ALLINA SERIES

Multifunction Substation Tester

SCAN ME

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WISEGRID ENERGY

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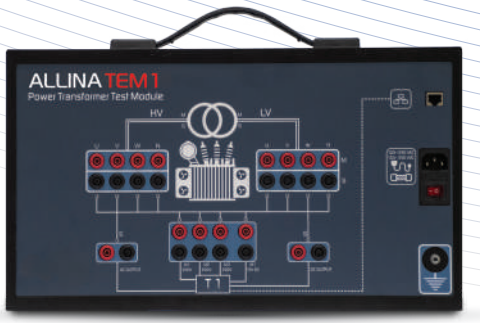
Allina Series

Multifunction Substation Tester

Allina T1 is a controllable single–phase current and voltage source with a rated output power of 5 kVA. It is suitable for a wide range of commissioning, periodic, and diagnostic tests on various substation equipment, including power transformers, current transformers (CTs), voltage transformers (VTs/CVTs), circuit breakers (CBs), grounding systems, busbars, and other substation equipment. This device is ideal for use in high–voltage substations, distribution substations, power plants, research laboratories, universities, and industrial sites such as refineries and petrochemical complexes. A range of complementary modules is also available to extend the Allina T1's testing capabilities and adapt it to specific applications.

Allina Complementary Modules

(Minimizing Test Time, Maximizing Efficiency)



Allina MODULE | TEM1

3–phase transformer test module

- Single wiring for all tests on three phases
- Test time reduction
- Easy and safe test performing

Allina MODULE | CM1

Coupling module for transmission line

- Line impedance measurement
- Grounding system impedance test module
- Measurement of ground grid safety voltages

Allina MODULE | CB1

Circuit breaker test module

- Safe tests using dual ground method
- Single wiring for all tests
- Fast mounting on main module to simplify tests

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Power Transformer

- Dynamic resistance of On Load Tap Changer (OLTCs)
- Winding resistance (by injecting DC current in tha range of 0 to 10A or 10 to 100A)
- Turn ratio on both regular and phase shift transformers (LF/EAF transformers)
- Magnetic core demagnetizing (up to 10A)
- No–load current (excitation current) and Loss (up to 2.2kV)
- Magnetic balance (flux devision)
- Vector group and phase shift (for industrial transformers)
- Short circuit and zero sequence impedance
- Switch box for automatic performing tests on three–phase transformer (TEM1 module)

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Multifunction Substation Tester

(CT)

Current Transformer

- Ratio and polarity (by injecting current up to 1000A AC)
- Test and analysis of TPY and TPZ Type CT (magnetizing characteristic)
- Secondary burden
- Winding resistance
- Excitation and hysteresis curve (up to 2.2kV @ 50 Hz)
- Ratio and polarity (by applying voltage up to 2.2kV)
- Core demagnetizing
- (up to 2.2kV) for secondary side
- Power frequency withstand voltage

(CVT , VT , PT)

Voltage Transformer

- Ratio and polarity (up to 2.2kV)
- Secondary burden
- Primary and secondary winding resistance
- Power Frequency withstand voltage (up to 2.2kV)
- Short circuit impedance (CVT)

(CB)

Circuit Breaker

- Static contact resistance (by injecting current up to 400A DC)
- Time test (for various duty cycles such as O, C, CO, OC, COC, OCO)
- Trip/close coil minimum pickup voltage (up to 260 V DC/AC, 10 A)
- Motor current and spring charge time monitoring
  (by using optional DC clamp–on ammeter)
- Dual ground method (for time test under electromagnetic
  noises of in–service high voltage substations)
- Trip/close coil current monitoring
- Pole discordance analysis
- Power frequency withstand voltage (up to 2.2 kV)

Protection System

- Overcurrent and earth fault relays
- Distance relays (by CM1 module)
- High–impedance differential relays
  (including REF, busbar, motor, and generator)
- I–t characteristic (clearing time) for low–voltage, medium–voltage, and power fuses (by AC current injecting up to 1000 A)
- Directional overcurrent relays
- Directional earth fault relays
- I–t characteristic for low–voltage circuit breakers
  (MCB, MCCB, and ACB)
- REF stability

