

EMC Test Equipment Catalog



- Electrostatic Discharge Simulator
- Impulse Noise Simulator
- Fast Transient / Burst Simulator
- Lightning Surge Simulator
- Voltage Dip & Swell Simulator
- Damped Oscillatory Wave Simulator
- Emission Measurement System
- Broadband Sleeve Antenna
- TEM Horn Antenna
- EMC Test Systems for Automotive Electronics

|2|0|2|0|-|2|0|2|1|

www.noiseken.com

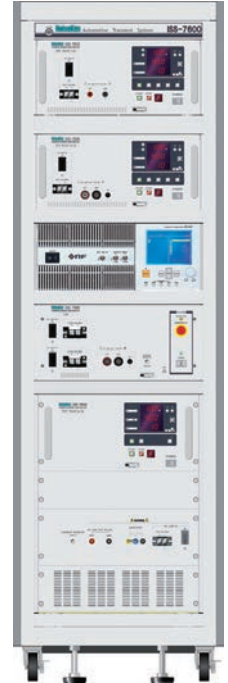
ISO Standard Compliant Automotive Transient Surge Simulator

ISS-7600 Series

Designed to meet and exceed the testing needs to ISO7637-2 (2011), NoiseKen ISS-7600 series Automotive Transient Surge Simulator System offers flexible and productive testing facilities.

- Highly accurate output waveforms
- Waveforms guaranteed not only at the output terminal of each generator but also at the output terminal of the Coupling Network.
- Capable of running either as a system or as individual generators.
- PC Remote Control Software can control ISS-7600 through USB interface connection.
- Supports 12 V / 24 V / 42 V systems
- 60 V / 50 A Coupling Network
- Up to 200 A Power supply available.
- Electric shock-free safety plugs are used for every output terminal.
- Load resistors meeting the loading conditions (specified in Annex D of the standard) for the verification of the output characteristics optionally available.
- Equipped with a high accuracy current monitor. An oscilloscope allows measurement of the current waveform flowing into the DUT. Current and voltage waveforms can be examined at the same time with an oscilloscope because the current monitor output circuit is floating with respect to the SG and FG. The monitor's frequency response characteristic is from DC to 150 kHz.
- Japanese software is also available.

* Private standards or specifications by manufactures can be responded upon request.



Pulse 1 / 2a Generator ISS-7610

Pulse 1 : Simulation of transients due to supply disconnection from inductive loads. It is applicable to DUTs which, as used in the vehicle, remain connected directly in parallel with an inductive load.

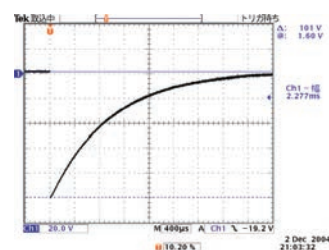
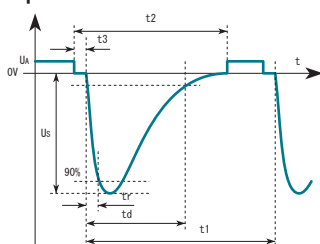
Pulse 2a : Simulates transients due to sudden interruption of currents in a device connected in parallel with the DUT due to the inductance of the wiring harness



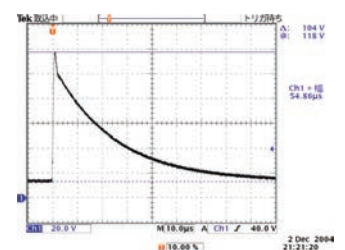
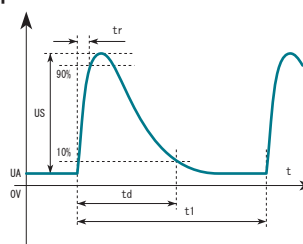
- Compliant tests to ISO 7637-2 (2011) Standard (Pulse1/Pulse2a generator)
- Stand-alone usage possible with 60V 30A CDN built-in.

Parameter	Specification (Pulse 1)	Specification (Pulse 2a)	Item	Q'ty
Output voltage(Us)	-5 V ~ -720 V (-1 V step)	5 V ~ 300 V (1V step)	Output cable(2 m)	Each 1 pc. of red & black color one
Output impedance(Ri)	10 Ω, 30 Ω, 50 Ω	2 Ω, 4 Ω, 10 Ω, 30 Ω, 50 Ω	DC input cable(2 m)	1 pc.
Pulse width(td)	50 μs, 200 μs, 300 μs, 500 μs, 1ms, 2ms	50 μs, 200 μs, 300 μs, 500 μs	Short lead for waveform verification	1 pc.
Rise time(tr)	1 μs : -0.5 μs /+0 μs 3 μs : -1.5 μs /+0 μs	1 μs : -0.5 μs /+0 μs	Interlock plug	1 pc.
Pulse repetition period(t1)	0.5s ~ 99.9s (0.1s step), P2a : 0.1s ~ 99.9s (0.1s step)		Fuse(3.15 A)	2 pcs.
DUT power capacity	DC 60 V / 30A		AC cable	1 pc.
Dimensions	(W)430 × (H)200 × (D)522 mm		Instruction manual	1 volume
Weight	Approx. 20 kg	Power consumption 260 VA		

Output waveform pulse1



pulse2a



ISS-7600 Series

Pulse 3a / 3b Generator **ISS-7630**

Simulation of transients which occur as a result of the switching processes. The characteristics of these transients are influenced by distributed capacitance and inductance of the wiring harness.

- Compliant tests to ISO 7637-2 (2011) Standard (Pulse 3a/Pulse 3b generator)
- Stand-alone usage possible with 60V 30A CDN built-in.
- Frequency sweep (10 kHz - 100 kHz - 10 kHz) test possible (Option)
- Faster than 3.5ns rise time realized so as to conduct more severe test than the Standard.

