Platform Lightning Test System

Introduction

The platform lightning test system consists of two generators: an H-wave generator and an A-wave generator.

Standards

1) MiL-STD-464C Electromagnetic environmental effects requirements for systems
2) SAE ARP-5416 Aircraft Lightning Test Methods
3) SAE ARP-5416 Aircraft Lightning Test Methods

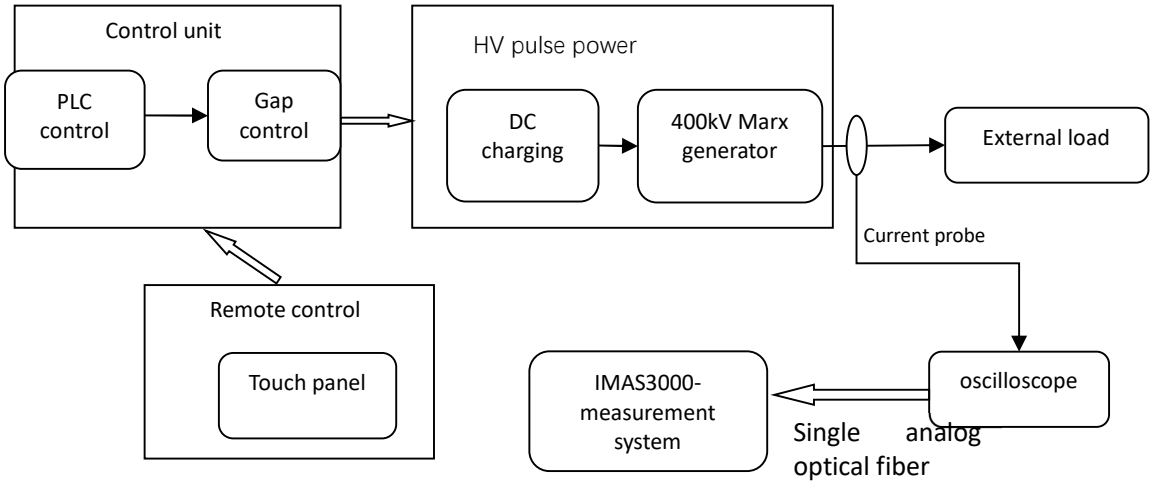
Scope of Supply

serial number	name	Model	quantity	Introduction to the device
1	H-wave generator	SXIC-10H	1 set	H waveform: 0.245μs±20%/4μs±30%; Max. load is 30μH, output:0.1~1 kA; Insulation material: N2 or SF6; Discharge switch: Adjustable gas spark switch; Based on PLC + touch screen control scheme; It can realize the automatic control of the whole test process; Contains air compression control unit;
2	A-wave generator	SXIC-03A	1 set	A waveform: 6.4μs ±20% /69μs±30% The output is from 1kA to 3 kA when testing a large system with 30 μH; Discharge switch: Gas ignition switch Based on PLC + touch screen control scheme It can realize the automatic control of the whole test process;
3	Oscilloscope	MDO34 3-BW-100	1 unit	Bandwidth: 100MHz Sample rate: 2.5Gs/s Four-channel

4	Multi-channel digital acquisition system	SXFA3024	3 sets	Frequency range: 200MHz Number of channels: 4 channels Communications: Fiber optics Power supply: battery, more than 4 hours It can communicate the probe with the measurement and analysis software, and the host computer analyzes and monitors the waveform
5	Current probe	C225	1 set	Self-integrating current sensor The maximum value is 5kA Frequency range: 100Hz-5MHz Measurement ratio: 0.01V/A
6	Current probe	C325S	1 unit	Self-integrating current sensor The maximum value is 5kA Frequency range: 100Hz-5MHz Measurement ratio: 0.1V/A
7	Current probe	C313S	3 sets	Self-integrating current sensor The maximum value is 2kA Frequency range: 100Hz-10MHz Measurement ratio: 0.1V/A
8	Current probe	C312S	1 set	Self-integrating current sensor The maximum value is 1kA Frequency range: 100Hz-10MHz Measurement ratio: 0.1V/A
9	Attenuators	A10	1 set	Ratio: 10:1
10	Measurement and analysis systems	iMAS3520	1 set	The computer can communicate with the oscilloscope, remotely set the oscilloscope, read the oscilloscope waveform, and automatically calculate the waveform parameters
11	Remote control unit	IMCS2000	2 sets	Touch screen operation; Control the two generators; Equipped with an emergency stop button
12	Surface current probes	SX30-50-10M	2 pcs	Maximum peak current: 5000A Sampling factor: 0.001V/A
13	Inductor matching box	customize	1 set	The multi-segment inductance is adjustable, and the overall inductance is guaranteed to be 30μH during external testing
14	Voltage probe	V60DP	1	Ratio:1000:1
15	Cage design			Prepared by the buyer
16	Impedance box	SXDZ-08	1	To avoid resonant
17	Documents		1	User manual, test report, troubleshooting techniques

