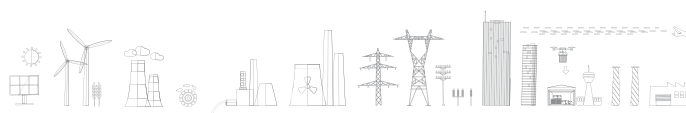




isa  
we.know.how.

ADVANCED TEST AND DIAGNOSTIC SYSTEMS



## we.

We are a leading company in the field of design and manufacturing of portable test equipment and online monitoring solutions for electrical energy systems, power plants and electrical substations. We supply a complete range of test sets for testing relays, power transformers, instrument transformers, circuit breakers, batteries and many other high voltage apparatus. We supply our test equipment and monitoring systems worldwide to electrical utilities, power equipment manufacturers, general contractors and service companies.

## know.

Established in 1938, ISA is a family company based in the north of Italy that exports its products worldwide in more than 100 countries through a network of company's branches and specialized distributors. Passion, knowledge, expertise and technology drive us to help our customers all over the world, to maintain their assets value, improve their reliability, reduce maintenance costs and extend working life of the electrical systems and related apparatus.

ISA Energy Master school, provides a high level trainings on our products. Our application specialists also perform on site trainings and workshops in order to share our knowledge with customers.

## how.

We understand our customers' requirements and we supply the most advanced solutions for testing their electrical apparatus. Our test equipment is designed and produced according to the most widely adopted international standards. The test sets are crafted one by one, using the best available technology and according to ISA 9001 Quality System. We supply rugged products all over the world and thanks to the network of qualified service centers on all continents we perform after sale service and quick support as well as assistance to our customers.





## TRANSMISSION AND DISTRIBUTION POWER GENERATION



### DRTS 66 AUTOMATIC RELAY TEST SET

- Manual control with color display and by laptop with TDMS software
- Simultaneously available: 6 Current and 6 Voltage plus 1 battery simulator output
- High current outputs: 6 x 32 A, 3 x 64 A, 1 x 128 A
- High power outputs: 6 x 430 VA, 3 x 860 VA, 1 x 1000 VA
- Voltage outputs: 6 x 300V at 100 VA
- High accuracy outputs: better than 0.05%
- IEC 61850 protocol interface. USB, Ethernet and Pen drive interface
- IRIG-B interface for end-to-end tests

### DRTS 64 AUTOMATIC RELAY TEST SET

- Manual control with color display and by laptop with TDMS software
- Simultaneously available: 4 Current and 4 Voltage plus 1 battery simulator output
- High current outputs: 6 x 32 A, 3 x 64 A, 1 x 128 A
- High power outputs: 6 x 430 VA, 3 x 860 VA, 1 x 1000 VA
- Voltage outputs: 4 x 300V at 100 VA
- High accuracy outputs: better than 0.05%
- IEC 61850 protocol interface. USB, Ethernet and Pen drive interface
- IRIG-B interface for end-to-end tests



### DRTS 34 AUTOMATIC RELAY TEST SET

- Manual control with color display and by laptop with TDMS software
- Simultaneously available: 3 Current and 4 Voltage plus 1 battery simulator output
- High current outputs: 3 x 32 A, 1 x 96 A
- High power outputs: 3 x 420 VA, 1 x 1000 VA
- Voltage outputs: 4 x 300V at 100 VA
- High accuracy outputs: better than 0.05%
- IEC 61850 protocol interface. USB, Ethernet and Pen drive interface
- IRIG-B interface for end-to-end tests

### DRTS 33 AUTOMATIC RELAY TEST SET

- Local control with color display
- Simultaneously available: 3 Current and 3 Voltage plus 1 battery simulator output
- High current outputs: 3 x 32 A, 1 x 96 A
- High power outputs: 3 x 430 VA, 1 x 900 VA
- Voltage outputs: 3 x 300V at 100 VA
- High accuracy outputs: better than 0.05%
- IEC 61850 protocol interface. USB, Ethernet and Pen drive interface
- IRIG-B interface for end-to-end tests
- Optional PC control using TDMS - Advanced Test and Data Management software