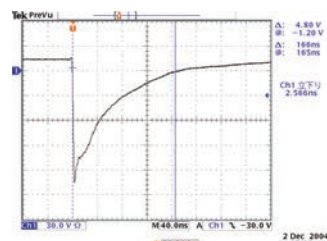
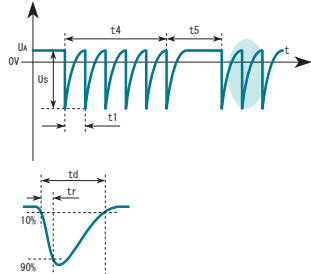


Parameter	Specification
Output voltage(Us)	-20 V ~ -350 V (-1 Vstep) 20 V ~ 350 V (1 Vstep)
Output impedance(Ri)	50 Ω
Pulse width(td)	150ns ± 45ns
Rise time(tr)	5ns ± 1.5ns, <3.5ns
Pulse repetition period(t1)	10μs ~ 999μs(1μs step) *1 kHz ~ 100 kHz Frequency sweep possible (option necessary)
DUT power capacity	DC60V/30A
Dimensions	(W)430 × (H)200 × (D)522 mm
Weight	Approx. 17 kg Power consumption 110 VA

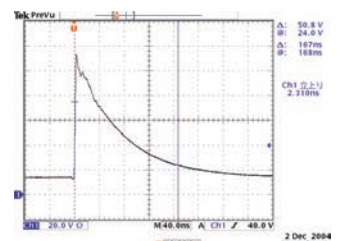
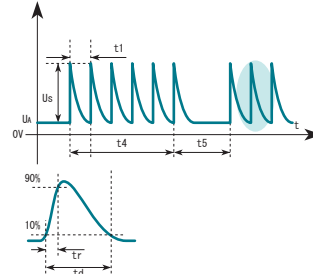
Item	Q'ty
Output cable(0.5m)	Each 1 pc. of red & black color one
DC input cable(2m)	1 pc.
BNC conversion adaptor	1 pc.
50Ω coaxial cable (BNC equipped)	1 pc.
G cable	1 pc.
Waveform verification lead	1 pc.
Interlock plug	1 pc.
Fuse(3.15A)	2 pcs.
AC cable	1 pc.
Instruction manual	1 volume

Output waveform

pulse3a (tr : set at <3.5ns)



pulse3b (tr : set at <3.5ns)



Difference of the impulse response among measurement probes

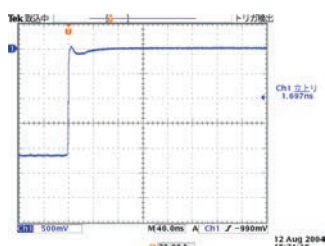
Since Pulse 3a / 3b contain high frequency components, the waveform measurement should be paid attention. It can be done easily with the optional attenuator.



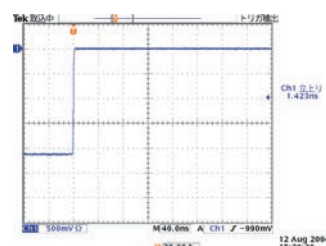
BNC conversion adaptor for the measurement



Attenuator in No-load (Option)



Measurement with a 100:1



Measurement with the NoiseKen no-load attenuator

ISS-7600 Series

Pulse 2b / 4 Generator

BP4610

Pulse 2b : Simulates transients from d.c. motors acting as generators after the ignition is switched off.

Pulse 4 : Simulates supply voltage reduction caused by energizing the starter-motor circuits of internal combustion engines spikes associated with starting.

- Compliant tests to ISO 7637-2 (2011) Standard (Pulse 2b generator)
- Compliant to ISO 7637-2 (2004) pulse 4
- $\pm 60\text{ V } 10\text{ A DC} - 150\text{ kHz}$ bipolar amplifier built-in.
- Works as a power source replacing an external battery for testing with the other pulses.
- Expandable to be 15 A or 30 A upon addition of an optional external power supply.

* Requirement of 100 A / 200 A can be responded upon request and discussion.

* Optional software shall be necessary for putting Pulse 2b / 4 out.

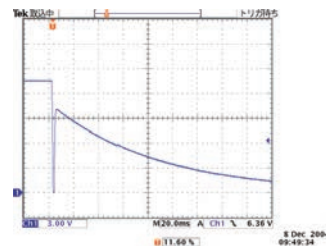
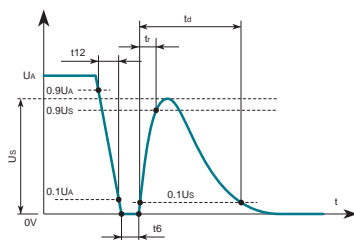


Parameter	Specification	
Pulse 2b	UA, Us*	0 V ~ 60.0V $\pm 10\%$ $\pm 0.5\text{ V } 0.1\text{ V step}$
	Ri	0 Ω ~ 0.05 Ω
	Td	0.1s, 0.2s, 0.5s, 1s, 2s, 4s $\pm 20\%$
	t12, tr, t6*	1ms, 2ms, 5ms $\pm 50\%$
Pulse 4	UB	0 V ~ 60.0 V $\pm 10\%$ $\pm 0.5\text{ V } 0.1\text{ V step}$
	Us, Ua	0 V ~ -UB $\pm 10\%$ $\pm 0.5\text{ V } -0.1\text{ V step}$
	Ri	0 Ω ~ 0.02 Ω (at shipment)
	t7, t8, t10, t11*	1ms ~ 999ms $\pm 10\%$ 1ms step
	t9	0.1s ~ 99.9s $\pm 10\%$ 0.1s step
Dimensions	(W)430 × (H) 177 × (D)550 mm	
Weight	Approx. 26 kg Power consumption 1200 VA	

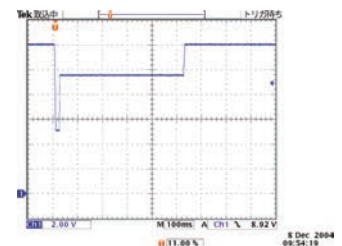
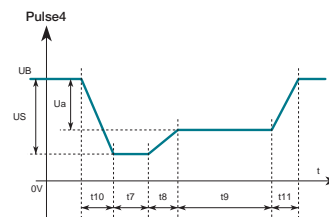
*Each parameter can be set individually.

