590J DATASHEET



UNIVERSAL C.T. AND FULL LOAD P.T. TESTER

DEL SHU UNIVERSAL C.T. TESTER



Contents

Section

| Key Features |
|---|
| Application 1 |
| Where it is used1.1 |
| Measurement C.T. Ratio error 1.2 |
| Protection C.T. Measurements 1.2.1 |
| P.T. Ratio Error Measurement 1.3 |
| Full Load P.T. Testing 1.3.1 |
| Burden Measurement 1.4 |
| Admittance Measurement 1.5 |
| Hardware features 2 |
| Power Source 2.1 |
| Interface 2.2 |
| Case Details 2.3 |
| Transit Case 2.3.1 |
| Case Sizes (LxWxH) 2.3.2 |
| Weight 2.3.3 |
| Operating Ranges 3 |
| Measurable P.T. Test Ranges |
| Measurable C.T. Test Ranges |
| Admittance range 3.3 |
| C.T. Burden range 3.4 |
| P.T. Burden range 3.5 |
| Measurement Accuracy 4 |
| C.T. Ratio accuracy 4.1 |
| C.T. Phase error accuracy 4.2 |
| Winding resistance accuracy |
| External Burden range 4.4 |
| P.T. Turns ratio measurement accuracy 4.5 |
| P.T. Phase error resolution |
| Protection Features 5 |
| Power Supply and Consumption |
| Additional features 7 |
| CE Compliance & Certifications 8 |
| Test Procedure for P.T.s |
| Test Procedure for C.T.s 10 |
| 590J Interface connections 11 |
| Accessories Included 12 |
| Secondary C.T. cable and accessories 12.1 |
| Primary C.T. cable and accessories 12.2 |

RED PHASE INSTRUMENTS PTY. LTD. ABN 47 005 176 670 10 Ceylon Street, Nunawading, Melbourne, Victoria, 3131, Australia Tel: + 61 3 9877 6988 Fax: + 61 3 9878 8508 E-mail: sales@redphase.com.au

KEY FEATURES:

- PORTABLE AND LIGHTWEIGHT FOR TESTING P.T.S AND C.T.S TO 0.02% ACCURACY OFFLINE IN THE FIELD WITH PRIMARY SIDE VOLTAGE/ CURRENT OUT OF SERVICE. BOTH 50Hz AND 60Hz VERSIONS.
- TESTS FOR C.T. CURRENT AND PHASE ERROR FROM 2.5/5 UP TO 60,000/5 or 12,000/1.
- TESTS P.T. TURNS RATIO AND PHASE ERROR, FROM 1kV/100V UP TO 500kV/110V UNDER SELECTABLE FULL OR NO LOAD CONDITIONS.
- FULL LOAD P.T. TEST SIMULATES THE VARIOUS APPLICATION VOLTAGE LEVELS AND LOAD CONDITIONS AS PER ELEMENTS OF THE IEC 60044-2 STANDARD. USER MAY ALSO CUSTOMIZE APPLICATION TEST POINTS TO SUIT ADOPTED STANDARDS OR NEW REQUIREMENTS.
- CALCULATES OVERALL C.T. ERRORS UNDER LOAD FROM ADMITTANCE MEASUREMENT ON SECONDARY WINDING. (DOES NOT REQUIRE EXPENSIVE PRIMARY CURRENT INJECTION TESTING.)
- CALCULATES OFFLINE ADMITTANCE AT 1.6kHz. THIS CAN PROVIDE A BLUEPRINT TO BE USED AS A REFERENCE FOR FUTURE ROUTINE LIVE C.T. TESTS WITH RED PHASE MODEL 505B. The model 505B carries out live Admittance tests rapidly during normal operation with the primary 50/60Hz current present; Does not interrupt supply.
- MEASURES THE BURDEN OF C.T. AND P.T. SECONDARY CIRCUITS TO ENSURE C.T. AND P.T. NOT OVERLOADED
- AUTOMATIC DEMAGNETIZATION OF CT.
- USER IS ABLE TO CREATE THEIR OWN SET OF CT INJECTION AND BURDEN TEST POINTS.
- CT BATCH TESTING POSSIBLE ON MEASUREMENT C.T's.
- IS ABLE TO STORE UP TO 1000 C.T. AND P.T. RECORDS EACH.
- ABLE TO PROVIDE INTELLIGENT CLASS (PASS OR FAIL) RESULTS ASSESSMENT AND ALSO PROVIDE BEST CLASS FIT DETERMINATION.
- ABLE TO DOWNLOAD RESULTS TO A USB FLASH DEVICE OR PC.
- PROVIDES FOR EXCITATION OF STANDARD AND TRANSIENT PROTECTION C.T.s.
- GRAPHICAL PRESENTATION OF EXCITATION CURVE ALSO AVAILABLE.