## DRTS 6 AUTOMATIC RELAY TEST SET

- Multi-tasking automatic test set designed for testing protection relays, energy meters, transducers
- Outputs: 6 x 15A (80 VA), 4 x 300V (85 VA), 1 x 260 VDC
- High accuracy: 0,1%, 0.05% (HP)
- Analog measurement inputs
- IEC 61850 Protocol interface
- USB and RS232 port
- Controlled by laptop PC or local control by PDA
- Lightweight: 18 kg

## DRTS 3 PLUS AUTOMATIC RELAY TEST SET

- Multi-tasking test set designed for testing protection relays, energy meters, transducers
- Outputs: 3 x 15 A (100 VA); 4 x 300 V (85 VA); 1 x 260 V DC
- High accuracy: better than 0,05%
- Analog measurement inputs
- IEC 61850 Protocol interface
- USB and RS232 port
- Controlled by PC laptop or local control by PDA
- Lightweight: 18 kg



## RELTEST THREE PHASE RELAY TEST SET

- Advanced multifunctional relay test set, specially designed for distribution, smart grid and renewable energy plants.
- Local control, via keyboard and colored display. Remote control with TDMS Software.
- Three independent AC voltage outputs adjustable from 0 to 400 V.
- Fourth independent AC voltage output adjustable from 0 to 130 V.
- One current output, from 0 to 15 A, switchable on 3 phase sockets.
- One independent current output, adjustable from 0 to 1 A.
- Frequency generator: 40 - 400 Hz.
- IEC 61850-8 communication interface.

## T 1000 PLUS - TD 1000 PLUS SECONDARY INJECTION RELAY TEST SET

- Multi-tasking test set designed for testing relays and transducers.
- Max current output: 250 A.
- Max AC voltage output: 250 V. Max DC voltage output: 300 V.
- Two current outputs to test the differential relay.
- TD 1000 PLUS 15 Hz model with higher power at 15 Hz.
- Frequency generator: 15 ÷ 550 Hz.
- Phase angle shifter.
- Oscilloscope function for current and voltage.
- USB port - Microprocessor controlled.







## STS 5000 MULTIFUNCTION SUBSTATION MAINTENANCE & COMMISSIONING TEST SYSTEM FOR CURRENT, VOLTAGE AND POWER TRANSFORMERS\*

- Fully automatic
- Primary injection testing capabilities: up to 800 A or up to 3000 A, with the optional module BUX 3000
- Variable output frequency: 15 - 500 Hz
- 2000 V AC high-pot test
- IEC 61850-9-2 communication protocol
- PADS software for the remote control of STS family test equipment

## STS 4000 MULTIFUNCTION SUBSTATION MAINTENANCE & COMMISSIONING TEST SYSTEM FOR CURRENT, VOLTAGE AND POWER TRANSFORMERS\*

- Fully automatic
- Primary injection testing capabilities: up to 800 A or up to 3000 A, with the optional module BUX 3000
- Variable output frequency: 15 - 500 Hz
- 2000 V AC high-pot test
- IEC 61850-9-2 communication protocol
- PADS software for the remote control of STS family test equipment



\* For USA and Germany, only STS 3000 light with TD 5000 and TDX 5000 models are available.



## eKAM ELECTRONIC AND AUTOMATIC PRIMARY INJECTION TEST SYSTEM UP TO 2000 A, 3000 A AND 5000 A

- Fully automatic test set. Two portable units: control and current units
- High current output: up to 2000 A, 3000 A and 5000 A
- Variable output frequency: 15 - 500 Hz
- CT ratio, burden and polarity test
- IEC 61850-9-2 sample values protocol interface
- Large graphic display
- Step & touch plus ground resistance tests with STLG option
- Advanced Test & Data Management Software for test set control, results storage and analysis