Description of H Wave Generator

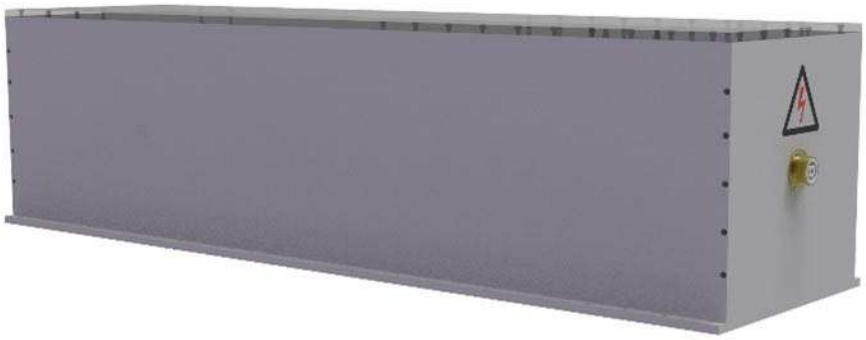
H wave generator consists of HV pulse power, control system, measurement system and remote-control unit.



Intelligent control unit adopts 35U standard 19' cabinet with PLC, power switch, emergency stop button and green & red alarming lights.

H-Wave PLC Control Cabinet

HV impulse power consists of HV charging unit and Marx generator, which includes HV impulse capacitors, gas spark switch, earthing resistance and shell.



HV impulse power

Remote controller mainly includes 10’ touch panel, power switch and emergency stop button. The charging voltage and charging time can be set from the touch panel, press “start test” button, the system will start test automatically.

