

DVpower 

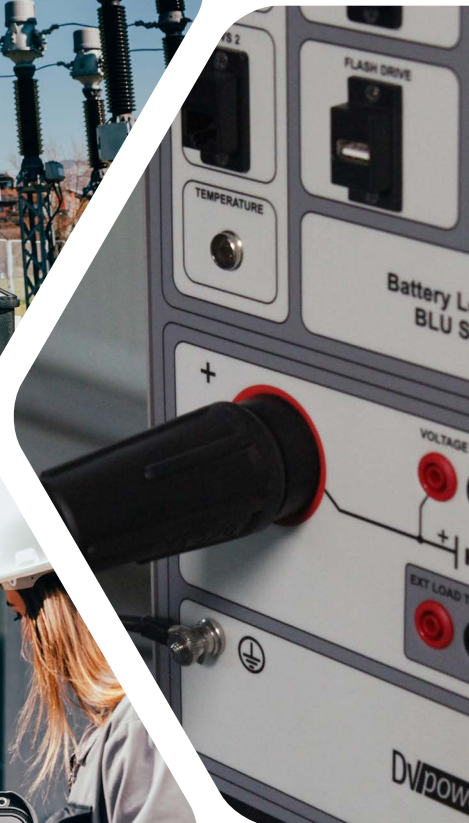
Product Catalog

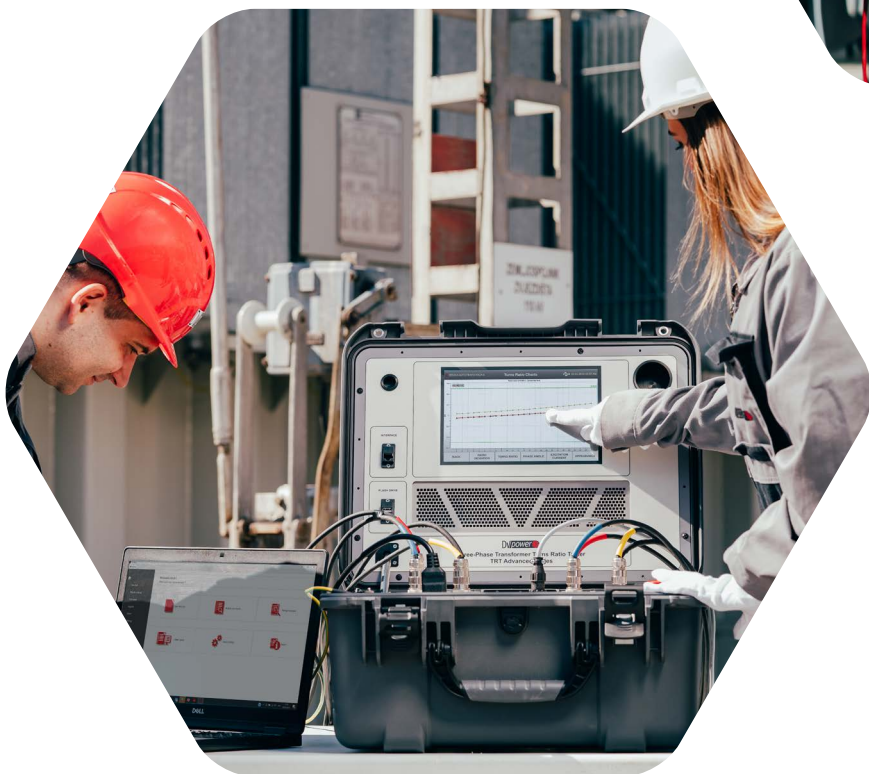
Smart test devices for reliable electric power systems

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About Us

IBEKO Power AB, with headquarters in Stockholm (Sweden) and best known through the brand "DV Power", has since 2000 developed radically light and ingenious test solutions for transformers, circuit breakers and batteries.

The company was founded by a group of engineers with deep knowledge and experience in the power electronics technology area. Today our DV Power products are sold all over the world – in over 100 countries – and we are still focusing on extensive research and development. Thanks to all our customers that provide us with continuous case studies and feedback, we are able to build even better products that serve our customers need.

Our success is solely based on extensive research, development and fast commercial application.

This is short version of DV Power Catalog. For full version, please contact your local distributor or visit www.dv-power.com/catalog/.

Contents

Circuit Breaker Analyzers & Timers	
CAT500 Series	4
CAT Advanced Series	5
CAT Standard Series	6
CAT-P Series	7
Power Supplies & Coil Analyzers	
SAT II Series	8
Micro-Ohmmeters	
RMO-H Series	9
RMO-A Series	9
RMO-G Series	9
Tap Changer and Winding Analyzers	
TWA Advanced Series	10
Transformer Turns Ratio Testers	
TRT Advanced Series	11
Sweep Frequency Response Analyzer	
FRA500 Series	12
Multi-Tap Current and Voltage Transformer Analyzer	
CVA500 Series	12
Handheld Turns Ratio & Winding Resistance Testers	
TWR-H Series	13
TRT-H Series	13
RMO-TH Series	14
Three-phase Transformer Demagnetizer	
DEM Series	14
Battery Load Units	
BLU-C Series	15
Battery Voltage Recorder	
BVS Series	16
Battery Voltage Supervisors	
BVR Series	17
Battery Chargers	
BAC Series	18
Ground Grid Tester	
GGT300 Series	19