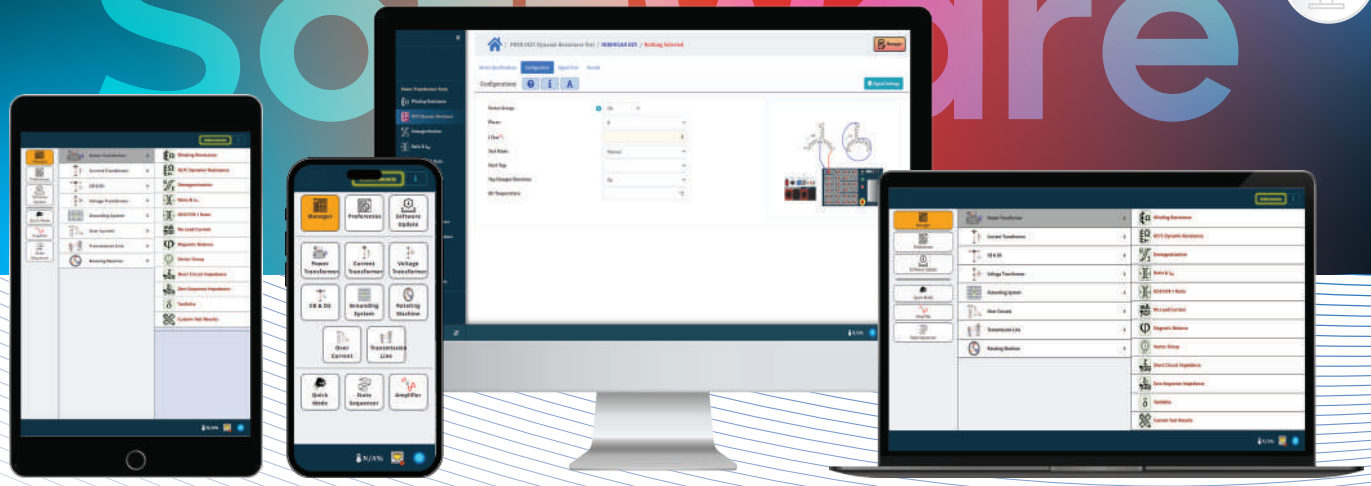
Grounding System, Overhead Line, and Cable

- Positive and zero sequence impedance of transmission line
- Ground impedance
- Ground grid integrity (by injecting current up to 400A DC)
- Soil resistivity
- Safety Voltages including Step, Touch, Transfer, Metal–to–Metal Voltages (by using CM1 module)

Rotating Machine

- Stator and rotor DC winding resistance
- Stator impedance

Software



- Web–based software eliminating need for installation and run on a computer, tablet and cell smartphone
- Specific test rooms with corresponding wiring diagrams depending on the test parameters
- User–friendly interface supporting both WiFi and Ethernet cable connections
- Touchscreen LCD for handling tests with the same performance as the connected computer
- Aided software in all test steps automatically generating test results
- Online project management website
- Manageable database

Quick, State Sequencer, and Amplifier Modes

Quick
Mode

- Different output channels selction (2000V AC / 65V DC / 260 V AC / 100A DC / 200A AC)
- Different inputs channels selection (300V AC/DC / 10A / 10V AC/DC)
- Adjusting limitations on test time, vltage, and current
- Setting different triggers modes

Sequencer
Mode

- Employing up to 10 sequences with different amplitude and test time
- Testing automatic reclosing circuit breaker performance
- Testing protection system operation time (by primary injection)
- Calculating complex parameters from measured signals (R / L / C / X / P / Q/ S)

Amplifier
Mode

- Operation in AC voltage / current mode (15 Hz to 120 Hz variable frequency) up to 2200 V AC / 1000 A AC
- Synchronization with AC voltage or current
- Injecting voltage / current signals with amplification factor and phase shift relative to the reference signal
- Synchronization of up to 3 ALLINA devices