1.0. APPLICATIONS

1.1. Where it is used

The Model 590J is a modestly priced, lightweight field portable instrument designed to audit P.T. and C.T. installations in a utility system. The Model 590J is used for many routine workshop tests, as well as field testing, to an accuracy of 0.02%. It is optimised for testing metering C.T.s, but can also test protection C.T.s for current and phase error at normal burden.

1.2. C.T. Ratio Error Measurement

The traditional method of testing of C.T.s using primary injection is very costly. The Model 590J tests a C.T. by measuring the turns ratio and the 50Hz/60Hz admittance of the C.T. secondary winding. These tests require the C.T. to be offline for only a few minutes. From these tests the performance of the C.T. is automatically calculated to typically within 0.02% for 5 injection points customizable to 400% of rated current and at a chosen PF above 0.5. These nominal primary load levels for testing can be customized by the user at any time.

1.2.1 Protection C.T. Measurements

Most elements covering protection C.T.s under IEC60044-1 and IEC 60044-6 standards have been implemented in the 590J. Standard and specialized transient C.T types can be tested for excitation beyond 10kV. Depending on insulation.

1.3. P.T. Ratio Error Measurement (No Load)

The Model 590J will test the turns ratio of a single phase inductive P.T. at reduced energization with its own internal solid state voltage source. Tests on a variety of P.T.s up to 500kV rating has established that a reduced energization level will give results valid to within 0.02% in nearly all cases under no load conditions

1.3.1 Full Load P.T. Testing – up to 2 windings

The 590J can test a P.T.'s ratio under varying voltage and load conditions as outlined in elements of the IEC60044-2 standard.

A typical test would occur at the following test points:

- . 120% of V
- 100% of V
- 80% of V
- Test points above are customizable by operator.
- Power factor is selectable between 0.8 & unity.
- Test is performed at 25 & 100% of rated burden.

Note: PT test can only be performed within the ratio limits outlined in section 3.1.

1.4. Burden Measurement

The metering circuit burden can be measured by connecting the C.T. or P.T. secondary circuit to the Model 590J. It will check that the C.T. or P.T. is not overloaded under normal service conditions.

1.5. Admittance Measurement

A C.T. can be checked at minimal cost by performing a 1.6kHz admittance test with the 590J. The result is stored and then referred to when future Live admittance tests are performed by the Model 505B Live C.T. Tester.

The admittance of a C.T. is a very sensitive indicator of shorted turns and other common faults which can cause metering errors of 1 to 20% which can be easily overlooked for years.

2.0. HARDWARE FEATURES

2.1. Power Source

The Model 590J has an internal solid state voltage source to test P.T.s and C.T.s. The source can generate up to 160V at 50Hz or 60Hz, and 2V at 1.6kHz. To avoid spurious results caused by 50Hz or 60Hz pickup from nearby equipment, the tests are carried out at 51Hz or 61Hz and the microprocessor control locks on to the 51Hz signal only. The software extrapolates the 51Hz or 61Hz test results for an actual 50Hz or 60Hz performance.

2.2. Interface

The alphanumeric keyboard on the front panel can be used to enter information about the item to be tested. Above the keyboard is a backlit 6 inch graphic LCD screen which displays the keyed information and final test results.