Circuit Breaker Analyzers & Timers

CAT500 Series - Coming Soon

Applications

- Simultaneous timing measurement of up to 12 main contacts (4 breaks per phase) including pre-insertion resistors (if present in the circuit breaker) and 6 auxiliary contacts
- Resistance measurement of the pre-insertion resistors (if present in the circuit breaker)
- Evaluation of synchronization between the circuit breaker poles
- Measurement of the coil currents, voltages and resistance (simultaneously for 3 coils – during open or close sequence)
- Evaluating the state of substation's batteries by graphically showing the voltage value
- Measurement of displacement, contact wipe, over-travel, rebound, damping time and average velocity of the breaker's moving parts
- Recording of circuit breaker vibrations
- "First trip" test
- Static resistance measurement
- Dynamic resistance measurement
- Minimum operating voltage test
- Anti-pumping relay test
- Recording of circuit breaker vibrations
- Measurement of spring-charging motor time, current and voltage (both DC and AC power supply voltage, when used as CAT & SAT test system)

Main Features of CAT500 (a/n CAT5012-N-01)

- Robust design for field use
- Accurate measurement in high voltage environment
- Timing, motion and vibrations measurement
- Both Sides Grounded Feature for AIS, GIS and Dead Tank (optional)
- Built-in micro-ohmmeter (up to 500 A)
- Static/dynamic resistance determination on up to 6 main contact chambers with CAT modules
- Touch-screen color display 10.1"
- Ethernet communication
- Built-in printer 112 mm (optional)
- Database of circuit breakers test plans
- Minimum operating voltage test





Circuit Breaker Analyzers & Timers

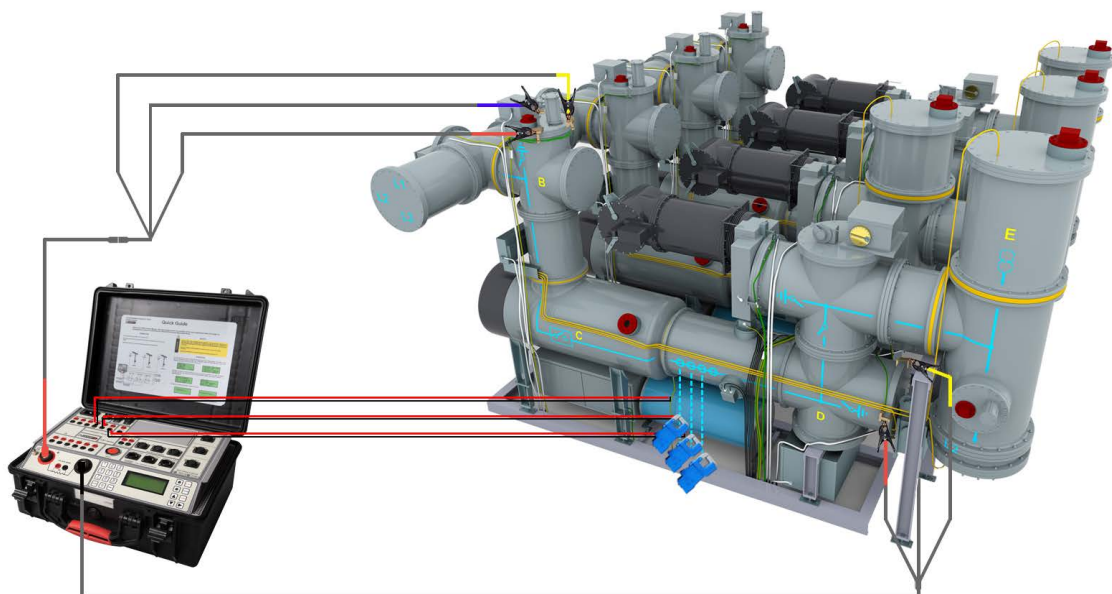
CAT Advanced Series

Applications

- Simultaneous timing measurement of up to 12 (4 breaks per phase) main and pre-insertion resistor contacts
- Evaluation of synchronization (simultaneity) between the circuit breaker poles
- Auxiliary contacts timing measurement
- “First trip” test
- Dynamic resistance measurement
- Measurement of displacement, damping time and average velocity of moving parts
- Resistance measurement of the pre-insertion resistors
- A measurement of the coil currents, simultaneously for 6 coils
- Contact (static) resistance measurement

Main Features of CAT126 (a/n CAT1260-N-01)

- Both Sides Grounded Feature for AIS, GIS and Dead Tank (optional)
- 12 timing channels (3x4) for main and pre-insertion resistor contacts
- 6 timing channels for auxiliary contacts
- 6 coil control and coil current measurement channels
- Option for external triggering of measurement
- 3 motion transducer inputs for analog and digital transducers
- 6 configurable analog channels
- Built-in micro-ohmmeter 500 A



Timing measurement on Gas Insulated Switchgear (GIS) with grounding on both sides



Circuit Breaker Analyzers & Timers

CAT Standard Series

Applications






- Simultaneous timing measurement of up to 6 (2 breaks per phase) main and pre-insertion resistor contacts
- Evaluation of synchronization (simultaneity) between the circuit breaker poles
- Auxiliary contacts timing measurement
- Measurement of displacement, damping time and average velocity of moving parts
- Resistance measurement of the pre-insertion resistors
- A measurement of the coil currents, simultaneously for 2 coils