## T 3000 - T 2000 SUBSTATION MAINTENANCE AND COMMISSIONING TEST EQUIPMENT

- Multi function system for testing current, voltage and power transformers, all type of protection relays (T 3000 only) energy meters and transducers
- Primary injection testing capabilities
- 3000 V AC high-pot test
- Generates up to 800 A (option up to 4000 A)
- Microhmmeter function (option): up to 400 A DC
- RS232 interface for PC connection
- Test results and settings are saved into local memory





## STS 5000 / STS 4000 WITH TD 5000 MULTIFUNCTION TEST SYSTEM FOR CURRENT, VOLTAGE AND POWER TRANSFORMERS. CAPACITANCE AND TAN DELTA DIAGNOSTIC SYSTEM WITH THE OPTIONAL MODULE TD 5000\*

- Tan Delta, capacitance, dissipation factor measurements and for excitation current test
- Output voltage up to 12 k
- Variable output frequency: 15 - 500 Hz
- Compact and lightweight
- TDMS software for test set control, results storage and analysis
- PADS software for the remote control of STS family test equipment

## TDX 5000 TAN DELTA AND CAPACITANCE DIAGNOSTIC SYSTEM FOR POWER APPARATUS\*

- Designed to perform Tan Delta, capacitance, dissipation factor measurements a excitation current test on current, voltage, power transformer and circuit breaker.
- Output voltage up to 12 k
- Variable output frequency: 15 - 500 Hz
- Compact and lightweight
- TDMS software for test set control, results storage and analysis
- PADS software for the remote control of STS family test equipment

\* For USA and Germany, only STS 3000 light with TD 5000 and TDX 5000 models are available.



## SFRA 5000 SWEEP FREQUENCY RESPONSE ANALYZER

- Standalone high accuracy transformer analysis
- Leading wideband accuracy: basic 0.02dB with class leading high frequency performance • Leading phase accuracy: 0.05 degrees basic • Wide frequency range: 5Hz to 45MHz
- Full colour VGA display enabling engineer to perform and store Measurement in the field without a PC • PC software included: remote control, tables, graphs and database management of results
- LCR mode: fully functional LCR meter to measure transformer LCR parameters
- Various measurement modes: FRA, RMS, LCR, Scope
- Compliant to IEC60076-18 standard • Light and easy to carry

## ACCESSORIES FOR POWER TRANSFORMER TESTING

### ACCESSORIES FOR STS 5000 AND STS 4000

- CAP-CAL calibrator module to check the correctness of Tan Delta and Capacitance TD 5000 measurement
- RCTD compensating reactor module to increase the test current and getting the maximum test voltage with high capacitive burdens
- STOIL 12kV OIL CELL to test the isolation oil characteristics
- STCS with 20A DC BOOSTER to perform the test of ratio per tap, winding resistance and OLTC dynamic test with a current up to 20 A DC
- STLG line and grid module and STSG safety grounding module to perform the measurement of soil resistivity, ground grid resistance, step and touch tests and of overhead lines zero sequence and mutual coupling coefficients





## TESTING CIRCUIT BREAKER



### CBA 3000 ALL IN ONE CIRCUIT BREAKER ANALYZER AND MICROOHMMETER

- Faster: one single connection set up to perform automatically all possible Circuit Breaker tests
- Safer: Both Side Grounded facility without any additional external boxes/modules
- 3/6/9 static and dynamic contact resistance measurement – 200A DC output each
- First trip measurement three phase
- 16 or 24 fully user configurable Main/PIR and auxiliary input contacts
- 4 or 6 Open / Close coil commands • 8 analog input measurements
- 3 analog linear/rotary transducers and 3 digital transducers inputs for travel/ speed analysis
- Minimum voltage trip coil test fully automatic
- On-screen control and test results evaluation
- PC Software suite TDMS for analysis, archiving and test report creation