2.3. 590J Case

The Model 590J uses an injection moulded plastic case which is robust and hard wearing. It has an internal aluminium chassis and an aluminium front panel with a reverse screened "Lexan" polycarbonate finish.

2.3.1. Transit Case

A transit case is also provided as standard for transportation. Purpose built from ABS plastic, it is foam lined and offers suitable protection for the 590J during transportation to and from site. The case has room for test leads and accessories.

2.3.2. Case Sizes (L x W x H)

 590J case:
 420mm X 350mm x 210mm.

 Transit case:
 630mm X 270mm X 520mm

2.3.3. Weight

| 590J: | ~9kgs |
|---------------------------|-------|
| Transit case: | ~6kgs |
| Test leads & accessories: | ~3kgs |



3.0. OPERATING RANGES

3.1. Measurable P.T. Test ranges

No load voltage ratio only

- Maximum ratio 510kV / 110V
- Minimum ratio 0.24kV / 100V
- VA rating from 1 to 300VA.

Full Load ratio testing

- Maximum ratio 330kV / 110V
- Minimum ratio 1kV / 100V
- VA rating from 1 to 300VA.

3.2. Measurable C.T. Test ranges

| Maximum ratio | 60,000/5 |
|------------------------|------------------|
| | or 12,000/1 |
| Minimum ratio | 2.5/5 or 1/1 |
| VA RATING 1A Secondary | Typically 150VA. |
| VA RATING 5A Secondary | Typically 300VA. |
| Selectable % Primary I | 1% to 400%. |
| Selectable % BURDEN | 10% to 100% |
| Selectable PF | 0.5 to 1.0 |
| | |

The 590J computes the C.T. performance at the selected PF.

C.T. TYPES: Single and multiple primary turn, parallel winding compensation, composite core.

3.2.1 Protection C.T. Measured Parameters

- Turns Ratio
- Ratio Error at rated up to 30x overload current
- Winding Resistance
- Accuracy Limiting Voltage
- Composite Error
- Instrument security factor
- Remanence flux factor
- Knee Point

The protection CT types that the 590J is expected to commonly test are:

| IEC60044-1 | EC60044-6: |
|------------|------------|
| 5P: | TPX: |
| 10P: | TPY: |
| PX: | TPZ: |
| PR: | TPS: |
| | |

T

- **3.3.** Admittance measurement range 50/60Hz 100uS to 100mS + 0.5% 1.6kHz 100uS to 50mS. + 0.5%
- **3.4.C.T. Burden measurement range**
1A Type0 to 25 Ohms / 25VA
5A Type5A Type0 to 12 Ohms / 300VA

To achieve this the 590J typically injects 0.5A up to a limit of 25V to determine the C.T. burden value

3.5. P.T. Secondary burden range 100V / 110V 0 to 300VA

4.0. MEASUREMENT ACCURACY

4.1. C.T. Ratio accuracy

| 4.1. | | | | | | | | |
|---|--|--|--|--|--|--|--|--|
| | Ratio Ranges 2.5/5 to 10,000/5 10,000/5 to 20.000 20,000/5 to 60,000 | | | | | | | |
| | %Injection Range 5% to 120% 120% to 200% 200% to 400% | Ratio Accuracy 0.02% 0.03% to 0.05% 0.05% to 0.1% 0.1% | | | | | | |
| 4.2. | C.T. Phase error 5 to 120% Primary | | | | | | | |
| 4.3. | Winding Resistance AccuracyAccuracy1 mΩ + 1 % | | | | | | | |
| 4.4. | External Burden Resolution to | 50 mΩ + 1 % | | | | | | |
| 4.5. | P.T. Turns ratio n | neasurement accuracy | | | | | | |
| No L | oad - ratio test at a | a fixed voltage . | | | | | | |
| | Ratio Ranges V/100V to330kV/11 V/110V to 500kV/11 | | | | | | | |
| | | | | | | | | |
| volta | Load - simulation o ges and load conc C60044-2. | of varying application litions as per elements | | | | | | |
| 100k ^v | Ratio Ranges 100V to 100kV/110V V/110V to 330kV/11 racy based on burd | | | | | | | |
| 4.6. | P.T. Phase error a -No Load- To 2 min. | accuracy <i>Full Load-</i> To 5 min. | | | | | | |
| <u>5.0.</u> | PROTECTION FE | ATURES. | | | | | | |
| Fuses for Mains input, Flashing LED when terminals are live. Buzzer to indicate error conditions. | | | | | | | | |
| 6.0. SUPPLY & CONSUMPTION | | | | | | | | |
| Stand Input | s Supply dby Power: Power: ut Power: | 85 - 264 VAC, 50/60Hz 30W 280W Steady State 280W Steady State 2.7kW Peak | | | | | | |
| Outpu | ut Current: ut Voltage Max Metering | 3A r.m.s. 15A peak 150Vac r.m.s. | | | | | | |

