

Product Catalogue



Power and Utility Test Equipment for:

**Instrument Transformers
CVT's
Earth Testing
Partial Discharge
Meter Testing
Installation & Commissioning**





Delivering Solutions Reliably

Since 1976 power companies have relied on test solutions from Red Phase Instruments to provide essential assessment data of vital electrical and utility infrastructure.

A trusted quality manufacturer, our equipment is built to withstand the rigors of continual field work and long term use by service personnel.

With some products still in service after 25+ years we are a constant and reliable utility partner that provides quality test equipment and engineering services at the most technical level.

Our equipment is a direct reflection on our customers needs with almost all of our products borne of collaborative technical agreements between Red Phase Instruments and our power or utility clients.

With an approachable and professional attitude, Red Phase Instruments technical staff are easy to reach, providing utilities with the security and confidence that assistance and advice is only a phone call away; and with our open door policy, our clients are secure in the knowledge that we are always available for direct discussion and demonstration on our current products, new ideas and customization programs.

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New Products

FSM10 Frequency Selective Multimeter



Hand held off frequency measurement of earth and structural potentials under the influence of an injected current in a fall of potential set up.

Also able to measure current branch distribution with a Rogowski coil.

In-built GPS feature allows for wireless phase synchronization.

591 Live CT Ratio and Burden tester



Hand held Live CT Ratio and Burden test set.

Simultaneous measurement of primary and secondary current for immediate ratio determination.

Voltage measurement

Rogowski coil for primary to 1200A.

Clamp on CT for secondary to 100A combined with alligator terminated leads for Voltage measurement and Burden measurement

590J Universal CT/PT test system



Portable test system for the accuracy measurement of Instrumentation Transformers.

Transformers covered include:

- Metering CT's
- Protection CT 's
- PT's under burden conditions

**590G-V2: Offline Measurement CT Tester**

Portable field service metering CT test system used in the measurement of full load CT and no-load PT ratio and phase errors in accordance with existing and customizable test standards.

With a ratio error resolution to 0.02%, the test set allows for measurement to 0.1 class accuracy CT's.

**590J: Universal full load CT and PT Tester**

Portable field service unit.

Able to perform the following offline tests:

Full Load PT testing.

Protection CT excitation measurements.

Measures full load CT ratio and phase errors in accordance with existing and customizable test standards.

**505B: Live CT Admittance tester**

Battery powered, field portable instrument for checking metering CTs and secondary metering circuits. Measures for:

1.6kHz admittance on a CT secondary and /or complete metering loop.

50Hz (or 60Hz) CT secondary current.

Live VA burden of the metering loop from the test block, or at the CT secondary terminals.

**590K: Full Load CVT Analyzer**

A comprehensive, portable CVT test system.

Tests CVTs rated to 550kV..

Rated ratio accuracy to 0.05%.

50 and 60Hz versions available.

Measures up to 3 CVT secondary's at once.

Measures CVT ratio and phase errors at different burdens, power factors and test points..

Multiple test point standards to choose from.

**590F: Online "Live" CT test accessory**

Used in conjunction with the 590G-V2 above the 590F comes in both HV and LV configuration for testing CT's at Live Loads up to 100kV.

Electronic compensation greatly improves accuracy over an operating range of between 5% to 100% of nominal input current.

**704: Hand Held CT Burden Tester**

Battery powered tester is ideal for carrying out a quick burden check in C.T. metering and protection circuits.

The clip-on C.T. is connected to the C.T. secondary wiring and the crocodile clips attached to the C.T. terminals. It calculates the burden as the ratio of voltage over current.

For Utilities Contractors and Educational Institutions



597C: Phase angle Meter

With both Voltage, direct current or current via clamp on CT the 597C is able to measure phase angle to 0.1 deg accuracy over a voltage range of 10V to 500V and 50mA to 50Amps via direct current measurement.

The clamp on CT option allows measurement of currents up to 500Amps.



632A: Watt and Phase angle Meter

With voltage ranges of 50V, 160V & 500V and a Current inputs ranges of 1A, 3.2A and 10Amps this instrument is invaluable as a desktop measurement tool for utilities world wide as well as an excellent laboratory asset in educational institutions.



633: Phasor Meter

This instrument demonstrates the properties of phasors and real/imaginary number notation for students and engineers alike.

The 633 gives the phase displacement and magnitude of the parameter under investigation. It has 50 and 500V ranges and 1 and 10A current range including a 500V range reference voltage input.



4014: Quad Ammeter

The Model 4014 integrates four ammeters for the direct and simultaneous reading of four (4) CT secondaries up to 10A during the setting up or checking of protection systems while they are in service with normal 50 or 60Hz primary currents flowing.

Statistical and Precedence Detection



PDT-832B: Portable Partial Discharge (PD) Analyzer

Important utility assets such as cables, transformers and switchgear can be monitored for destructive dielectric breakdown due to high voltage discharge events which can lead to eventual equipment failure.

