

Power Apparatus Diagnostic Software for STS equipment

- Software module optionally included in TDMS, Test & Data Management software package, for the remote control of STS family test equipment
- Possibility to create test plan and sequence of programmed tests
- Possibility to drive STS and TD 5000 test sets remotely from PC
- Automatic results assessment
- Automatic generation of test plans
- Database and storage features: test results can be saved, printed, stored, recalled and arranged in reports
- Test report creation
- Secure access by password.

Automatic control

Asset management database

| ID | Date | Original Filename |
|----|---------------------|-----------------------|
| 0 | 30/01/2003 16.24.00 | C:\xtest\Z_PRO\mdb\ |
| 1 | 27/05/2006 15.12.00 | C:\Documents and Sett |
| 2 | 22/07/2006 8.02.00 | C:\xtest\Z_PRO\2006_2 |
| 3 | 27/05/2006 15.12.00 | C:\Documents and Sett |
| 4 | 30/01/2003 16.15.00 | C:\xtest\Z_PRO\mdb\ |
| 5 | 30/01/2003 16.13.00 | C:\xtest\Z_PRO\mdb\ |
| 6 | 30/01/2003 16.09.00 | C:\xtest\Z_PRO\mdb\ |
| 7 | 30/01/2003 16.24.00 | C:\xtest\Z_PRO\mdb\ |
| 8 | 01/08/2006 11.48.00 | C:\xtest\Z_PRO\mdb\ |
| 9 | 01/08/2006 11.47.00 | C:\xtest\Z_PRO\mdb\ |
| 10 | 21/03/2006 15.44.00 | C:\xtest\Z_PRO\mdb\ |
| 11 | 05/03/2006 9.33.00 | C:\xtest\Z_PRO\mdb\ |

Test Plan Editor

Test report creation

| PT Short-circuit impedance | |
|----------------------------|------------|
| Test values | |
| Output | AC 140 V |
| Voltage | 140.0 V |
| Max I | 1.000 A |
| Frequency | 50.0 Hz |
| Measures | |
| Per-phase A | |
| f [Hz] | V meas [V] |
| | 24.770 |

Graphical test result

Automatic result assessment

PADS

PADS is an optional additional module included in TDMS, Test & Data Management Software, a powerful software package providing data management for acceptance and maintenance of testing activities. Electrical apparatus data and test results are saved in the TDMS database for historical results analysis. TDMS database organizes test data and results for the majority of electrical apparatuses tested with ISA test sets and related software.



PADS - Power Apparatus Diagnostic Software is a powerful software application, optionally included in TDMS software package, that allows the remote control of the STS family: STS 5000, STS 4000, STS 3000 *light*. These devices allow performing tests of: CTs, VTs, PTs, CBs and almost all other power devices in electrical substation.

The software performs various tasks, such as:

- . Control STS and TD 5000 from PC
- . Create test plan
- . Download stored test results via Ethernet connection
- . Create and customize test reports
- . Print test results
- . Open and save results in TDMS database.

This program runs under Windows© environment.

Note: Windows is trademark of Microsoft Corporation.

A P P L I C A T I O N

The following table lists the tests that can be performed on CTs, VTs, Power Transformers and Circuit Breakers using PADS in connection with STS and TD 5000.

| N. | TEST | TEST DESCRIPTION |
|----|-------|---|
| 1 | CT | Ratio, Voltage mode |
| 2 | CT | Ratio, polarity and burden with high AC current |
| 3 | CT | Burden; secondary side |
| 4 | CT | Excitation curve |
| 5 | CT | Winding or burden resistance |
| 6 | CT | Voltage withstand |
| 7 | CT | Remote polarity check |
| 8 | CT | Rogowski coil transformers |
| 9 | CT | Low power transformers |
| 10 | CT | Tan Delta measurements |
| 11 | VT | Ratio; polarity |
| 12 | VT | Burden, secondary side |
| 13 | VT | Ratio, electronic transformers |
| 14 | VT | Voltage withstand |
| 15 | VT | Remote polarity check |
| 16 | VT | Tan Delta measurements |
| 17 | PT | Ratio per TAP |
| 18 | PT | Static and dynamic resistance of Tap Changer |
| 19 | PT | No-load current |
| 20 | PT | Short-circuit impedance |
| 21 | PT | Tan Delta measurements |
| 22 | CB | High DC current micro-Ohmmeter test |
| 23 | CB | Tan Delta measurements |
| 24 | Relay | Threshold and timing |
| 25 | R | Resistivity and ground resistance |
| 26 | R | Step and touch voltages |
| 27 | L | Line parameters |
| 28 | Other | Sequencer |

PADS allows to perform tests on CT, VT, PT according to the following IEC standards: EN 60044-1; EN 60044-2; EN 60044-5; EN 60044-7; EN 60044-8; EN 60076-1, and also in accordance with ANSI/IEEE C57.13.1. Resistance tests are performed according to the following standards: EN50522, EN61936-1, IEEE80-2000 and CENELEC HD637 s1.