Output Waveform

pulse2b



pulse4



Pulse 5a / 5b Generator

ISS-7650

Pulse 5a : Simulation of load dump transient, occurring in the event of a discharged battery being disconnected while the alternator is generating charging current and with other loads remaining on the alternator circuit at this moment.

Pulse 5b : Simulation of the above load dump transient when a Zener diode is inserted to the battery route.

- ISO 7637-2 (2004) compliant pulse 5a
- Pulse 5a and Pulse 5b generating unit
- A built-in 60 V / 30 A Coupling Network allows independent operation.
- Equipped with a programmable clip circuit that can produce Pulse 5b clipped waveform in steps of 0.1 V without externally attaching a zener diode.

*The ISO standard requires pulse 5a and 5b have the same value for their td. Due to the effects of the integrated clip circuit, pulse 5b width is different from that of pulse 5a. Pulse 5b non-compliant to ISO 16750 (2012) Test B



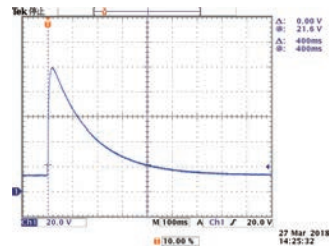
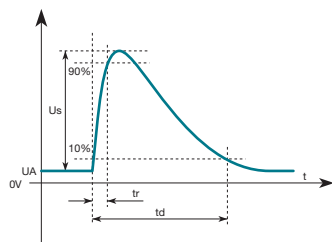
ISS-7600 Series

Parameter	Specification
Pulse5a	12 V system
Output voltage(Us)	20 V ~ 100 V (0.5 V step)
Output impedance(Ri)	0.5 Ω ~ 8 Ω (0.5 Ω step)
Pulse width(td)	40ms, 100ms ,200ms, 350ms ,400ms
Rise time(tr)	10ms (+0, -5ms)
Pulse5b	12 V system
Output voltage(Uss)	10 V ~ 40 V (0.1 V step)
Pulse width(td)	Td of pulse 5b is dependent on Us, Uss and Ri settings, the same value as pulse 5a td not available
DUT power capacity	DC 60 V / 30 A
Dimensions	(W)488 × (H)670 × (D)660 mm
Weight	Approx. 100 kg
	Power consumption150 VA(in stand-by) / 600 VA(in charging)

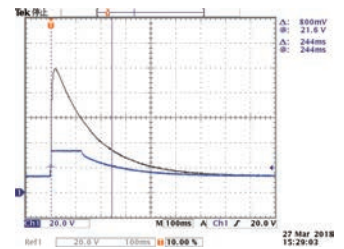
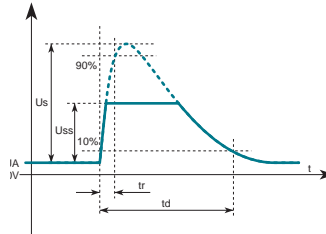
Item	Q'ty
Output cable (2 m)	Each 1 pc. of red & black color one
DC input cable (2 m)	1 pc.
Coaxial cable for current monitoring	1 pc.
DC coupling switching plug	1 pc.
Short lead for waveform verification	1 pc.
Interlock plug	1 pc.
Fuse (6.3 A)	2 pcs.
AC cable	1 pc.
Instruction manual	1 volume

Output Waveform

pulse5a

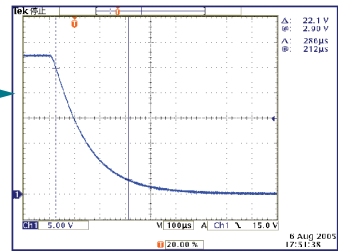
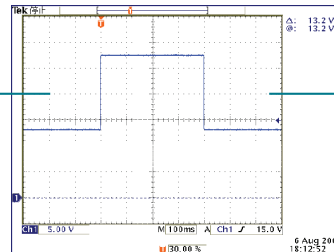
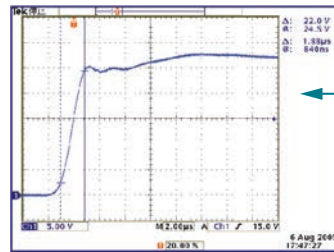


pulse5b



pulse5c (Customized waveform)

* Responded upon the particular request. If required, please contact us.



*1ms - 500ms (1ms)

Coupling Network & System Rack ISS-7690 / ISS-7602

System rack that all pulse generating units can be mounted on (ISS-7602).

ISS-7690 Coupling Network unit centralizes all pulse outputs of the system-configured generators in the single output port.

- Software selectable pulse generators and DC supplies
- In addition to the built-in DC power supply (BP4610), two external power supplies (battery) connections are available
- Switches three independent power supplies (BP4610 (LINE 1), LINE 2, LINE 3)
- A high speed DC interruption switch with < 1μs fall time capability is standard built-in
- Equipped with a high accuracy current monitor.
- The pulse 3a and 3b waveforms meet the ISO standard specifications at the output ports of the Coupling Network Unit.



Insure high frequency Pulse 3a / 3b waveforms which may be dulled due to the wiring length with the centralized CDN output port.