### CBA 2000 HV CIRCUIT BREAKER ANALYZER AND MICROOHMMETER

- Designed for the complete test of all circuit breakers
- Up to 18 main and 18 resistive contact inputs
- Built-in 200 A microOhmmeter - static and dynamic contact resistance measurement
- Motion and speed analyzer. Digital transducer for motion analysis
- Up to 4 trip/close coil controls • 10 analog inputs • 12 auxiliary timing inputs
- Circuit Breaker test with both sides connected to ground (BSG option)
- Minimum Trip Coil Test
- Analysis and result evaluation directly on the display
- USB and RS232 port



### CBA 1000 CIRCUIT BREAKER ANALYZER AND MICROOHMMETER

- Designed for the complete test of all circuit breakers
- 6 main and 6 resistive contact inputs • Up to 4 trip/close coil controls
- Built-in 200 A microOhmmeter - static and dynamic contact resistance measurement
- Motion and speed analyzer. Digital transducer for motion analysis
- 7 analog inputs • 4 auxiliary timing inputs
- Circuit Breaker test with two ends connected to ground (BSG option)
- Minimum Trip Coil Test
- Analysis and result evaluation directly on the display
- USB and RS232 port



### GECC 3000 / GECC 1500 DC VOLTAGE POWER SUPPLY UNIT

- Powerful output up to 3.3 KW (GECC 3000)
- Powerful output up to 1.65 KW (GECC 1500)
- Lightweight: only 11.5 kg
- Ripple free power supply
- For testing circuit breaker, DC motors and protection system





## BTS 200MKII BATTERY TEST SYSTEM

- High power battery capacity test system
- Designed to perform discharging cycle combining efficiency with portability
- Discharging current up to 1300A with external loads
- Graphical display showing test parameters, curves and results
- Internal memory
- Suitable for all battery types
- Shunt and clamp connection to external current
- Possibility to use the BTS 200 in connection with up to 9 external loads ELU 200
- Light and easy to carry, with handle and wheels

## ELU 200 MKII EXTERNAL LOAD FOR BTS 200MKII

- Resistive extra load for BTS 200
- Different configurations allowed to set the discharging current at different voltage levels
- Up to 9 external loads ELU 200 can be connected to BTS 200
- Interface: USB



## TESTING SURGE ARRESTER



## SCAR 10 METAL OXIDE SURGE ARRESTER TEST SET

- On-line diagnostic of metal oxide surge arresters
- According to IEC 60099-5 A1 "Diagnostic indicators of metal-oxide surge arresters in service"
- Third harmonic analysis of leakage current with compensation
- Extensive field experience
- Easy, fast and reliable diagnostic method
- Safe lightweight equipment
- Supplied with C 47-IS clip-on transformer specifically designed to measure leakage current losses in the presence of high electric and magnetic fields





## CONTINUOUS ON LINE DIAGNOSTICS AND FAULT LOCATOR SYSTEM



### TFS 2100E

#### TRAVELING WAVE FAULT LOCATOR SYSTEM

- The most accurate overhead transmission and distribution line fault locator
- Accuracy: 50m typical, regardless the line length
- The GPS synchronization is embedded into TDU 100E and the fault location is performed directly on the network map
- Unaffected by fault resistance and suitable for all kind of power lines AC and DC
- Automatic distance to fault calculation
- Unlimited number of monitored lines
- Non intrusive installation and easy to set up
- Master Station software for distance to fault calculation and analysis
- Internet, Modem and Point to Point connections available

## EDS ON LINE EXPERT DIAGNOSTIC SYSTEM FOR SUBSTATION APPARATUS

EDS units are designed to continuously monitor the condition of:

- High Voltage and Medium Voltage Circuit Breakers
- Current and Voltage Transformers
- High Voltage Surge Arrestors (MOV's)

The EDS is easy to install and, once configured, operates continuously.