The 832B combined with purpose designed electromagnetic and acoustic sensors is a statistical 3 or 4 channel PD event monitor with the flexibility of sensor gain and frequency adjustment. This allows the operator to target and view the discharge events of interest in a magnitude distribution plot across the mains line

frequency phase angle.. Statistical interval event capture and recording can be easily adjusted for or the operator can view the PD events in real time.

834B, 835B & 836B: Sensors for PDT-832B

Ultrasonic, HFCT & Noise Sensors shown below cover a PD bandwidth up to 10MHz.. Varying combinations may be used for different applications.



PDT-120: Portable Partial Discharge (PD) Locator

Dual channel Partial Discharge locator with a colour touch screen interface for easy parameter adjustment and visual feedback. As standard it comes with two TEV or Capacitor coupled high frequency sensors. Other optional sensors that have been purpose designed for use with the 120 are our ultrasonic and high bandwidth HFCT sensors.

Combined they provide a powerful and flexible PD analysis tool with the ability to determine PD location using varied sensing methods.

For ease of transportation the 120 PD locator comes in its own carry case and separate accessories bag.

The carry case is ergonomically designed and comes with a neck strap for portability during field use.

KWH Meter Testing with and without load



471: Single Phase 30 Amp kWh Meter Tester

Robust single phase kWh meter test unit with a 30 Amp Phantom load.

Built to last, the 471 is not a solid state unit, hence far more fault tolerant than switch mode types.

Wide input range to 270V.

Output current settings: 0.5, 1, 1.5, 2, 3, 5, 10, 15, 20, 30A

PF settings: 1.0, 30deg lag, 60 deg lag. Tolerance +/-5%

Comes with 1.8 metre test leads and M6 adaptor set to fit most meter terminals although M5 and M8 sets may be supplied as an option.



689-V2: Three Phase 100A kWh Meter Tester

This latest instruments from Red Phase is a combined Meter Tester and 100A Phantom Load.

The Model 689 –V2 can inject up to 100A, 3 phase into direct connected meters using the internal switch mode current source.

A set of plug and socket adaptors is supplied for popular M6 screws used in most meter terminals.

It also has a 10A injection circuit for testing CT operated meters. For operator convenience and safety, there is a switch on the front panel so that both CT Customer load and Phantom load testing can be done without changing the test lead connections.

The backlit LCD display shows all the information needed in typical meter testing operations, Up to 100 test records can be stored for later downloading.

All the accessories needed to test disc and electronic meters are supplied as a package with the Model 689.



691: Poly-Phase Reference Standard

The Model 691 is packaged in a 19" style bench-top case with all connections on the front panel for use in Meter test benches.

It has inputs for comparison with another poly-phase standard or 3 separate single phase standards for verifying calibration accuracy.



809F: Online meter verification panel

In situations where high revenue is measured by electronic kWh meters it is important to be 100% sure of the

metering accuracy. Our Model 809F is an automatic meter verification panel which continually tests 5 or more meters in a substation. It will cycle through each meter and test its output pulse accuracy for both real and reactive power.

Linear and Power Factor Loads



462F: 10A Phantom Load

The 462F is designed for use with any field test set to test polyphase C.T. meters.

It can be powered from the metering test block, and will test nominal 240V, 3 phase, 4 wire star connected L.V. meters or nominal 63.5V star connected H.V. meters. It can also test nominal 110V, 3 phase, 3 wire delta connected meters.

The 462F can be used with the Red Phase Instruments Model 679 polyphase meter tester.

The 3 current outputs are variable from 0 to 100% in 1A and 10 A ranges in coarse (10%) and fine (1%) increments. Phase angle/power factor settings are available from 60° LEAD to 90° LAG in 15° increments.



467B-30: 200VA Linear Phantom Load

Three phase phantom loads are used to energise CT or direct connected meters for commissioning or routine testing. The 467B-30 can deliver up to 200VA per phase and the operator is able to adjust the current injection amplitude from zero to full scale. Shrouded safety plugs and sockets are used to connect the cables to the front panel. The input required is 240V/415V 3 phase, 4 wire and this is protected with a 3 pole circuit breaker.



472: Poly-Phase Phantom Load

3 phase, 4 wire 240V/415V 50Hz & earth.

A 3 phase 10A circuit breaker is used to protect the unit.

The Neon indicators show which phase is live.

Output configuration is switchable from star to delta.

3 phase, 4 wire star 240V/415V nominal.

Maximum 0.7A, 160VA.

The output voltage is controlled by 3 "Variacs", and is adjustable 0 – 110%.

The output is not isolated from the mains supply.

3 phase, 3 wire delta 110V nominal.

In this configuration the output from the 472 is isolated from mains supply.

The N terminal is earthed to the chassis and mains earth.

The output of VA and VC terminals is 110V nominal w.r.t. N terminal.

The output voltage is controlled by 2 "Variacs" and is adjustable 0 – 110%.

2kVA Earth Injection System



The 4046 / 4047C Injection System

The 2kVA frequency selective earth injection system is designed for the delivery of continual power over a range from 2.0 Amps @ 800V to 20.0 Amps @ 100V or 32Amps @ 63V, (Model dependent).