Main Features of CAT64 (a/n CAT6400-B-01)

- Simple and easy to operate
- 6 timing channels (3x2) for main and pre-insertion resistor contacts
- 3 timing channels for auxiliary inputs
- 2 coil control and coil current measurement channels
- Option for external triggering of measurement
- 2 configurable analog channels
- 1 motion transducer input for analog and digital transducers
- Internal battery power supply
- Battery operation for up to 8 hours



CAT Standard Models Comparison

CAT Standard Models	CAT03	CAT31	CAT34	CAT61	CAT64
					
Main and preinsertion contacts timing channels	3	3	3	6	6
Auxiliary contacts timing channels	NO	3	3	3	3
Coil control	NO	YES	YES	YES	YES
Coil current measurement channels	NO	2	2	2	2
External trigger channels	2	2	2	2	2
Analog input channels	NO	NO	2	NO	2
Transducer input channels	NO	NO	1	NO	1
Thermal printer (built-in)	Optional	Optional	Optional	Optional	Optional

Circuit Breaker Analyzers & Timers

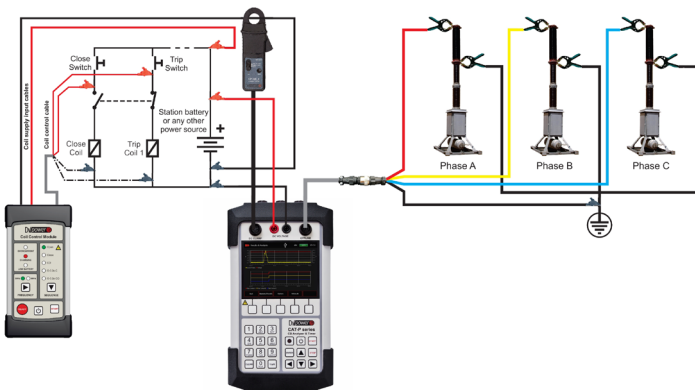
Handheld Circuit Breaker Analyzer & Timer - CAT-P

Applications

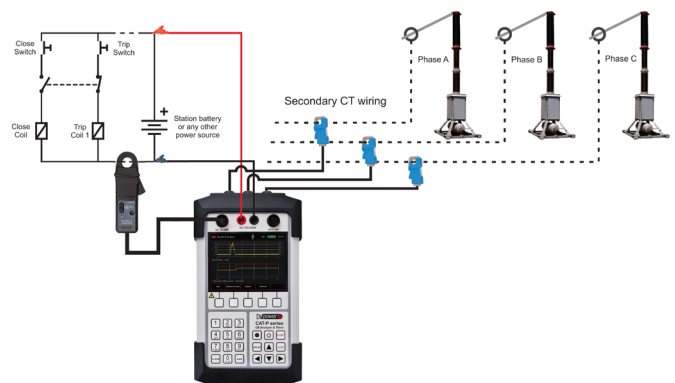
- First trip test
- Main contacts timing measurement
- Main contacts bounce time measurement
- Resistance and timing measurement of the pre-insertion resistors
- Pre-trigger time measurement
- OPEN and CLOSE coils current measurement
- Coil resistance measurement
- Auxiliary contact timing measurement
- DC supply voltage measurement
- Actuation of circuit breaker's OPEN and CLOSE coil via Coil Control Module

Main Features of CAT-P (a/n CATP000-N-00)

- Lightweight - only 1,4 kg
- Compact and ergonomic design
- Internal battery power supply (user-replaceable)
- Battery operation for up to 8 hours
- Touch-screen color display 15.7"
- Coil control (via external module) for OPEN and CLOSE coil
- Offline and online (First trip test) testing of circuit breakers
- Graphical test results for quick interpretation
- Over 30 000 test results storage
- New Dark mode display feature for improved visibility during on-site testing



Offline testing: CAT-P and Coil Control Module connection to live tank circuit breaker with one breaking element per phase



Online testing: CAT-P connection to live tank circuit breaker with one breaking element per phase

Power Supplies & Coil Analyzers

SAT II Series

Applications

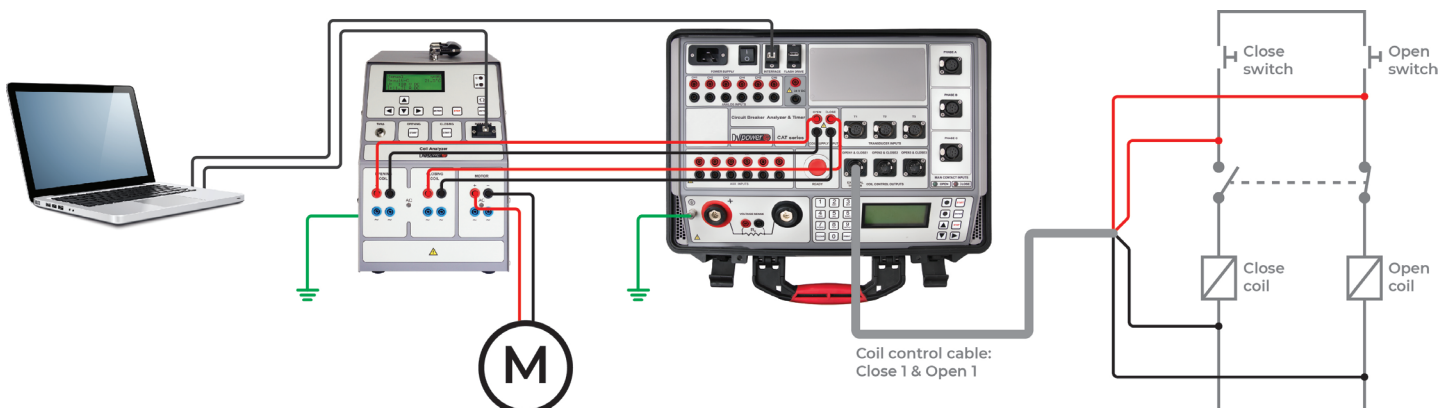
- Power supply for opening and closing coils and spring-charging motor during circuit breaker and switchgear testing
- Coil current and coil resistance measurement as per IEC 62271-100
- Minimum trip voltage test of the circuit breaker's coils as per IEC 56 & ANSI C37.09
- Motor current and operating mechanism charging time as per IEC 62271-100
- Temperature measurement on auxiliary and control equipment
- Power supply or a temporary battery charger (AC & DC motor outputs)