- For Protection CT's

120Vac r.m.s.

7.0. ADDITIONAL FEATURES

Auto class assessment of metering CT's to 0.1 class.

Batch testing.

Test points customizable for any burden from 0 to 100% and customizable injection test points from 0% to 400%.

Comes with PC Windows Test Report software for C.T.'s and P.T.'s with easy to understand results format

| RØI 590GV2 Metering CT Test Report | | Injection % (A) Injection % (A) 120 100 | | | | Injection % (A) 50 | | A) | Injection % (A) 20 | | Injection % (A) | | | | |
|---|-------------------|--|---|--|--|--|---|------------------|-----------------------|-----------------------------------|--|--|---|---|----------|
| General Information | | | | Builden (% \%) | Ratio | Phase | Ratio | Phas | | | 1350 | Ratio | Phase | Ratio | Phase |
| Record # | | | 11 | (36 (94) | (%) | 0 | (%) | 0 | (3 | | 0 | (%) | () | (%) | 0 |
| Operator | | | OPERATOR 2 | 100 | 0.00300 | 1.220 | 0.0020 | 0 1.27 | 0.00 | 103 1 | 550 1 | 0.00100 | 1.550 | -0.00100 | 2,780 |
| Test Date & Time | | 8 | 02/2013 4:01 PM | 25 | 0.00800 | 0.950 | 0.0000 | 0 1.00 | 0.00 | 1 007 | 210 1 | 0.00700 | 1.530 | 0.00400 | 2.170 |
| Model # | | | | | | CT Babel | - | | _ | _ | | 67.0 | Trans France | | |
| Serial # | | | | 211.000 | | 0111000 | | | 100 | 2.0 | _ | | TRAFFICITION OF | | =302 |
| Location | | | - | | | | | | 1110 | | | | | | - 97.100 |
| Class Code & Name | | | 9995 | | | | - | | | 1 | <u>, </u> | | | | |
| Test Class Accuracy Code 8 | & Name | | 9993 | 2 | | | | 1 | | 5 °T | 14 | | | | |
| CT Parameter Setting | a 8 | | | 0.004 | | | | 1 | | 1 ** | ~ | 1 | | | |
| Primary Canent Rating (Arro | | _ | 4003.0 | ¹⁰ 0.992 | | | - | - | | ° 1 | | | | - | |
| Secondary Current Rating (A | Arros) | | 5.0 | - | 4 | | | - | | 0.5 | - | | | | |
| VA Rating (VA) 15.0 | | | | | | | | | | | | | | | |
| | | | 15.0 | 0.000 | | | | | | | | | | - | |
| | | | 15.0 | 0.000 | 15 30 45 | 60 75 miter (1.4) | 96 105 | 120 | | • | 14 34 | 41 KB Vjedani | 75 M | 105 120 | |
| VA Rating (VA) | | | | | | wher (1.A) | | 100 | | 0 | 15 3 | | | 105 120 | |
| VA Rating (VA) Power Pactor Line Frequency (Hz) | | DEFAUL | 1.00 | •xx + | | wher (1.A) | | 50 | | 0 | 15 3 | | | | |
| VA Rating (VA) Power Pactor Line Frequency (Hz) Test point menu name | | DEFAUL | 1.00 | Magnetis | ation Cu Point 1 | wher (1.A) | Points Point3 | Point 4 | Point 5 | 0 0 0 0 0 0 | Point 7 | Porce | Point® | | 1 |
| VA Rating (VA) Power Pactor Line Frequency (Hz) Tost point menu name Test point menu Id | - 44 | DEFAUL | 1 00 50 T TEST POINTS | | ation Cu | arve Po | ints | Pisit 4 0.017 | Point 5 0.014 | | | Porce | 1.4 | |] |
| VA Rating (VA) Power Pactor Line Frequency (Hz) Test point menu name Test point menu Id CT Main Errors | | DEFAU 759.88348 | 1 00 50 T TEST POINTS | Magnetis | ation Cu Point 1 | Point 2 0.027 | Points Point3 0.021 | | | Paired | Point 7 | Porc.0 | Point® | Pairs 10 0.003 | - |