Included is a GPS feature for use in terrestrial potential profiling as well as wireless synchronization of phase angles in current branching tests.

An added feature of the GPS is the ability for the frequency selective multi-meter to indicate to the operator the angular displacement between the potential path and injection path which is very useful when performing potential and impedance tests over large grounding systems.

Features:

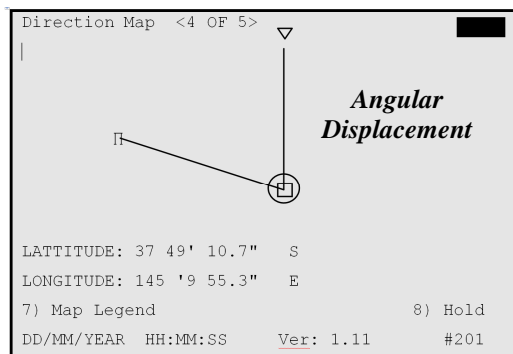
Selectable current settings from 2.0Amps to 20Amps or 3.2Amps to 32Amps
 Selectable injection frequencies from 40 to 70 Hz allow for tuned current injection into the grounding system of interest.
 Resulting tuned potential measurements may be taken without interference from background line frequencies.

Used for determining:

Earth grid impedance
 Fall of Potential
 Step potential
 Touch Potential
 Branch or split currents.

Injection system comprises:

4025E and 4031 Frequency Selective Multi-meter
 4046 Injection unit with GPS
 4047/C Coupling Transformer—Multi Voltage / Current isolation transformer



8kVA Earth Injection System



The 4041 / 4042-3 Injection System

The 8kVA Complete Earth Injection system is the largest and most powerful of the Red Phase Injection systems. Designed to deliver continual power across large grounding systems and perfect for testing long feeder or transmission line systems.

Includes a GPS feature for terrestrial or grid profiling as well as wireless synchronization of phase angles during current branch tests.

An added feature of the GPS is the ability for the frequency selective multi-meter to indicate to the operator the angular displacement between the potential path and injection path which comes in useful when performing potential and impedance tests over large grounding systems.

Three Phase Power is required to achieve the selectable voltage & current settings from: 10Amps @ 800V to 90Amps @ 90V

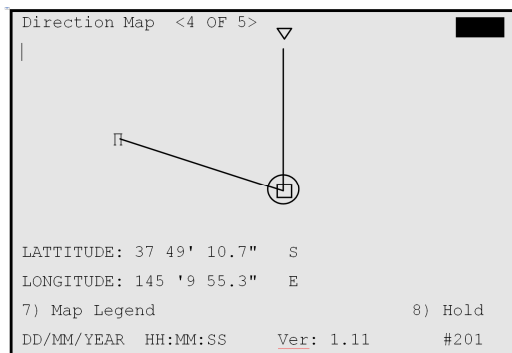
With a selectable injection frequency from 40 to 70 Hz combined with a frequency selective multi-meter, measureable voltage signals may be taken without interference from background line frequencies.

Used for determining:

- Earth grid impedance
- Fall of Potential
- Step potential
- Touch Potential
- Branch currents.
- Feeder / transmission line integrity

Complete Injection system comprises:

- 4025E and 4031 Frequency Selective Multi-meter
- 4041 Current Injection unit with GPS
- 4042 Coupling Transformer—Multi Voltage / Current isolation transformer



Remote Continuity Tester



4022B/C: A Remote Continuity tester for bonded structures

The integrity of buried conductors and earth bonded structures is difficult to determine. In small systems, a periodic resistance check will highlight any breakages. In larger systems a D.C. continuity check is likely to be of use.

The Model 4022B/C is used to test the continuity of connections and bonded structures within an earthing system or grid. Such structures include the equipment itself or peripheral elements such as a station's fencing and equipment barriers.

New features:

An internal power source. An internal sealed lead acid battery allows operators the freedom to move the test equipment to various earth points around the grid without the need for a mains extension cable. Lasting for up to 3 hours from full charge the unit also comes with a low battery shutdown feature and battery status indicators.

The 4022C comes with ergonomic pistol grip probes for rugged duty applications. The probe pins are hardened stainless steel and rotate when pressed onto a bonded structure, making for easier connection to metal surfaces through corroded and painted surfaces.

Performance:

Operating range and resistance resolution is 0 to 1999 milli-ohm.
Accuracy is 1% nominal.
Built in calibration check.

Impulse Impedance Tester



Model 4051

The lightning impulse impedance tester is used to measure the impulse ground impedance of a transmission pylon footing or other grounded structures without the need to disconnect the overhead ground conductor.

Portable and battery operated, the 4051 tests a grounded structure's lightning impedance by applying a selected impulse profile signal of up to 32A directly to the Pylon footing. The resulting peak load voltage is measured and the impedance figure is determined from this.

The following 4 impulse profiles can be applied and measured for:

- 1) 4/10us
- 2) 8/20us
- 3) 10/350us
- 4) 30/80us





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