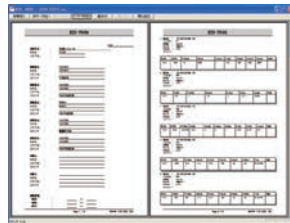
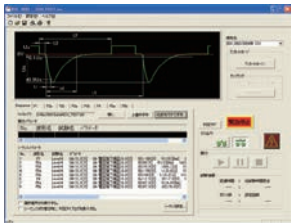
Parameter	Specification
DUT power capacity	60 V / 50 A
DC input	2 channels (Amplifier power supply & battery) *Including Pulse 2b, Pulse 4 and arbitrary waveform.
Pulse input	Pulse1, Pulse2a/2b ,Pulse3a/3b ,Pulse4, Pulse5a, Pulse5b
Interruption test	≤ 1μs (in DC interruption), Not switched in fluctuation of the interruption
Current monitor	Monitoring terminal (BNC)output 10m V/A (DC)150 kHz
System rack	(W)555 × (H)1800 × (D)790 mm

ISS-7600 Series

Control software
ISS -7601

Comprehensive control software for the all pulse generators.

- Comprehensive control software for the all pulse generators.
- Enables to control the each pulse generator comprehensively.
- One touch output possible even in Pulse 2b and Pulse 4 whose waveforms assembly may be troublesome.
- Easy setting of the test conditions with its programming function.
- Reporting function available to realize the test conditions, comments as well as the result (Preview and print-out also possible).
- Sequence setting screen
- Preview screen for printing the test result out



Fest Pulse /Slow Pulse Generators
ISS-7630 / ISS-7610-N1229

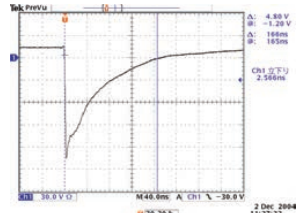
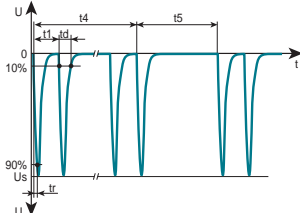
The ISO 7637-3 2007 standard provides evaluation of the immunity of devices under test (DUTs) to transient transmission by coupling via lines other than supply lines. The test transient pulses simulate both fast and slow transient disturbances, such as those caused by the switching of inductive loads and relay contact bounce. Also it provides 3 kinds of the coupling methods.

ISS-7630(Fast Pulse)	
Parameter	Specification
Output voltage(Us)	-20 V ~ -350 V (-1 V step) 20 V ~ 350 V (1 V step)
Output impedance(Ri)	50 Ω
Pulse width(td)	150ns ± 45ns
Rise time(tr)	5ns ± 1.5ns, < 3.5ns
Pulse repetition period(t1)	10 μs ~ 999 μs(1 μs step)
DUT power capacity	DC 60V / 30 A
Dimensions	(W)430 × (H)200 × (D)522 mm
Weight	Approx. 17 kg Power consumption 110VA

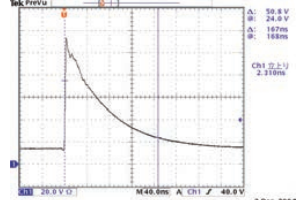
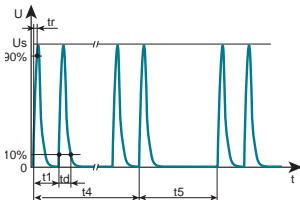
ISS-7610-N1229(SLOW Pulse)	
Parameter	Specification
Output voltage(Us)	5 ~ 50 V (0.1 V step) -5 ~ -50 V (-0.1 V step)
Output impedance(Ri)	2 Ω
Pulse width(td)	50 μs ± 10 μs
Rise time(tr)	1 μs
Pulse repetition period(t1)	0.1 ~ 99.9s (0.1s step)
DUT power capacity	-
Dimensions	(W)430 × (H)200 × (D)522 mm
Weight	Approx. 20 kg Power consumption 50VA

■ Output Waveform

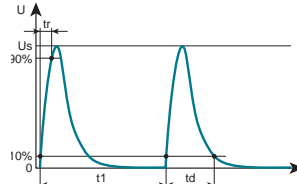
■ Fast Pulse a



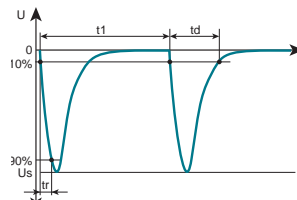
■ Fast Pulse b



■ Slow Pulse +



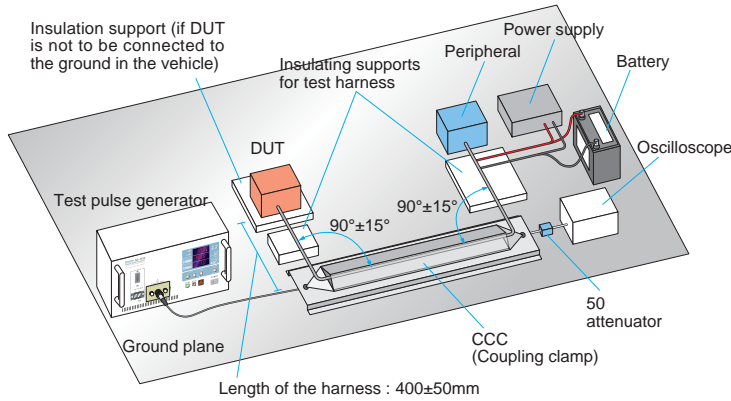
■ Slow Pulse -



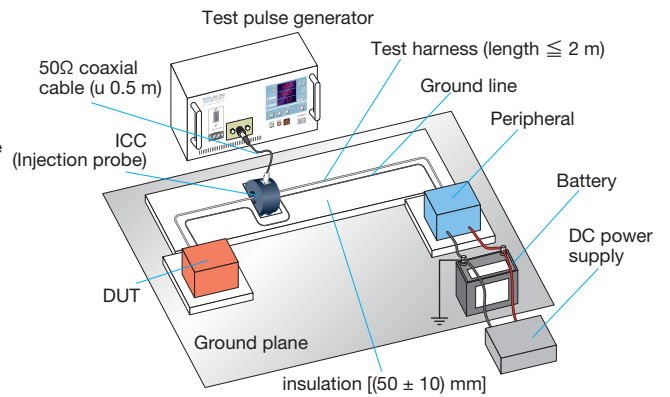
ISS-7600 Series

■ Test Setup(ISO 7637-3)