EDS units are designed to operate reliably under extreme weather conditions and electrical interference found in normal substation operations. In particular:

- Modules mounted outdoor are IP 65 and designed to work over an extended temperature range (from - 40°C to + 85°C)
- Self-diagnostics continuously tracks the condition of the EDS and issues alerts if an abnormality is detected in the system
- By the continuous monitoring of the key parameters, EDS detects malfunctions in early stage and issues prioritized alarms communicating abnormal conditions and guiding maintenance decisions



## CB MONITOR ON LINE CIRCUIT BREAKER MONITORING SYSTEM

CB MONITOR for substation equipments is a cost-effective on line diagnostic system used to monitor MV and HV circuit breakers. CB MONITOR system can monitor up to 10 circuit breakers at the same time. The purpose of the Circuit Breaker Monitoring System is to highlight issues before these can cause an inefficiency in the system, thus allowing a far better management of condition based maintenance.

CB MONITOR verifies continuously the following parameters:

- Auxiliary contacts opening and closing time
- Accumulated fault current during arcing time ( $I^2t$ )
- Auxiliary contacts bouncing times
- Open and close current profiles
- SF6 Density trend
- Mechanism operating time
- Temperature
- Battery voltage





## TDMS - TEST & DATA MANAGEMENT SOFTWARE

TDMS is a powerful software package providing data management for acceptance and maintenance testing activities. Electrical apparatus data and test results are saved in the TDMS database for historical results analysis. TDMS software organizes test data and results for the majority of electrical apparatus tested with ISA test sets and related software. TDMS software controls and provides data acquisition from all ISA test sets:

- DRTS 66, DRTS 64, DRTS 34, DRTS 33, DRTS 6, DRTS 3 Plus - Relay and Energy meters test sets
- STS 5000, STS 4000, STS 3000 light and TD 5000 - CT, VT, PT and Tan Delta measurement test sets
- T 3000 and T 2000, T 1000 Plus and TD 1000 Plus - Primary and Secondary injection test sets
- CBA 2000 and CBA 1000 - Circuit Breaker analyzers
- BTS 200 - Battery load unit

### TDMS CONTROL PLATFORM

TDMS is the control platform to run all ISA test software. Test programs, calibration, firmware, software upgrade and languages are all managed by TDMS.

TDMS is a powerful software package providing the following functions:

- TDMS controls all ISA Microprocessor based test equipment.
- TDMS allows to create test plans.
- TDMS Data Base organizes test data generated by ISA test sets.
- TDMS generates integrated test reports.
- TDMS performs statistics and trending.