PADS TEST PLAN EDITOR

PADS TEST PLAN EDITOR is an **innovative and advanced software feature, allowing the operator to define a sequence of tests.** The operator sets the parameters of each test; then TEST PLAN EDITOR creates the sequence to be performed automatically. This feature is **available for the test of current, voltage and power transformers. It is also possible to create tests for primary and secondary injection.**

Test plans can be saved or recalled, like test results. During the test, test results are stored in the memory. The software allows saving, exporting and analysing test results and creating new test reports.

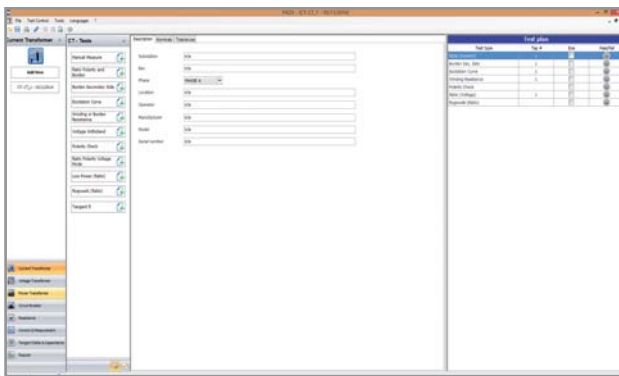
At the end of the programming, starting the first test will execute the complete test plan.

PADS SOFTWARE FUNCTIONS

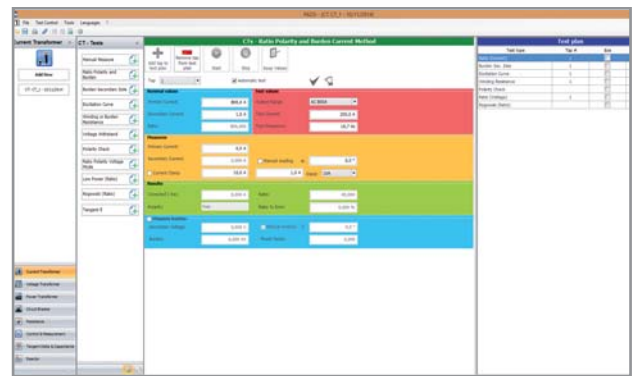
PADS software for the remote control of STS and TD 5000 family test equipment allows the following tests of current, voltage, power transformers and circuit breakers:

TEST OF CURRENT TRANSFORMERS

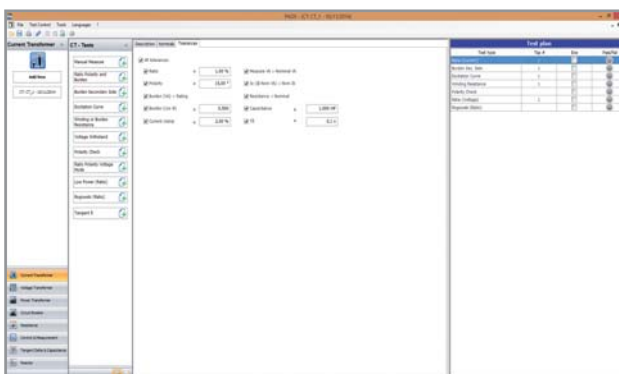
- . CT ratio and polarity voltage method
- . CT ratio, polarity and burden current method
- . CT burden secondary side
- . CT excitation curve
- . Winding resistance
- . Voltage withstand
- . Remote polarity check
- . Rogowski coil
- . Low power
- . Power factor, capacitance and Tan Delta.