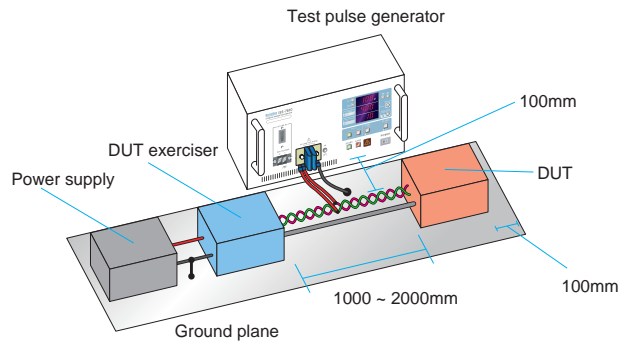
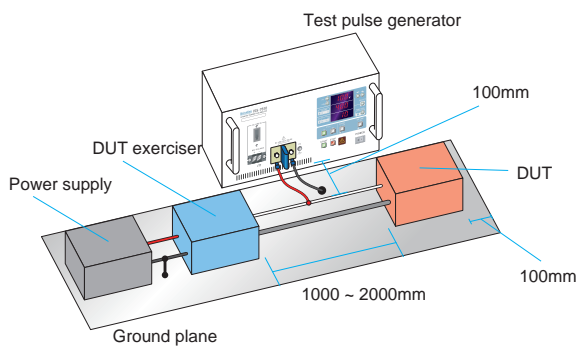
· Capacitive coupling clamp (CCC) method (Only for Fast Pulse)



· Inductive coupling clamp (ICC) method (Only for Slow Pulse)



■ Direct capacitor coupling (DCC) method (For Fast Pulse and Slow Pulse)



* DCC test setup for CANBAS.

Option

Coupling Clamp MODEL : ISS-7630-Cup



Coupling clamp for testing for lines other than supply lines. Capacitively couples 3a and 3b pulses into the lines under test.

Contents: Coupling clamp, BNC Coaxial cable 0.5m, BNC coaxial cable 0.1 m, 50Ω 5W terminator, Metal fasteners

● Correspondent model : ISS-7630

Injection Probe MODEL : F-120-2



Clamp used for the Inductive coupling clamp (ICC) test method provided in ISO 7637-3 Standard. Calibration fixture (FCC-BCICF-1) is also available.

* The left photo is the figure including the calibration fixture.

DCCBOX



- Inject pulse noise into the I / O signal line through a 100pF coupling capacitor regulated by ISO 7637-3.
- With a check terminal to check the pulse
- The pulse decoupling inductor can be attached to and detached from the sample (hereinafter referred to as EUT1 and EUT2).
- Since the pulse generator to the DCC BOX is a balanced transmission line and the DCC BOX to EUT 1 and EUT 2 is an unbalanced transmission line, a balanced / unbalanced balun is built in to suppress disturbance of the pulse waveform.

Waveform Verification Attenuator under No Load Conditions Model: 00-00007A



The attenuator for observing high frequency and high voltage pulses of Test Pulse 3a / Test Pulse3b of ISS-7630.
2.5 k Ω 40 dB ATT (Pulse 3a / Pulse 3b)

● Compatible model: ISS-7630

Waveform Verification Set Model: 06-00059B



A set of resistor and attenuator for observing the pulse of Test Pulse 1 / Test Pulse 2a / Test Pulse 2b / Test Pulse 3a / Test Pulse 3b / Test Pulse 5a of ISS-7610, BP4610, ISS-7630, & ISS-7650.

1 Ω resistor, 2 Ω resistor, 10 Ω resistor, 50 Ω resistor, 2.5 k Ω 40 dB ATT, 50 Ω 20 dB ATT × 2

● Compatible models: ISS-7610, ISS-7630, ISS-7650

* Resistors can also be purchased individually.

50Ω Load Waveform Verification Attenuator Model: 00-00006B



The attenuator for observing high frequency and high voltage pulses of Test Pulse 3a / Test Pulse 3b of ISS-7630.
50 Ω 20 dB ATT × 2 (Pulse 3a / Pulse 3b)

● Compatible model: ISS-7630

JASO Standard Compliant Automotive Transient Surge Simulator

JSS Series

Simulator to reproduce various transient surge phenomena which are generated in a vehicle and required in JASO D 001-94 General Rules of Environmental Testing Methods for Automotive Electronic Equipment established by The Society of Automotive Engineers of Japan Standard, and evaluate the immune resistibility of the equipped electronics devices against the surge.

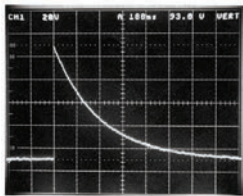
- JASO D001-94 Rule compliant simulator
- Respond both for 12 V and 24 V systems.
- One touch selection possible for the output surge waveform.