### TDMS DATABASE

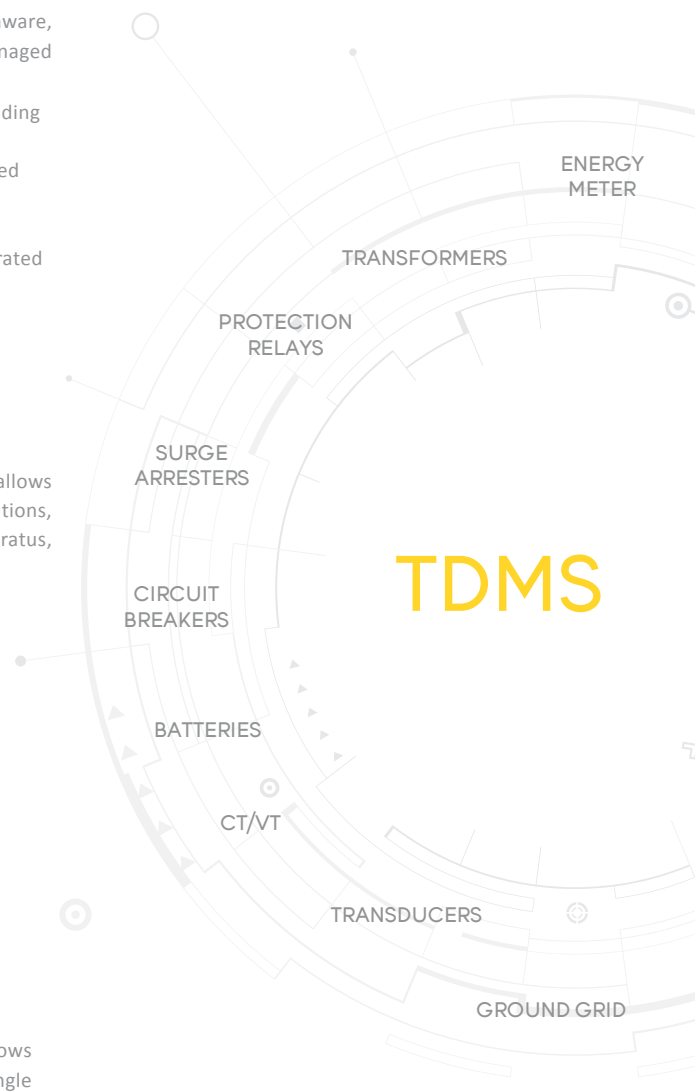
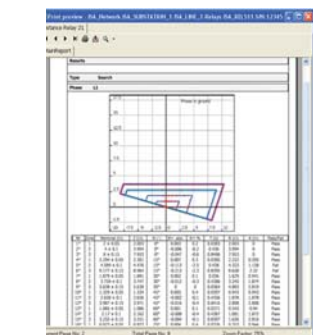
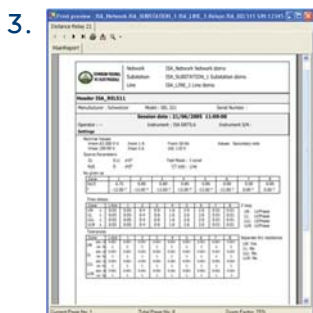
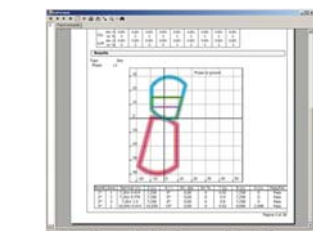
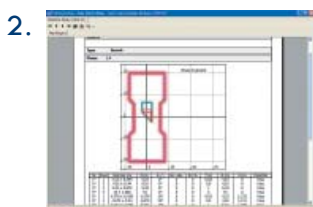
TDMS software is a powerful database. It allows to create an electrical network with substations, feeders and the majority of electrical apparatus, such as:

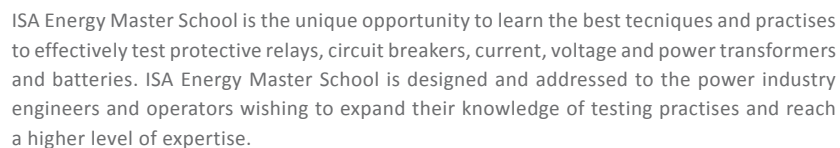
- Relays
- Instrument transformers
- Power transformers
- Circuit Breakers
- Energy Meters
- Transducers
- Power Quality Meters
- Ground Grids

### TDMS REPORT EDITOR

TDMS has a built-in Report Editor that allows to generate professional test report for a single test object, for a group of tested devices or for an entire substation.

It can create customized report or use standard forms. TDMS Tests report can be exported in MS Office (Word and Excel), PDF or RTF formats.





ISA Training provide engineers the opportunity to learn how to use ISA test equipment to effectively test protection relays, current, voltage and power transformers in high and medium voltage network. These hands-on training are for power system engineers with beginning, intermediate, and advanced levels of expertise. 2-Day and 1-Day training are available. Please, visit [www.isatest.com](http://www.isatest.com) for more information.



ISA workshop is the best opportunity to learn the most advanced techniques and most common practises to effectively test power apparatus of HV and MV substations. ISA workshop is designed for power system engineers and its aim is to share the knowledge especially on protection testing and instrument transformers testing methods. ISA's philosophy is strongly focused on exchanging know-how on new methods and solutions and on creating a network of people sharing experience and ideas. ISA workshops are arranged all over the world with different programs. Please, visit [www.isatest.com](http://www.isatest.com) for more information.



ISA provides upon request customer on site training; please contact us at [isa@isatest.com](mailto:isa@isatest.com).



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