Main Features of SAT40A II Series (a/n SAT40AX-NX-1)

- Lightweight – only 11 kg
- Two powerful motor outputs:
10 V – 250 V DC/AC, up to 40 A inrush current
- Four separate opening and closing coil outputs:
10 V – 300 V DC, 10 V – 250 V AC
- Ripple-free DC voltage (ripple less than 1%)
- Typical accuracy: $\pm (0,25 \% \text{ rdg} + 0,25 \% \text{ F.S.})$
- Temperature sensor input
- DV-Win software
(control of CAT & SAT devices as one test system)
- Compatible with other vendor's circuit breaker analyzers



CAT and SAT connection principle





Micro-Ohmmeters

RMO-H Series




Applications

- Switchgear resistance measurement according to IEC 62271-101
- Medium-voltage circuit breaker testing using Kelvin's probes
- Bus bar joints, cable splices, welding joints resistance checking (PASS/FAIL criteria)
- 2-way connection for high-voltage circuit breaker testing:
 Short cables for direct measurement on terminals (from crane basket) - RMO-H1, -H2, -H3 models
 Long cables for traditional measurement method (from ground) - RMO-H21, -H22, -H23

Main Features of RMO-H3 (a/n RMOH300-N-00)

- Handheld – only 0,95 kg
- Test currents: 1 A - 300 A DC
- Typical accuracy: $\pm (0,1 \% \text{ rdg} + 0,1 \% \text{ F.S.})$
- Measuring range: $0,1 \mu\Omega - 3000 \text{ m}\Omega$
- High-capacity Li-Po battery (2 types available):
 8200 mAh, up to 4,1 V DC (RMO-H1, -H2, -H3)
 4200 mAh, up to 8,3 V DC (RMO-H21, -H22, -H23)
- 1000 test results storage
- Bluetooth communication with DV-Win software
- IP54 mechanical protection rating



Series	RMO-A Series	RMO-G Series	RMO-H Series
			
Models	RMO100A, RMO200A RMO300A, RMO400A, RMO500A, RMO600A	RMO100G, RMO200G, RMO300G, RMO400G, RMO500G, RMO600G, RMO800G	RMO-H1, RMO-H21, RMO-H2, RMO-H22, RMO-H3, RMO-H23
Test Current	up to 600 A	up to 800 A DC	up to 300 A DC
Continuous Test	YES	YES	NO
DTR Test Mode	YES	YES	NO
Both Sides Grounded	NO	YES (with Current Clamps)	YES
High-Precision Module	YES (Optional)	YES (Optional)	NO
Built-in Thermal Printer	YES (Optional)	YES (Optional)	NO