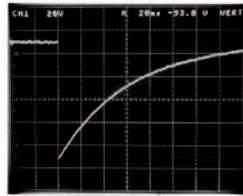
JSS-001
JSS-002

JSS-003

Output Waveform



A-1 Waveform
 τ :200ms
V:20V/Div
H:100ms/Div



B-1 Waveform
 τ :60ms
V:20V/Div
H:20ms/Div

Specification

Parameter	Specification (JSS-001)	Specification (JSS-002)	Specification (JSS-003)
Output voltage / RC Time constant / Output impedance / DC cut time			
Type A-1	100 V / 200ms / 0.8 Ω / -		100 V / 200ms / 0.8 Ω / -
Type A-2	150 V / 2.5 μ s / 0.4 Ω / -		150 V / 2.5 μ s / 0.4 Ω / -
Type B-1	-100 V / 60ms / 8 Ω / 300ms		-100 V / 60ms / 8 Ω / 300ms
Type B-2	-320 V / 2ms / 80 Ω / 10ms		-320 V / 2ms / 80 Ω / 10ms
Type D-1		150 V / 400ms / 1.5 Ω / -	150 V / 400ms / 1.5 Ω / -
Type D-2		200 V / 2.5 μ s / 0.9 Ω / -	200 V / 2.5 μ s / 0.9 Ω / -
Type E		-400 V / 26ms / 210 Ω / 120ms	-400 V / 26ms / 210 Ω / 120ms
Repetition frequency / number of pulse	30s / 1 ~ 999999	30s/1 ~ 999999	30s/1 ~ 999999
DUT power capacity	Max. DC 50 V / 10 A	Max. DC 50 V / 10 A	Max. DC 50 V / 10 A
Dimensions	(W)555 × (H)1500 × (D)790 mm	(W)555 × (H)1500 × (D)790 mm	(W)555 × (H)1800 × (D)790 mm
Weight	Approx. 160 kg	Approx. 200 kg	Approx. 200 kg

JASO D001-94

1. Conditions of Transient Voltage Test

Class	Type of test	Test conditions				Number of pulses	Location of transient voltage impression
		Vp(V)	τ (μ s)	f(Hz)	R3(Ω)		
12V system	Type A	A-1	70	200000	-	0.8	1
		A-2	110	2.5	-	0.4	10
	Type B	B-1	-80	60000	1/30	8	10
		B-2	-260	2000	-	80	100
24V system	Type C	As agreed between the parties concerned				via agreement	Related Terminal
	Type D	D-1	110	400000	-	1.5	1
		D-2	170	2.5	-	0.9	10
	Type E	-320	26000	1/30	210	100	100
	Type F	As agreed between the parties concerned				via agreement	Related Terminal

2. Constants in the Generating Circuits for Type A and Type D Transient Voltage Tests

Type of test	Capacitor voltage(V)	ResistorR1	ResistorR2(Ω)	ResistorR3(Ω)	ResistorR4(Ω)	Capacitor C(μ F)	Remarks
Type A	A-1	88	5(100)	1(100)	4(100)	80000	} Select the either combination
		70	To be determined along power supply capacity for the charging	2(100)	0.8(100)	∞	
Type D	D-1	110	0.6(200)	0.4(150)	11(100)	4.7	} Select the either combination
		130	22(100)	2(100)	∞	50000	
	D-2	170	1.2(100)	0.9(100)	∞	73000	2.2

Remarks

1. Numbers in parenthesis are reference figures for resistor power rating. Unit: W
2 The specified values for resistors and capacitors shall be true values not designated values.

3. Constants in the Generating Circuits for Type B and Type E Transient Voltage Tests

Type of test	Capacitor voltage(V)	ResistorR1	ResistorR2(Ω)	ResistorR3(Ω)	ResistorR4(Ω)	Capacitor C(μ F)	Remarks
Type B	B-1	-100	50(10)	10(10)	40(10)	2400	} Select the either combination
		-80	To be determined along power supply capacity for the charging	20(10)	8(10)	∞	
	B-2	-260	60(5)	80(5)	∞	33	-
Type E	-457	27(100)	300(10)	700(10)	1000	} Select the either combination	
	-320	13(100)	210(10)	∞	2000		

Remarks

1. Numbers in parenthesis are reference figures for resistor power rating. Unit: W
2 The specified values for resistors and capacitors shall be true values not designated values.
* See the original document for the Figures.

FORD Standard Transient Pulse Generator

ISS-T1321

Simulator to generate Transient Pulse as required in FORD's EMC standard (EMC-CS-2009) for surge test onto automotive electronic devices. The generation waveforms are Pulse A1 / A2-1 / A2-2 / C1 / C2 surges standardized as RI130 & CI220, and Waveform F fluctuation standardized as CI260.



Basic specification

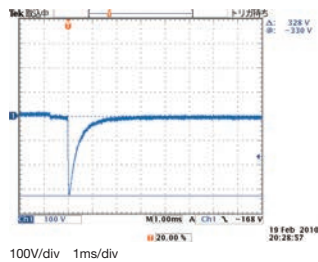
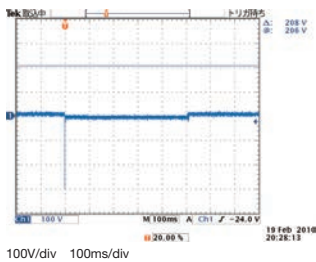
Parameter	Specification
DC Max Input Voltage	DC 13.5 V
DC Max Output Current	10 A · 50 A (depends on waveform selection)
DC Input Breaker	50 A
Test Timer	1 ~ 999S(Enable to memorize the last setting at most 3 months)
Switching Relay	KUP-1415-12(Produced by Potter & Brumfield) Display the relaying accumulation * Recommend the replacement after 100 hours usage.
Emergency Stop	Red colored mushroom shape type. (push-lock-turn-reset type) Pulse output stop / DC output stop.
Power supply	AC 100 V-AC 240 V ± 10 % 50 VA
Dimensions	Approx. W430 mm × D322 mm × H 200 mm (protrusion excluded)
Weight	Approx. 12 kg