Remote controller

Layout of H Wave Generator

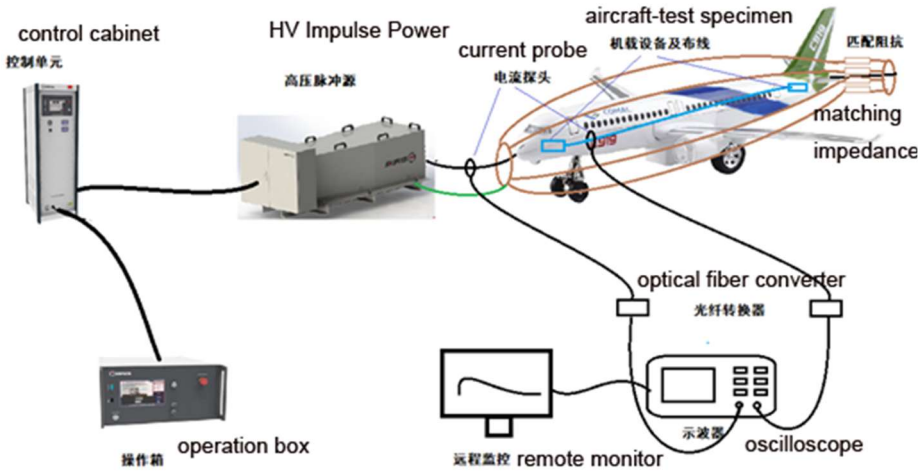
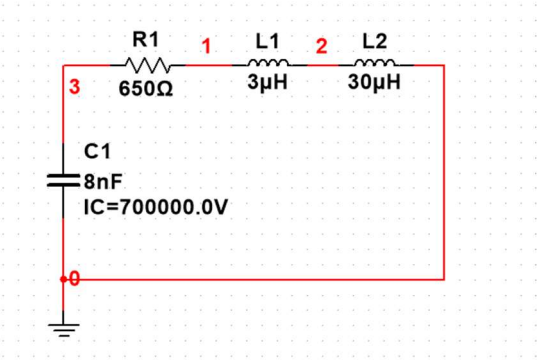
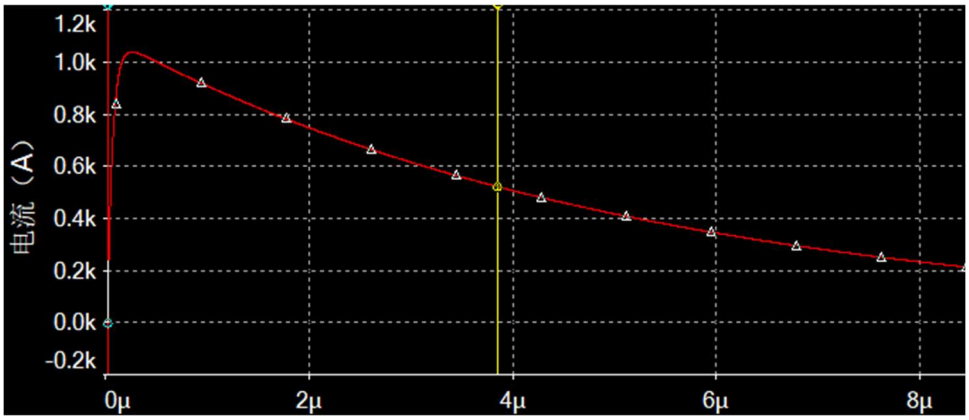