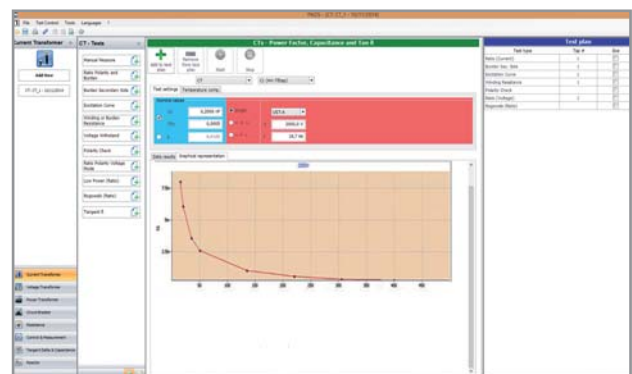
Test plan - Header: description



CT testing - Ratio, Polarity and Burden test, current method



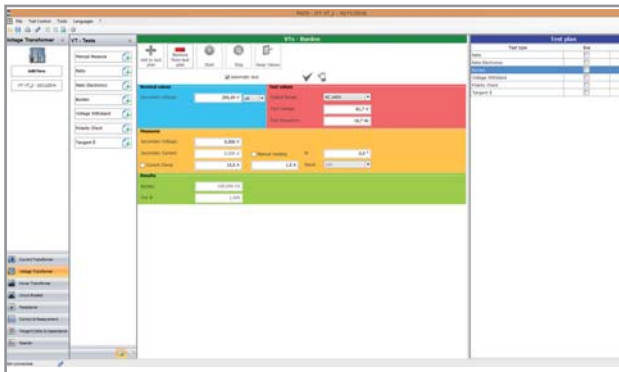
Test plan - Header: tolerances



CT testing - Power factor, capacitance and Tan Delta test

TEST OF VOLTAGE TRANSFORMERS

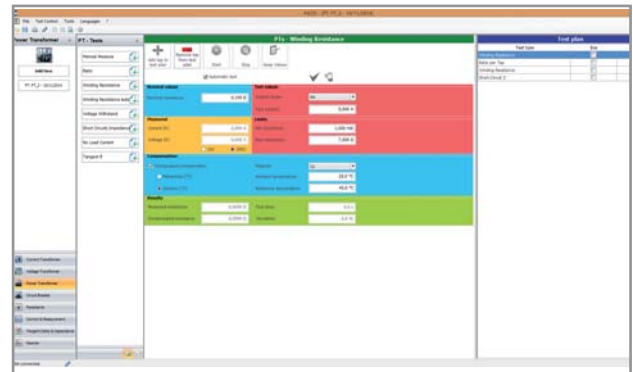
- . VT ratio and polarity
- . VT burden
- . Ratio of electronic transformer
- . Voltage withstand
- . Remote polarity check
- . Power factor, capacitance and Tan Delta.



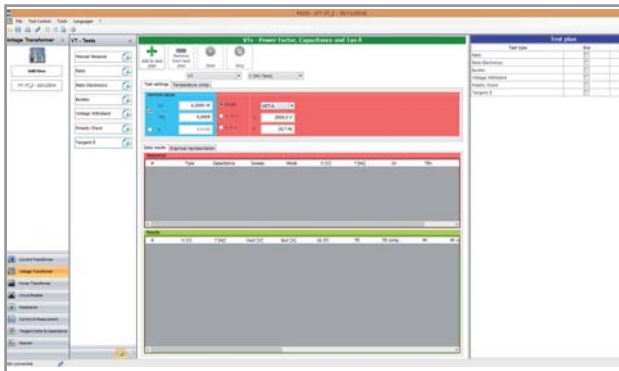
VT testing - Burden test

TEST OF POWER TRANSFORMERS

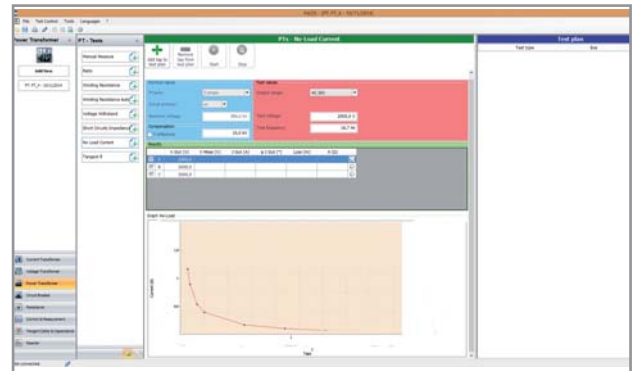
- . Ratio per tap
- . Static and dynamic winding resistance and tap changer test
- . No-load current
- . Short-circuit impedance
- . Power factor, capacitance and Tan Delta.



PT testing - Static and dynamic winding resistance and TAP changer test



VT testing - Power factor, capacitance and Tan Delta test



PT testing - No load current test

TEST OF CB AND RELAY TESTS

- . CB; primary and secondary relay tests.

TEST OF CIRCUIT BREAKERS

- . Contact resistance
- . Power factor, capacitance and Tan Delta.

ORDERING INFORMATION

| CODE | MODULE |
|--------|---|
| 10176P | PADS primary - Primary, CT, VT test module |
| 10176T | PADS trasfo- Power Transformer and Tan Delta test module |
| 10176F | PADS full - Full software suite including code 10176P and code 10176T |