| VA Rating (VA) Power Pactor Line Frequency (Hz) Test point menu name Test point menu Id CT Main Errors Quick Rate (R1) Winding DC Resistance (Dh | 118) | | 100 50 T TEST POINTS 3356 | Magnetis Current (A) | ation Cu Point 1 0.035 81.310 | Port 2 0.027 78.210 | Paints 0.021 74.590 | 0.017 | 0.014 | 0.012 65.010 | Point 7 0.009 56.65 | Pares 0.007 0.43.250 | Paint® 0.005 1 28.720 | Paint 10 0.003 13.620 |] |
| VA Rating (VA) Power Pactor Line Frequency (Hz) Toot point menu lid CT Main Errors Quick Rate (H1) Winding DC Resistance (Dh Fran Ratio NL1 mesupred) | 118) | 759.88348 | 1 00 50 T TEST POINTS | Magnetis Current (A) | ation Cu Point 1 0.035 81.310 | Point 2 0.027 | Paints 0.021 74.590 | 0.017 | 0.014 | 0.012 65.010 Kite | Point 7 0.009 56.654 Point | Pares 0.007 0.43.250 Vdt 0 | Paint# 0.005 1 28.720 | Paint 10 0.003 13.620 Current (A) | |
| VA Rating (VA) Power Pacter Line Frequency (Hz) Test point menu name Test point menu il CT Main Errors Quick Rato (V1.1) Winding DC Resistance (Dh Final Ratio (V1.1), massured i vidtage (V) | 118) | 759.88348 0.960 | 100 50 T TEST PONTS 3990 | Magnetis Current (A) | ation Cu Point 1 0.035 81.310 | Pore 2 0.027 78.210 tagsoticat | Points Point3 0.021 74.590 Ion Darwe | 0.017 | 0.014 | Pairce 0.012 65.010 Kite | Point 7 0.009 56.651 e Point 15 * | Parts Parts 0.007 0.43250 Vdt 0 503 | Point® 0.005 1 28.720 89* 7 374 | Point 10 0.003 1 13.620 Current (A) 0.008 | |
| WA Rating (VA) Prever Programcy (Hz) Test point menu name Test point menu lid CT Main Errors Quick Ratio (H-1) Warding DC Resistance (Dh Friad Ratio (H-1), measured) voltage (V) Ratio Correction Factor | 118) | 759.88348 0.960 759.81189 | 100 50 T TEST POINTS 3356 | Magnetis Current (A) Voltage (V) | ation Cu Point 1 0.035 81.310 | Port 2 0.027 78.210 | Paints 0.021 74.590 | 0.017 | 0.014 | Pairce 0.012 65.010 Kine | Point 7 0.009 56.651 • Point 15 * NSI | Valia Parce 0.007 0.43.250 Vali 0.0 50.0 50.0 50.0 | 9 Paint# 0.005 1 28.720 39# 0 374 374 | Paint 10 0.003 13.620 Current (A) 0.008 0.010 | |
| WA Rating (WA) Prever Practise Line Frequency (Hz) Test point menu and CT Main Errors (acids Ratio (H1) Winding DC Resistance (DK) Priel Ratio (H1) Ratio Correction Pactor Softar Core Andremace (LS) | urre) at | 759.88348 0.960 759.81189 0.00000 | 100 50 T TEST PONTS 3990 | Magnetia Current (A) Voltage (V) | ation Cu Point 1 0.035 81.310 | Pore 2 0.027 78.210 tagsoticat | Points Point3 0.021 74.590 kon Cuawe | 0.017 | 0.014 | Pairce 0.012 65.010 Kine | Point 7 0.009 56.651 e Point 15 * | Parts Parts 0.007 0.43250 Vdt 0 503 | 9 Paint# 0.005 1 28.720 39# 0 374 374 | Point 10 0.003 1 13.620 Current (A) 0.008 | |
