

SGADI 300E

High Voltage Module AC/DC/Impulse Test System



SGADI 300E High Voltage Modular AC/DC/Impulse Test System is design to be used to generate up to 300kV LI/LIC/SI, for the same system, it also allows to generate 120kV AC voltage and 300kV DC voltage. It is suitable to test almost all electrical goods what voltage class under 35kV class. The module design is available to easily expanded at a later date.

SGADI 300E High Voltage Modular AC/DC/Impulse

Test System can prefect instead of the common impulse generator what is common sale in the market. A sampler test loop design and less components guarantee the better reliable performance and cost performance. Additional 120kV AC and 300kV DC can be generate except 300kV LI/LIC, it makes customer can have the chance to pay less and multiple function, in the meanwhile, it also requires a smaller test area ever before.

A digital control and measuring system is used to be control the difference output AC/DC/Impulse and related protection device such as over voltage and over current, in the meanwhile, it is also measuring rated voltage /current/power/frequency/waveform/pd (option). It offers a variety of advantages as semi or fully automatic operation, data storage and report generation.

Applications:

- Distribution Transformer
- Instrument Transformer
- Insulator
- Bushing
- Switchgear / Circuit Breaker
- Reactor
- Arrestor
- Diagnostic Onsite Testing
- Training

Standard Testing Applications:

- ◆ 120kV AC Apply Voltage Test
- ♦ 300kV DC Apply Voltage Test
- ◆ 300kV LI Lightning Voltage (1.2/50us)
- ◆ 300kV LIC Lightning Chopping (2-6us)

Optional Testing Applications:

- ◆ 250kV SI Impulse Voltage (250/2500us)
- ◆ 120kV Partial Discharge Measurement
- Capacitance & Tan Delta Measurement
- Corona Simulation

Benefit and Advantage:

- Modular design allows future expansions;
- Compact and intergrade design;
- Easy operation even for the new engineer;
- Efficient space usage by combining AC/DC and impulse voltages in one test system;
- Standard CE power plug 63A;
- Quick and easy installation and commissioning;
- Fast rearrangement without special skills;



- Semi or automatic control and measuring system;
- Fast assemble and disassemble the components by quick coupling connector;

Main Components:

• Single Phase AC Test Transformer (TT)

Test transformer which can be used for AC, DC and impulse voltage generation. The output power can be extended by cascading the transformers.

Rated power:	6kVA
Input voltage:	400V
Input current:	15A
Output voltage:	120kV
Output current:	50mA
Impedance voltage:	5%
Frequency:	50/60Hz
Duty cycle:	1 Hour
(The power rating can	be specially ordered according

customer's requirement.)

Voltage Regulator (VR)

Voltage regulator is used to regulate the input voltage for test transformer; the output voltage from test transformer will follow to change.

Rated power:	6kVA
Rated input voltage:	0.4kV
Rated input current:	15A
Rated output voltage:	0-0.42kV
Rated output current:	15A
Impedance voltage:	<12%
Cooling method:	AN
Frequency:	50/60Hz
Duty cycle:	1 Hour

(The power rating can be specially ordered according customer's requirement.)

Damped Resistor (DR)

Damped resistor is used to limit the output current of test transformer when flashover happened. Rated voltage: 120kV

Rated resistance:	12kohm
Temperature rise:	<55k
Frequency:	50/60Hz
Duty cycle:	1 Hour

• Coupling Capacitor & Divider (CC)

Coupling capacitor & divider consist of one high voltage capacitor and one secondary capacitor. It can used to measure the partial discharge, the same time it also can used to be a high voltage divider to measuring the AC high voltage. The voltage level can be extended by cascading the capacitor.

Rated voltage:	120kV
Rated capacitance:	500pF
Tan delta:	<0.2%
Divider ratio:	1200:1
Frequency:	50/60Hz
Duty cycle:	1 Hour

HV Rectifier + Protection Resistor (RE)

Rectifier, which can be used for impulse and DC voltage configurations.

Protection resistor:	50k Ω
Inverse peak voltage:	150kV
Rated current:	200mA
Duty cycle:	1 Hour

Resistive Divider (RD)

Resistive divider is used to measure the HV DC voltage also the charging voltage of the impulse capacitor.