Tap Changer and Winding Analyzers

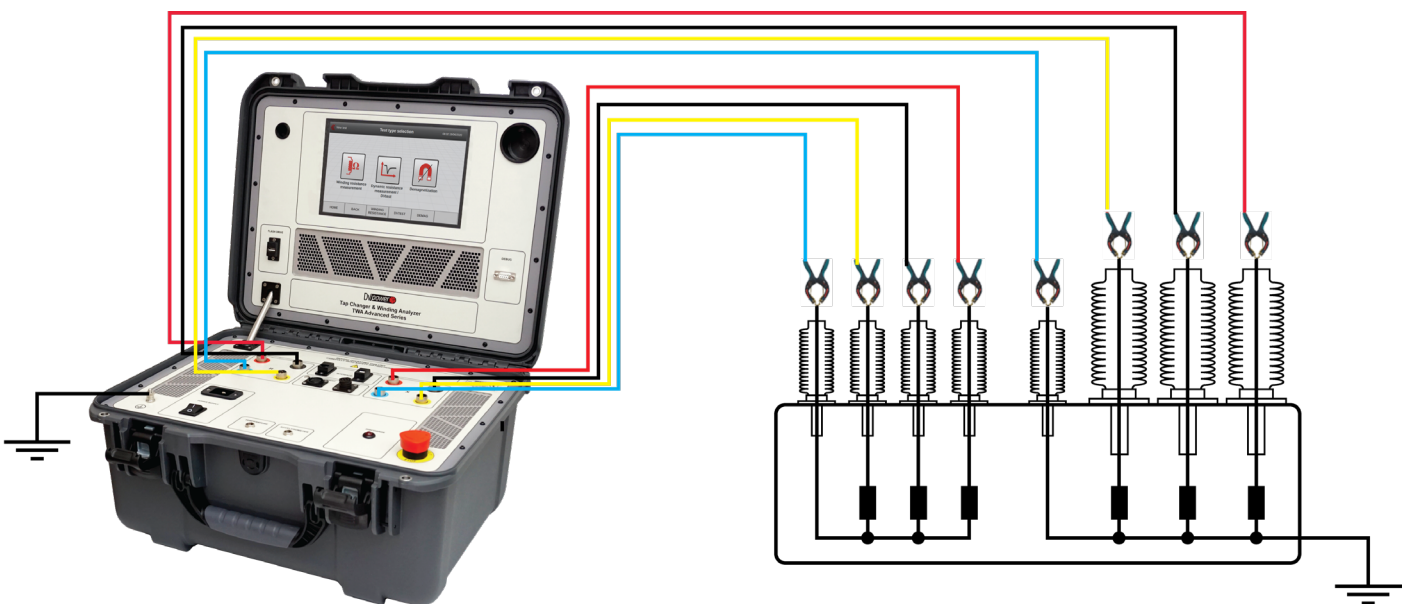
TWA Advanced Series

Applications

- Three-phase winding resistance measurement
- Dynamic resistance measurement DVtest of on-load tap changers
- Automatic demagnetization
- Tap changer vibration testing
- Evaluation of synchronization between on-load tap changer phases
- Measurement of on-load tap changer motor current using a dedicated channel

Main Features of TWA500 (a/n TWA500X-N-01)

- Measurement range: 0,1 $\mu\Omega$ - 10 k Ω
- Typical accuracy: \pm (0,1 % rdg + 0,1 % F.S.)
- All 6 windings measured in one test
- One-time cable setup
- Powerful, non-intrusive on-load tap changer analysis
- Fast measurement, enabled by special transformer saturation measurement algorithms
- Simultaneous measurement of HV and LV winding
- Automated test mode with automatic detection of result stabilization
- Special mode for simultaneous 3-phase measurement
- 10.1" graphical touch-screen display
- Rapid automatic demagnetization
- Built-in temperature measurement channel
- Interchangeable test leads with TRT Series



TWA500 Connection to a Test Object



Transformers Turns Ratio Testers

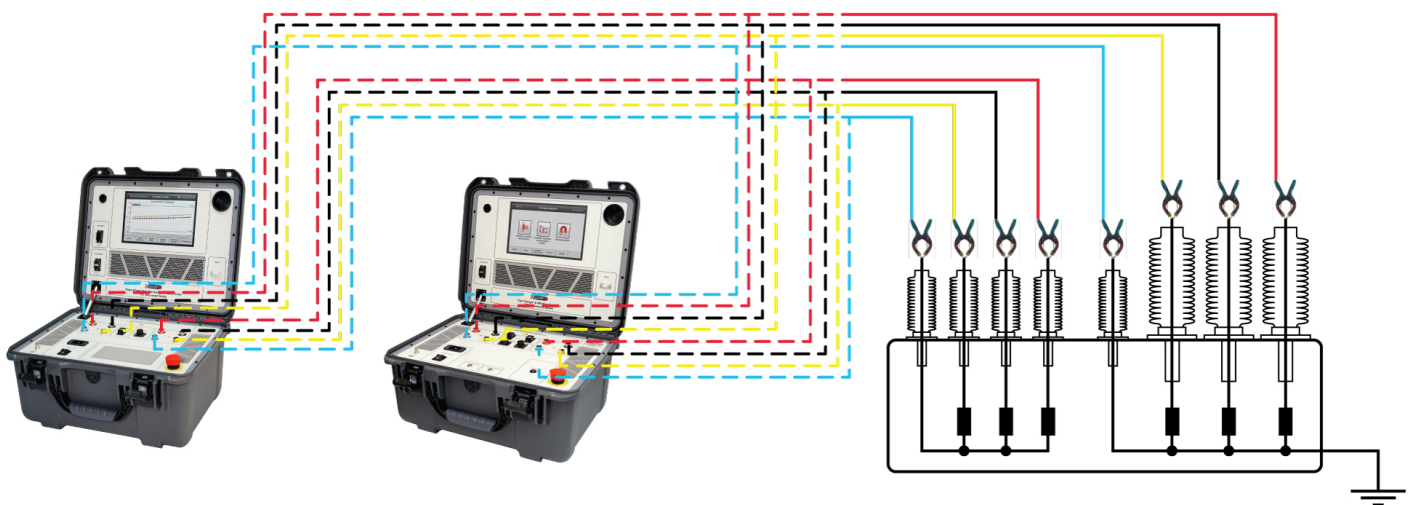
TRT Advanced Series

Applications

- Turns ratio measurement of single and three-phase transformers
- Excitation current measurement
- Phase angle measurement
- Automatic vector group detection
- Verification of demagnetization process
- Magnetic balance test
- Turns ratio and polarity verification of instrument transformers

Main Features of TRT500 (a/n TRT500X-N-01)

- Single-phase test voltages from 1 V to 500 V AC
- True three-phase test voltages from 1 V to $3 \times 290 \sqrt{3}$ V AC
- Turns ratio range: 0,8 – 50 000
- Turns ratio resolution: 5 digits
- The best turns ratio accuracy: $\pm 0,03$ %
- Large 10,1" graphical touch-screen display
- Built-in tap changer control unit
- Built-in thermal printer 112 mm (optional)
- PC communication: Ethernet and USB
- Interchangeable test leads with TWA Series