| VA Rating (VA) Power Pactor | urre) at | 759.88348 0.960 759.81189 0.00000 124.421 | 1 80 50 T TEST POWITS 3196 37 900 -113 542j | Magnetis Current (A) Voltage (V) | ation Cu Point 1 0.035 81.310 | Pore 2 0.027 78.210 tagsoticat | Points Point3 0.021 74.590 kon Cuawe | 0.017 | 0.014 | Pairce 0.012 65.010 Kine | Point 7 0.009 56.651 • Point 15 * NSI | Valia Parce 0.007 0.43.250 Vali 0.0 50.0 50.0 50.0 | 9 Paint# 0.005 1 28.720 39# 0 374 374 | Paint 10 0.003 13.620 Current (A) 0.008 0.010 | |
| VA Rating (VA) Prever Practire Line Frequency (Hz) Test point menu name Test point menu like CT Main Errors Qiskic Ratio (H1) Winding DC Resistance (Dh Prail Ratio (H1) masaured ui votinge (V) Ratio Correction Factor Softa Core Admittance (VS) Eldernal Burden ((Dhms)) | 1786) at 3) | 759.88348 0.960 759.81189 0.99000 124.421 0.000 0.900 | 1 00 50 17 TEST POINTS 3956 37 500 -113 542) 0.000j | Magnetis Current (A) Vidtage (V) | ation Cu Point 1 0.035 81.310 | Pore 2 0.027 78.210 tagsoticat | Points Point3 0.021 74.590 kon Cuawe | 0.017 | 0.014 | Pairce 0.012 65.010 Kine | Point 7 0.009 56.651 • Point 15 * NSI | Valia Parce 0.007 0.43.250 Vali 0.0 50.0 50.0 50.0 | 9 Paint# 0.005 1 28.720 39# 0 374 374 | Paint 10 0.003 13.620 Current (A) 0.008 0.010 | |
| VA Rabis (VA) Power Pactor Line Frequency (Hz) Line frequency (Hz) Line point menu same CT Main Errors Quick Rato (H1) Wonling DC Resistance (DA) Fred Ratio (H1), massared is voltage (V) Ratio Correction Pactor Statu Core Admittance (US) Deformal Burden (Dmin) Class Accountage Line (Line Admittance Line) | 1786) at 3) | 759.88348 0.960 759.81189 0.99000 124.421 0.000 0.900 | 1 00 50 17 TEST POINTS 3956 37 500 -113 542) 0.000j | Magnetis Correct (A) Voltage (V) | ation Ct Point 1 0.035 81.310 errs | Point 2 Point 2 0.027 78.210 | Part 3 0.021 74,590 Ion Daree | 0.017 71.640 | 0.014 | Pairce 0.012 65.010 Kine | Point 7 0.009 56.651 • Point 15 * NSI | Valia Parce 0.007 0.43.250 Vali 0.0 50.0 50.0 50.0 | 9 Paint# 0.005 1 28.720 39# 0 374 374 | Paint 10 0.003 13.620 Current (A) 0.008 0.010 | |
| VA Rabis (VA) Power Pactor Line Frequency (Hz) Line frequency (Hz) Line point menu same CT Main Errors Quick Rato (H1) Wonling DC Resistance (DA) Fred Ratio (H1), massared is voltage (V) Ratio Correction Pactor Statu Core Admittance (US) Deformal Burden (Dmin) Class Accountage Line (Line Admittance Line) | 1178) at 3) | 759.88348 0.960 759.81169 0.00000 124.421 0.000 0.000 valuation | 1 E0 50 T TEST POINTS 3356 37500 -113.542) 0.600j 0.600j | Magnetis Current (A) Voltage (V) | ation Cu Point 1 0.035 81.310 errs | note 11.4 Pore 2 0.027 78.210 Sugnotical | Paints Paint 3 0.021 74.590 Ion Darve | 0.017 71.640 | 0.014 | Pairce 0.012 65.010 Kine | Point 7 0.009 56.651 • Point 15 * NSI | Valia Parce 0.007 0.43.250 Vali 0.0 50.0 50.0 50.0 | 9 Paint# 0.005 1 28.720 39# 0 374 374 | Paint 10 0.003 13.620 Current (A) 0.008 0.010 | |

