solution. Do not use chemical solvents.** When using soap for cleaning, it is required to thoroughly rinse all soap residue off the unit before placing back into service. Any remaining soap residue may allow high voltage tracking especially in the presence of high humidity and/or moisture. Do not use CHANCE® Moisture Eater II wipes on any part of the tool as it will cause damage.

We recommend that every Phasing Meter be wiped clean and visually inspected for defects daily and before each use. If any defect or contamination that could adversely affect the proper operation, accuracy, or mechanical integrity of the tool is suspected, the Phasing Meter shall be removed from service. Before placing back into service, the Phasing Meter (including the stick portions) should be properly repaired (if necessary), cleaned, inspected, and tested for full operation.

Do not engrave on stick or meter housing. Abuse or misuse will damage the unit. Store in a dry location, do not drop, and protect from jostling or impacts during storage, carrying, or use.

Never straighten or modify probes.

⚠ CAUTION

Be careful when handling the Phasing Meter. Do not drop or scratch the tool.

Repairs

For Hubbell Power Systems authorized parts, repair, or factory calibration, please contact:

BEVINS
Protecting crews since 1957

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

General Information

Operating temperature range: -20° to +80°C (-4°F to 176°F)

Operating humidity range: 5% to 95% Rh

Storage temperature: -20° to +60°C (-4°F to 140°F)

Recommended storage at 21°C +/- 2°C (70°F +/- 5°F)

Storage humidity range: 5% to 95% Rh

Recommended storage at 45% Rh +/- 8% Rh

Limitations: Always use appropriate length insulated hotstick even if wearing rubber gloves.

The Phasing Meter Resistor Sticks are not to be considered as part of the Minimum Approach Distance (MAD) for the insulated hotstick. Always test the unit before and after each use on a known energized voltage source per the instructions. Do not use if damaged or malfunctioning. Keep all warning labels clean and readable. Store in a dry location.

Transmission Descriptions

Model	Description	Length	Weight
C4030457	Phasing Meter for voltages up to 120 kV 50/60 Hz, including resistor sections, handle sections and storage bags, and instruction booklet	63"	33 lbs
C4030458	Phasing Meter for voltages up to 161 kV 50/60 Hz, including resistor sections, handle sections and storage bags, and instruction booklet	76"	38 lbs
E4030498	Phasing Meter less handles, storage bag and instruction booklet for 120 kV, 50/60 Hz Equipped with male section of H33653 splice	63"	16 lbs
E4030499	Phasing Meter less handles, storage bag and instruction booklet for 161 kV, 50/60 Hz Equipped with male section of H33653 splice	76"	19 lbs
C4030459	One 8' x 1.25" Epoxiglas™ handle with female section of H33653 splice (two needed)	N/A	5 lbs
P6218	Storage bag, weatherproof duck, for 2 handles	108"	3.5 lbs
C4030460	Carrying bag, weatherproof duck, for 120 kV Phasing Meter less handles	84"	3 lbs
C4030464	Carrying bag, weatherproof duck, for 161 kV Phasing Meter less handles	102"	3 lbs
PSE4033473	Phasing Voltmeter Tester for Transmission Phasing Meter	N/A	1 lb

Distribution Descriptions

Model	Description	Weight
H1876	16 kV Phasing Meter Kit includes plastic case, two universal poles with bag, two hook probes, and instruction manual	14 lbs
H18761	16 kV Phasing Meter includes plastic case, two hook probes, and instruction manual	11 lbs
H18767	40 kV Phasing Meter includes plastic case, two hook probes, and instruction manual	13 lbs
H18763	Plastic Case for Phasing Meter	6 lbs
H18766	Straight Probe	2 oz
H18766P	Pigtail Hook	2 oz
H18766S	Shepherd's Hook	2 oz
H17601	Universal Pole, 1.25" x 6' (two needed)	1.75 lbs
P6436	Bag for two universal poles	1 lb
T4030786	1 & 16 kV Phasing Meter Kit includes plastic case, two universal poles with bag, two hook probes, and instruction manual	14 lbs
T4032311	5 & 16 kV Phasing Meter Kit includes plastic case, two universal poles with bag, two hook probes, and instruction manual	14 lbs
T4032557	5 & 16 kV Underground and Overhead Phasing Meter Kit includes plastic case, two universal poles with bag, hook probes, 16 kV DC Hi-Pot Adapter, two 15 - 34.5 kV bushing adapters, phasing voltmeter tester, and instruction manual	18 lbs
T4032261	25 kV Phasing Meter Kit includes plastic case, two universal poles with bag, two hook probes, and instruction manual	12 lbs
T4030428	15 kV Bushing Adapter	1 lb
T4030857	15 - 34.5 kV Bushing Adapter	1 lb
T4030856	15 - 34.5 kV Elbow Adapter	1 lb
H18762	80 kV Extension Resistors (two) 32" long	4 lbs
P6244	Bag for 80kV Extension Resistors H18762	1.25 lbs
H18764	48 kV Extension Resistors (two) 21" long	3 lbs
P6242	Bag for 48 kV Extension Resistors H18764	1 lb
C4030838	Phasing Voltmeter Tester	1 lb
C4031762	DC Hi-Pot Adapter up to 16 kV	1 lb
C4031763	DC Hi-Pot Adapter up to 35 kV	1 lb

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Hubbell Power Systems, Inc.
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Centralia, MO 65240
www.hubbellpowersystems.com

Hubbell has a policy of continuous product improvement.
Please visit hubbellpowersystems.com to confirm current design specifications.

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