TWA-TRT with interchangeable leads connection to three-phase transformer



Sweep Frequency Response Analyzer

Applications

- Potential mechanical and electrical problems detection in power transformers
- Quick test where the fingerprint is compared to a post event response
- Reliable detection of the mechanical movements in transformer caused by earthquakes, transportation, or mechanical impacts due to short-circuit forces after a failure

Main Features of FRA500 (a/n FRA500X-N-01)

- Sweep frequency range: 0.1 Hz – 25 MHz
- Dynamic range: >150 dB
- PC communication: USB and Bluetooth
- Dimensions (W x H x D): 340 x 290 x 150 mm
- Lightweight: 4,5 kg
- Battery backup (optional)
- Typical sweep time less than 20 seconds
- Superior frequency response in noisy environment
- Point spacing: log, linear, or both
- Sample points per sweep: 2 000 points per decade, 32 000 points total



Multi-Tap Current and Voltage Transformer Analyzer

Applications

- Saturation curve and knee point for CTs
- Demagnetization
- DC winding insulation resistance for CTs, VTs and CVTs
- Turns ratio, polarity, and phase angle tests for CTs, VTs, and CVTs
- Winding resistance CTs, VTs and CVTs
- Burden test for CTs, VTs, and CVTs

Main Features of CVA500

- Solution for testing of CTs, VTs, and CVTs
- Full range of the CT tests
- Large 10.1" graphical touch screen display
- Multi-tap CTs testing with a single-step cable setup
- Variable test voltage up to 2 kV 50/60 Hz
- AC test current up to 5 A
- DC test voltage up to 1 000 V
- DC test current up to 6 A



Coming soon



Handheld Turns Ratio & Winding Resistance Testers

Handheld Turns Ratio & Winding Resistance Tester - TWR-H Series

Applications

- Winding resistance measurement
- Transformer demagnetization
- Turns ratio measurement
- Excitation current measurement
- Phase angle measurement

Main Features of TWR-H (a/n TWRH000-N-00)

- Single-phase connection to a transformer
- Handheld device
- Internal battery power supply (user-replaceable)
- Test current up to 2 A DC for HV side
- Test current up to 10 A DC for LV side
- Winding resistance measurement range $1 \mu\Omega - 3 \text{ k}\Omega$
- Winding resistance measurement typical accuracy $\pm(0.5\% \text{ rdg} + 0.5\% \text{ F.S.})$
- Test voltage up to 40 V AC
- Turns ratio measurement range 0,8 - 20 000
- Turns ratio measurement typical accuracy up to $\pm 0.1\%$
- Dimensions: 170 x 310 x 58 mm
- Weight: 1,4 kg



Handheld Turns Ratio Tester - TRT-H Series

Applications

- Turns ratio measurement
- Excitation current measurement
- Phase angle measurement

Main Features of TRT-H (a/n TRTH000-N-00)

- Single-phase connection to a transformer
- Handheld device
- Internal battery power supply (user-replaceable)
- Test voltage up to 40 V AC
- Turns ratio measurement range 0,8 - 20 000
- Turns ratio measurement typical accuracy up to $\pm 0.1\%$
- Dimensions: 170 x 310 x 58 mm
- Weight: 1,4 kg





Handheld Turns Ratio & Winding Resistance Testers

Handheld Winding Resistance Tester - RMO-TH Series

Applications

- Winding resistance measurement
- Transformer demagnetization

Main Features of RMO-TH (a/n RMOTH00-N-00)

- Single-phase connection to a transformer
- Handheld device
- Internal battery power supply (user-replaceable)
- Test current up to 2 A DC for HV side
- Test current up to 10 A DC for LV side
- Dimensions: 170 x 310 x 58 mm
- Weight: 1,4 kg



Three-Phase Transformer Demagnetizer

DEM Series

Application

- Transformer demagnetization

Main Features of DEM60R (a/n DEM60RX-N-01)

- Fully automatic demagnetization
- Calculation of remanent magnetism
- Demagnetization currents up to 60 A DC
- Demagnetization progress graph
- Three-phase connection to a transformer
- Automatic discharging circuit
- Lightweight – 13,1 kg





Battery Load Units

BLU-C Series

Applications

- Capacity testing of Lead-acid, Ni-based and Li cells (up to 300A / 42 kW)
- Applicable to 3,0 – 800 V DC battery systems
- Temperature regulated capacity test for Li cells
- Testing the battery while in service
- Cell / Intercell voltage monitoring on large 7" touch screen display
- Total battery discharge (down to 0 V) with ZVD module, required before recycling

Main Features of BLU800C (a/n BLU800C-N-01)

- Battery voltage range: 5,25 – 800 V DC
- Total battery discharge (down to 0 V) with ZVD module, required before recycling
- Discharge power: up to 32 kW
- Discharge current: up to 100 A
- Lightweight: 20,0 kg
- Real-time monitoring on 7" touch-screen display
- Cell monitoring system (BVS or BVS-4) fully controlled by BLU800C
- Automated battery, cell and intercell voltage measurement during the capacity test
- Testing batteries while in service
- Test resume (no data loss) in case of interrupted power supply
- Ambient temperature measurement channel