Rated resistance:	600M Ω
Rated voltage:	300kV
Rated current:	0.5mA
Divider ratio:	3000:1
Duty cycle:	1 Hour

Smooth Capacitor & Impulse Capacitor (SC & IC)

Capacitor is used as energy storage capacitor for generate impulse voltage or smoothing capacitor for DC generation.



Rated capacitance: 333nF Rated DC & IMP voltage: 300kV Duty cycle: 1 Hour (The capacitance rating can be specially ordered according customer's requirement.)

• Grounding Switch (GS)

Remote controlled switch, which can be used to ground the high voltage construction KIT.

Rated DC & IMP voltage: 300kV Service pressure: 4-8bar

Trigger Switch (TS)

Remote controlled switch, which is be trigger the impulse generator.

Rated DC & IMP voltage: 300kV Service pressure: 4-8bar

• Chopping Gap (CG)

Chopping gap is used to generator LIC from 30kV-300kV for transformer testing.

Rated IMP voltage:	300kV
Sphere diameter:	250mm
Adjust distance:	0-150mm
Service voltage:	220V (AC)

Shunt (ST)

Shunt is used to measure the current what through the test object when LI and LIC.

Rated resistance:	0.1ohm/1ohm
Rated current:	5000A/500A
Rated voltage:	500V

Front/Tail Wave Resistor (RD)

Front/Tail wave resistor, which can be used as series resistor for impulse voltage configurations, determining the front and tail wave time. (Consider 0-8000pF load)

Rf Resistance value: Rt Resistance value: Max. IMP voltage:

100/200/400/800 Ω 300/600Ω 280kV

Weak Damped Capacitive Voltage Divider (DL)
Weak damped capacitive voltage divider is used to be

measure the impulse voltage, also use as a basic load of the impulse generator.

Max. IMP voltage:	3000kV
Rated capacitance:	400pF
Response time:	<95ns
Divider ratio:	600:1

Digital AC/DC/Impulse Control System (ACS-1)

Digital AC/DC/Impulse control system is used to be control the switchgears, voltage regulator, impulse trigger, in the mean time, it is also used to measure the rated voltage and current in the system. Necessary protection function is included. The software is base on the Window 10 platform and Labview software.

Option: Laptop type can be request in order)

Industry Platform:	TFT 23.5' TFT Screen
Operating system:	Window 10 or Window 8
I/O control:	Mitsubishi PLC
A/D sampling:	Mitsubishi PLC
D/A output:	Mitsubishi PLC
Channel of measuring:	8
A/D accuracy:	0.5% (16bit)

Digital AC/DC Measuring System (SG3005)

The Digital Measuring Instrument SG3005 is a microprocessor-controlled device for accuracy measuring AC, DC and also can be used for testing voltage waveform distortion and ripple factor.

The SG3005 has implemented a flash detector which stores and shows the last voltage measurement and its polarity before a breakdown or flashover occurs.

AC Measurement



Measurement modes:	
Input Voltage range:	
Frequency range:	
Accuracy:	

peak, peak/2, rms 0 ... 700 V rms 16 ... 1000 Hz 0.2% rdg, ± 3 counts

DC Measurement

Measurement modes: Input voltage range: Accuracy: mean value, ripple 0 ... 1000 V ± 0.2% rdg, ± 3 counts



Digital Impulse Voltage Measuring System (SG3004)

High voltage impulse test is used to assess the quality of any high voltage equipment. The test object is subjected to a fast voltage impulse of defined wave shape caused by the test object are used for detection of insulation strengths and/or faults.

SG3004-12 is an excellent and reliable tool for accurate measurement of all kinds of wave-shapes. It also manufactures complete impulse voltage test systems to meet most requirement. This impulse generation capability plus impulse measurement offers a complete solution to modern testing needs.

Number of Channels:	Two (Independent) channels
Input voltage:	1.5V-1500V
Input impedance:	2M Ω /20pF
Analog bandwidth:	50MHz for each channel
Trigger:	CH1, CH2 or Ext
Resolution:	12bit
Sampling rate:	100MS/sec max.



(LI/SI/LIC)

Ground Foil (GF)

Copper ground foil, which can be used to make ground connections between the individual high voltage apparatus.

Weight: 0.45kg/m

────High Voltage High Current High Power Test System and Components─── WWW.SAMGOR.COM



Outlook Diagram:



Typical 120kV AC / 300kV DC / 300kV LI-SI / 300kV LIC Block Diagram:





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