Output waveform and Current value

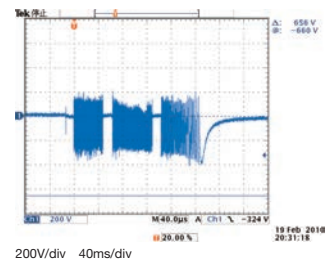
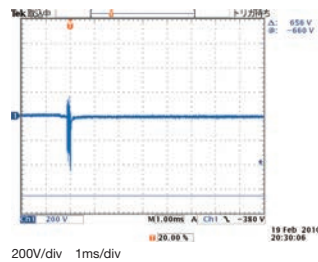
Test item	Output waveform	Mode	Required injection time *1	Max output current	Output terminal	
RI130	A2-1	2	60s		C, D*2 terminals(BNC terminals)	
		3				
	A2-2	2				
		3				
CI220	A1	1	120s	10A	DC LINE OUT (C, D terminals are short circuited)	
		2	20s			
	A2-1	1	120s			
		2	20s			
		3				
	3					
	A2-2	2				
		3				
	C-1	2				50A
		3				
C-2	2					
	3					
CI260	Waveform F	-	60s	10A	DC LINE OUT (C, D terminals are open)	

*1 : Injection times are variable. *2: Direct connection to 15-N1583 coupling test fixture.

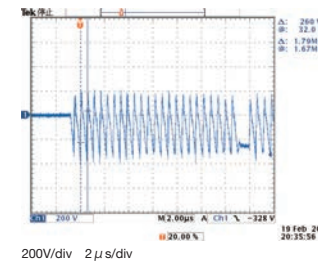
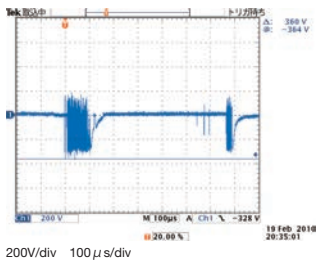
■ CI220 A1 MODE1



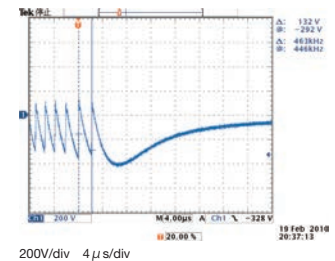
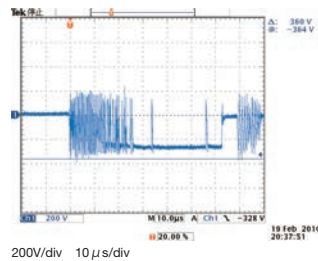
■ CI220 A2-1 MODE1



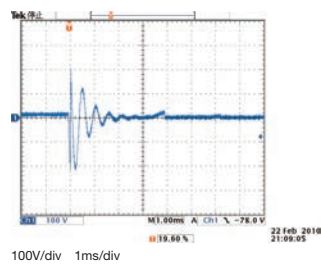
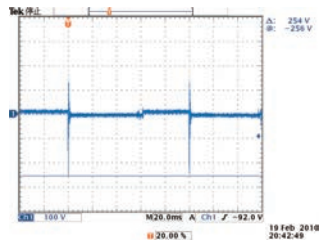
■ CI220 A2-1 MODE2



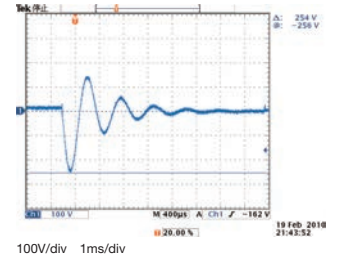
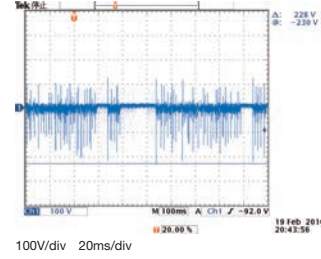
■ CI220 A2-1 MODE3



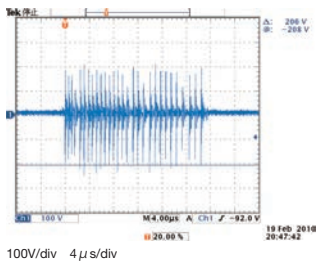
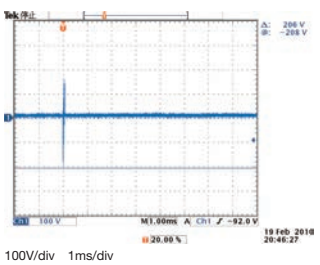
■ CI220 A2-2 MODE2



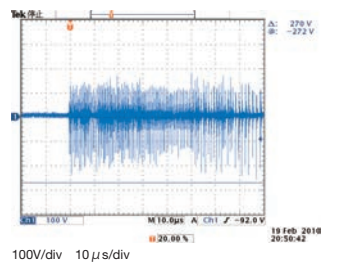
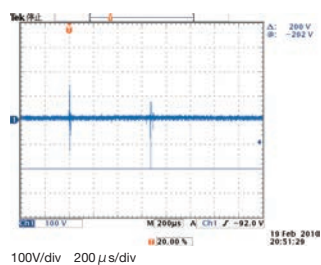
■ CI220 A2-2 MODE3



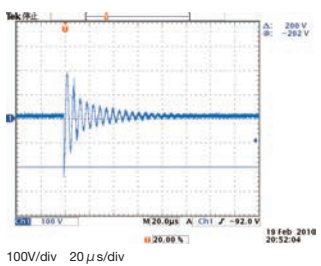
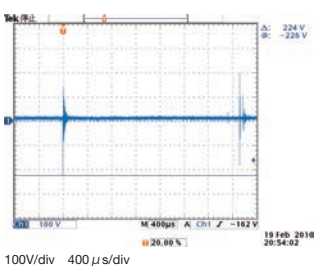
■ CI220 C1 MODE2