Battery voltage [V]		Maximum discharge current [A]									
Nominal	Min/max	BLU100C	BLU200C	BLU300C	BLU400C	BLU500C	BLU570C	BLU600C	BLU700C	BLU800C	
3,6	3,2 / 4,2	-	-	-	-	-	-	-	50	-	
6	5,55 / 7,05	40	50	55	50	55	20	50	50	20	
12	11,1 / 14,1	100	100	115	100	115	40	100	60	40	
24	22,2 / 28,2	150	200	185	200	185	80	200	120	80	
48	44,4 / 56,4	150	200	220	200	220	100	200	120	100	
60	55,5 / 70,5	150	200	220	200	220	100	200	120	100	
110	101,75 / 129,3	120	300	150	300	150	100	300	240	100	
120	111,0 / 141,0	120	300	140	300	140	100	300	260	100	
220	203,5 / 258,5	75	150	75	150	75	100	150	100	100	
240	222,0 / 282,0	70	150	70	150	70	100	150	110	100	
420	388,5 / 493,5	-	-	-	-	40	50	65	80	50	
480	444,0 / 564,0	-	-	-	-	-	50	-	70	50	
600	555,0 / 705,0	-	-	-	-	-	-	-	60	50	
640	592,0 / 752,0	-	-	-	-	-	-	-	-	40	

Battery Voltage Supervisors



Applications

- Automated cell voltage measurement
- String voltage and current monitoring using additional modules
- Monitors capacity testing performed with any load bank in the market

Main Features of BVS (a/n BVS-CUNN-000) & BVS-4 (a/n BVS4-CUNN-00)

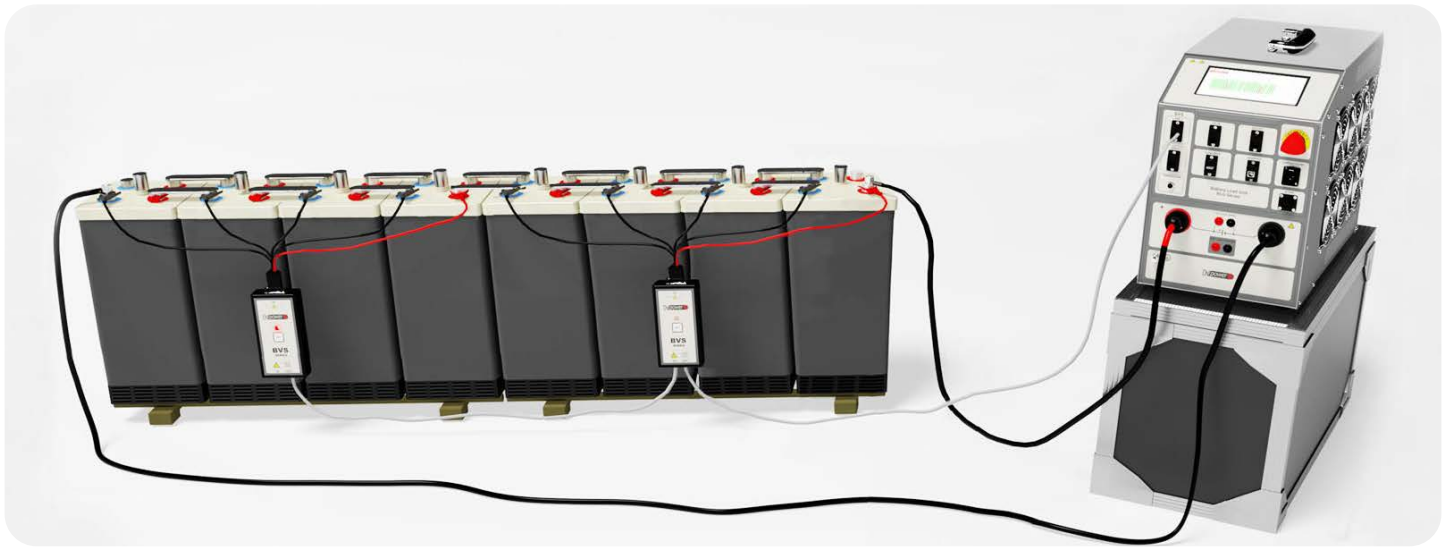
- Automated string and cell voltage, inter-cell connection voltage, string current and ambient temperature measurement during capacity test
- Can be used with different load banks using additional string voltage and string current module
- Reliable and easy to operate



Series	BVS	BVS-4
Cell Voltage Modules	 <p>CVM (BVS-CVMCN-00)</p>	 <p>CVM-4 (BVS-CVM4N-00)</p>
No. of Measured Cells	1 Module Measures 1 cell (or Block of Cells up to 30 V)	1 Module Measures 4 Cells (or Blocks of Cells up to 30 V)
Parameters	Cell Voltage, Inter-cell Connection voltage, Ambient Temperature String Voltage (optional) String Current (optional) Cell Temperature (optional)	Cell Voltage, Ambient Temperature String Voltage (optional) String Current (optional) Cell Temperature (optional)
Cell Temperature Measurement	One Temperature Channel per Cell	One Temperature Channel per 4 Cells
User Interface	DV-B Win PC software or BLU-C Series (7" touch screen)	DV-B Win PC software or BLU-C Series (7" touch screen)
Data Transfer	Bluetooth, USB Cable to PC	Bluetooth, USB Cable to PC
Data Sampling Interval	1 s Max (Depends on no. of CVM)	1 s Max (Depends on no. of CVM)