Noise Immunity:

The 590J is electronically robust and electrically immune to highly energized electrical sources.

8.0 CE COMPLIANCE & CERTIFICATIONS

| LVD Compliance | Assessed against EN 61010-1:2010 | | | | |
|-------------------------------|----------------------------------|--|--|--|--|
| In accordance with: | 2006/95/EC LVD | | | | |
| EMC Compliance | Assessed against EN 61326-1:2013 | | | | |
| In accordance with: | 2004 / 108 / EC | | | | |
| 9.0. TEST PROCEDURE FOR P.T.s | | | | | |
| | | | | | |

9.1. Isolate the P.T. primary side, and connect it to VA and COM terminals of 590J.

9.2. Isolate the P.T. secondary side, and connect it to 590J "VB" and "COM" terminals.

9.3. Key in P.T. test data including:

- Primary voltage
- Secondary voltage
- VA rating and
- Serial number.

Start the test.

The voltage and phase error results are given on the large LCD display All test results can be stored for later download to a PC or laptop.

10.0. TEST PROCEDURE FOR C.T.s.

10.1. Isolate the C.T. primary side. Use a length of cable to place one turn through the window of the C.T. and connect it to "VB" and "COM" terminals of 590J.

10.2. Isolate the C.T. secondary side, and using the 4 wire test lead supplied with the 590J and connect the secondary to the group of four terminals marked "VA" and "COM".

10.3. Input test data for the C.T. should include Primary current; Secondary current; VA rating; PF; % burden ; accuracy class; Model No. and serial number. Optionally the operator may run a nameplate guess with an Auto Ratio test.

10.4. Test results are displayed on the LCD at various current injection points such as: 120%, 100%, 50%, 20% and 5% and at both 100%VA and 25%VA burden. At the end of the test various options are available including saving the test results.

10.5. After the 50Hz / 60Hz C.T. test, a 1.6kHz admittance test may be carried out if required. This will measure the complex admittance of the secondary for storage in memory.

10.6 To complete testing of the P.T. and / or C.T. installation, the 590J may be connected to the P.T. or C.T. metering circuit and a burden test of this circuit may be performed.. This will indicate if the instrument transformer is operating within its rated burden range.

11.0. 590J CONNECTIONS

USB Port

Type A: For download of results data to USB Flash Memory.

Type B: For results download to a PC using a Terminal Program such as Hyper-Terminal or Terra Term. and...

Type B connection is also used to upgrade 590J system software.

Clip-On 1 and Clip-On 2 connectors Not applicable to 590J.

Printer Connector for optional thermal printer

VA & VB Injection / Sense Terminals

C.T. / P.T. primary and secondary connection terminals.

Mains

IEC connector.

12.0. ACCESSORIES INCLUDED

12.1. Secondary C.T. cable and accessories

Length

8m

Cable 1 x Secondary cable :



Secondary Cable Termination leads included



12.2. Primary C.T. cable and accessories

Cable 1 x Primary cable :

Length 8m



Primary Cable Termination leads included



Other cables included 1 x USB cable

1.8m

Please note: Existing accessory cables are also used for testing P.T.s.

Every care has been taken to ensure that the above data is correct at the time of printing. Always refer to the latest data sheet when purchasing. RED PHASE INSTRUMENTS reserves the right to alter specifications without notice.