fig 1 Renderings of the H-wave generator

Simulation of H Wave Generator

30μH Load, output 0.25/4μs H wave upto 1kA

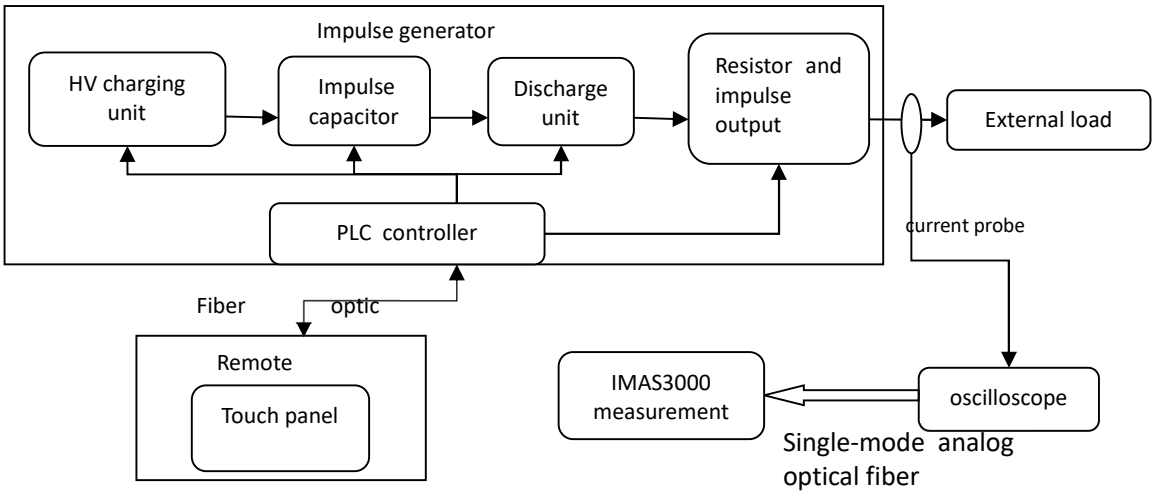




Simulation Wave

Description of A Wave Generator

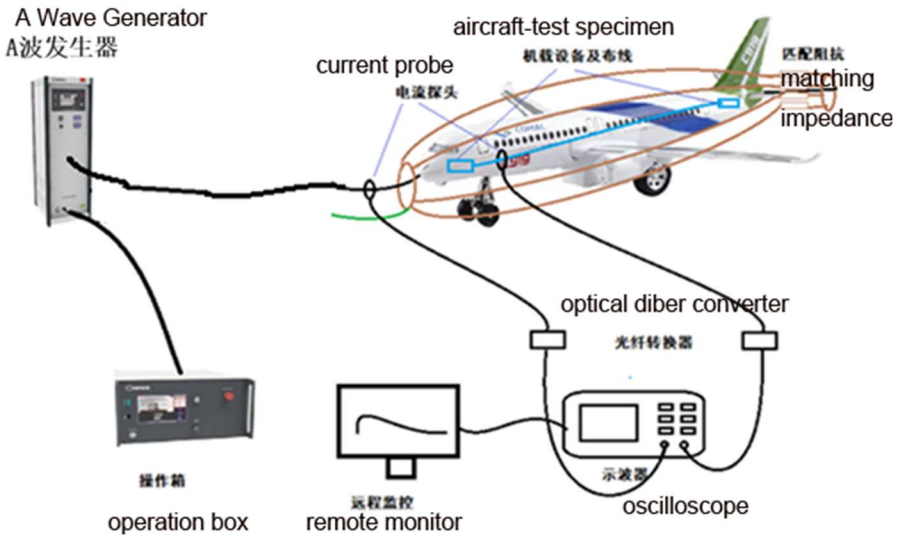
A wave generator consists of HV impulse power, control system, measurement system and remote control unit.



A-wave generator

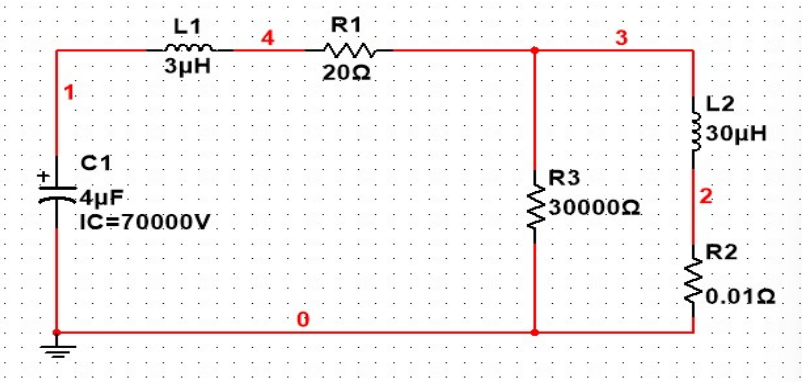
remote control operation box

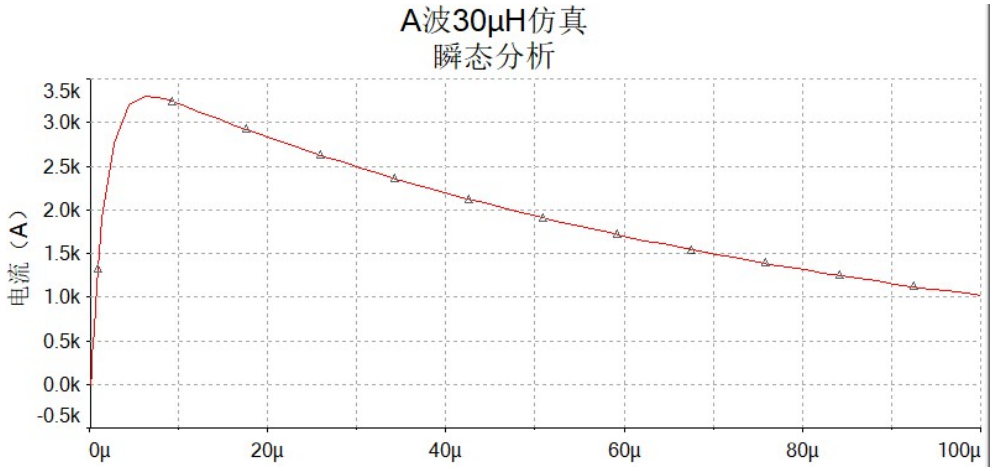
Layout of A Wave Generator



Simulation of A Wave Generator

30μH Load, output A wave upto 3kA





Simulation A Wave with 30 μ H load