Battery Voltage Supervisors



Connection principle of BVS-4 modules and BLU-C instrument without BVS-4 control unit



Battery Voltage Recorder

Applications

- Cell/String voltage measurement
- Efficient support tool during battery capacity measurement
- Monthly inspections of large battery banks
- Detection of failing cells

Main Features of BVR22 (a/n BVR22X-NN-00)

- Handheld – 0,7 kg
- Voltage measurement range: ± 600 V
- Inter-cell connection voltage measurement range: $\pm 1\,000$ mV
- Cell and ambient temperature measurements
- Current measurement using current clamps
- U+I mode for simultaneous measurement of string voltage and current during capacity test
- Automatically measures, time-stamps and stores cell/string (float) voltages
- Bluetooth communication with external density meter
- Easy transfer of measured data to DV-B Win software (via Bluetooth or USB cable) for further analysis



Battery Chargers

Applications

- Charging single Lead-acid, Ni-based and Li-ion cells
- Charging battery strings with voltages from 1 V DC up to 300 V DC

Main Features of BAC50L (a/n BAC50L-NN-01)

- Charging voltage: 1 – 60 V DC
- Maximum charging current: 50 A
- Maximum charging power: 2,4 kW
- Lightweight: 10 kg
- Two charging modes available:
 - IU – constant current + constant voltage
 - UU – constant voltage + constant voltage
- Temperature compensation of output voltage



Mains Voltage (V AC)	Voltage (V DC)	Current (A DC)	
		BAC25A	BAC50L
230/115	1,2	-	50
	2	-	50
	3,6	-	50
	6	-	50
	12	25	50
	24	25	50
	48	25	50 (230 V) 25 (115 V)
	60	25	30 (230 V) 20 (115 V)
	110/120	20 (230 V) 10 (115 V)	-
	220/240	10 (230 V) 5 (115 V)	-



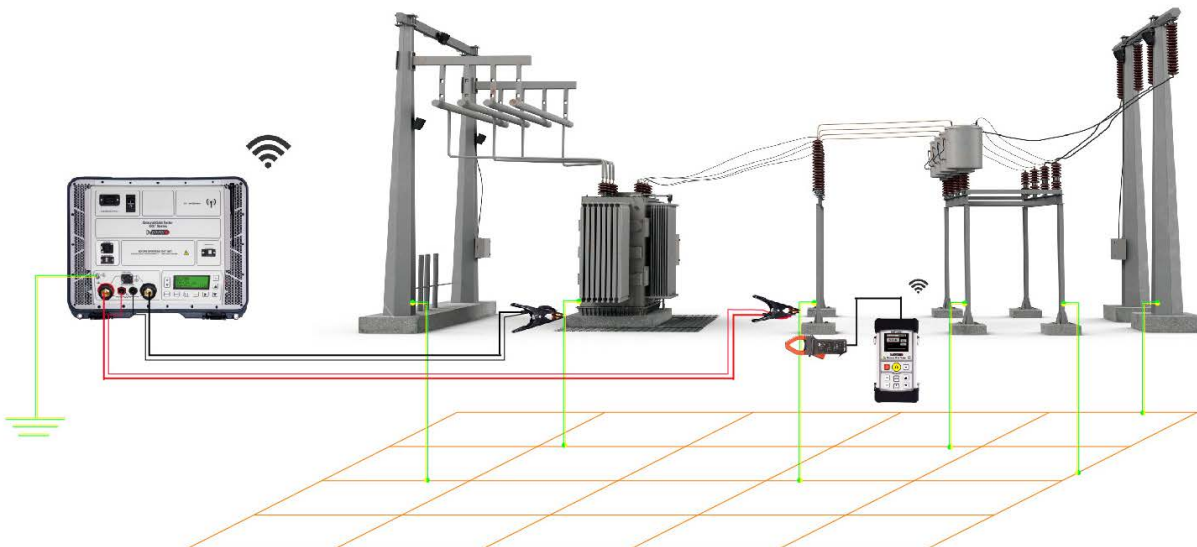
Ground Grid Tester

Applications

- Ground Grid Integrity Testing according to IEEE Std. 80-2000 (standalone or wireless control of the test by GGT-M remote module)
- Contact Resistance Measurement of HV switchgears according to IEC 62271-1:2017 (test current up to 300 A DC)
- Grounding current flow inspection with use of current clamps on GGT-M remote module ("down current" measurement)
- Testing in Both Sides Grounded (BSG) conditions (separate current clamp input for BSG)
- Contact Resistance Measurement of Dead tank circuit breakers (DTRtest mode)
- Resistance change monitoring for checking quality of connections or welding joints (CONTIN mode)
- Two models are available: GGT200 (up to 200 A) and GGT300 (up to 300 A)

Main features of GGT300 with GGT-M remote module (optional) (a/n GGT300N-N-01)

- Test current range: 5 – 300 A DC
- Resistance range: 0,1 $\mu\Omega$ - 999,9 m Ω
- Wireless communication between GGT300 device and GGT-M remote module
- Current clamp inputs for grounding current inspection
- Typical accuracy: $\pm(0,1\% \text{ rdg} + 0,1\% \text{ F.S.})$
- Weight: 15 kg



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