Technical Data

Output	Amplitude	Tmax	V max/I max	Power	Frequency
1000 A AC	1000 A	30 s	5 V	5000 VA	15 ... 120 Hz
	500 A	10 min	5 V	2000 VA	15 ... 120 Hz
	200 A	>2 h	5 V	1000 VA	15 ... 120 Hz
400 A DC	400 A	2 min	5 V	2000 VA	DC
	200 A	10 min	5 V	1000 VA	DC
	100 A	>2 h	5 V	500 VA	DC
10 A AC (rms)	10 A	10 min	260 V	2600 VA	15 ... 120 Hz
	3 A	>2 h	260 V	780 VA	15 ... 120 Hz
10 A DC	10 A	10 min	260 V	2600 VA	DC
	3 A	>2 h	260 V	780 VA	DC
2000 V AC	0...260V	>2 h	3 A	780 VA	15 ... 120 Hz
	0...260V	10 min	10 A	2600 VA	15 ... 120 Hz
	0...760V	>2 h	1.5 A	1200 VA	15 ... 120 Hz
	0...760V	10 min	5 A	3800 VA	15 ... 120 Hz
	0...2260V	>2 h	0.5 A	1130 VA	15 ... 120 Hz
	0...2260V	1 min	1 A	2260 VA	15 ... 120 Hz
260 V DC	0...260V	>2 h	3 A	780 VA	DC
	0...260V	10 min	10 A	2600 VA	DC

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Technical Data

Internal Measurement of outputs

output	Range	Guaranteed accuracy			Typical accuracy		
		Amplitude		Phase	Amplitude		Phase
		Reading error	Full scale error	Full scale error	Reading error	Full scale error	Full scale error
1000 A AC	—	0.2%	0.2%	0.2%	0.1%	0.1%	0.1°
400 A DC	—	0.3%	0.1%	—	0.1%	0.15%	0.1°
2260 V AC	2000 V	0.1%	0.1%	0.2%	0.08%	0.05%	0.1°
	1000 V	0.1%	0.1%	0.2%	0.08%	0.05%	0.1°
	500 V	0.1%	0.1%	0.2%	0.08%	0.05%	0.1°
	10 A	0.1%	0.1%	0.2%	0.08%	0.05%	0.1°
	500mA	0.1%	0.1%	0.2%	0.08%	0.05%	0.1°
260 V DC	300 V	0.1%	0.15%	—	0.05%	0.08%	—
	15 V	0.1%	0.15%	—	0.05%	0.08%	—
	10 A	0.1%	0.15%	—	0.05%	0.08%	—
	500mA	0.1%	0.15%	—	0.05%	0.08%	—
Digital Output	8 A DC	0.2%	0.25%	—	0.15%	0.2%	—

Environmental condition	
Operation tempeature	_10°... +55° C
Storage temperature	_20°... +75° C
Humidity range	5 ... 95% relative humidity
EMC	IEC 61326_1, Class A
Environmental reliability	Vibration and shock (IDS–STD–810. 2–direction)

Technical Data

Input	Impedance	Range	Guaranteed accuracy			Typical accuracy		
			Amplitude		phase	Amplitude		Phase
			Reading error	Full scale error	Full scale error	Reading error	Full scale error	Full scale error
M–300V AC/DC	500K Ω	300V	0.1%	0.1%	0.2 °	0.7%	0.05%	0.1 °
		15V	0.1%	0.1%	0.2 °	0.7%	0.05%	0.1 °
		750 mV	0.2%	0.1%	0.2 °	0.15%	0.05%	0.1 °
M–10A AC/DC	<0.1 Ω	10A AC	0.1%	0.1%	0.2 °	0.05%	0.07%	0.1 °
		500 mA AC	0.1%	0.1%	0.2 °	0.05%	0.08%	0.1 °
		10A AC	0.05%	0.15%	–	0.05%	0.08%	–
		500 mA AC	0.05%	0.15%	–	0.05%	0.08%	–
M2–10V PEAK	1 MΩ	7 V	0.1%	0.1%	0.2°	0.08%	0.05%	0.1 °
		350 mV	0.1%	0.1%	0.2°	0.08%	0.05%	0.1 °
		20 mV	0.2%	0.2%	0.2°	0.1%	0.08%	0.1 °
M1–10V DC	–	10V	0.5%	0.15%	–	0.05%	0.08%	–
		500 mA AC	0.5%	0.15%	–	0.05%	0.08%	–
		25 mV	0.1%	0.3%	–	0.1%	0.1%	–
M3–5V PEAK	1 MΩ	3.5 V	0.1%	0.1%	0.2°	0.08%	0.08%	0.1 °

TECHNICAL DATA

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