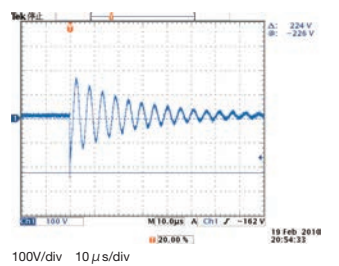
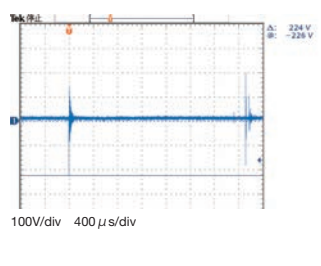
■ CI220 C1 MODE3



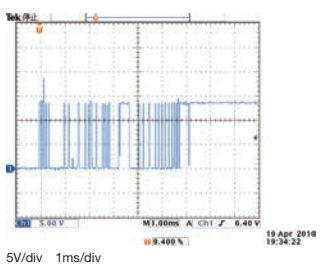
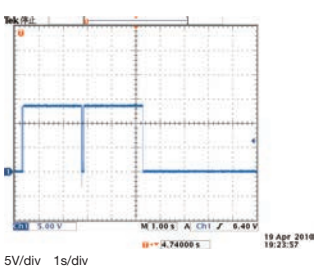
■ CI220 C2 MODE2



■ CI220 C2 MODE3



■ CI260 Waveform F



ISS-T1321

Test Fixture for FORD standard RI130/RI150

15-N1583

Harness injection fixture to perform RI130 / RI150 test required in FORD Standard EMC-CS-2009
(Enable to perform RI130 test in combination with ISS-T1321).



Test fixture outside appearance

Basic specification

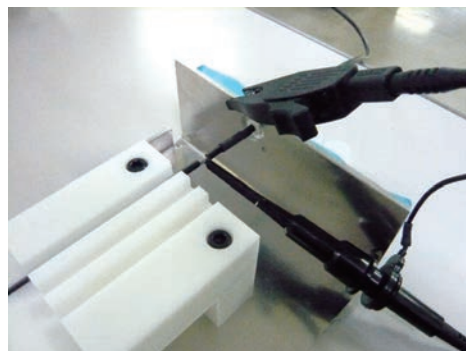
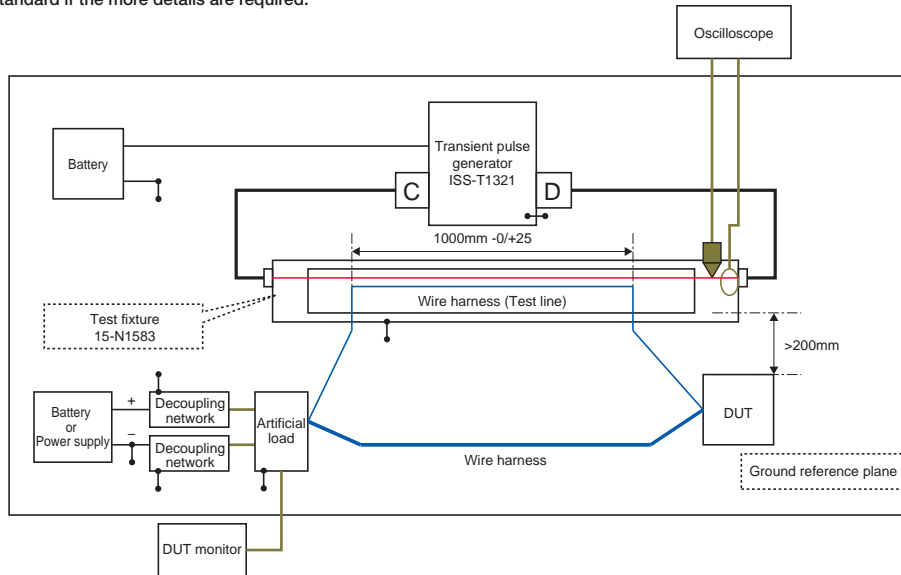
Connector	N Type (Female contact)
Source wire	AWG 14 copper wire (with cover)
Dimensions	(W)1306 × (H)72 × (D)152 mm (protrusion excluded)
Weight	Approx. 7.5 kg
Equipped cable	Connection cable to ISS-T1321 × 2 pcs.



Connection setup

[Test setup] RI130

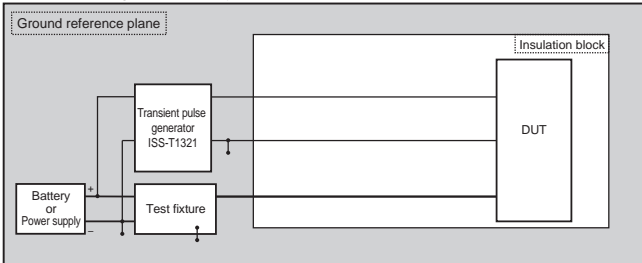
* Please go through the Standard if the more details are required.



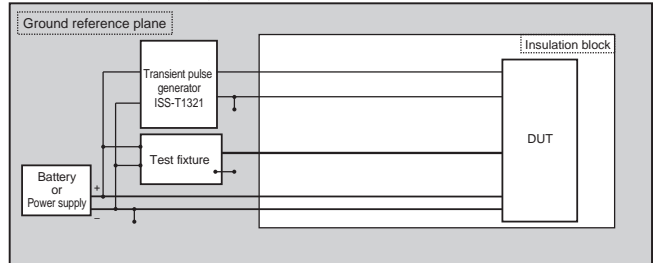
ISS-T1321

[Test setup] CI220

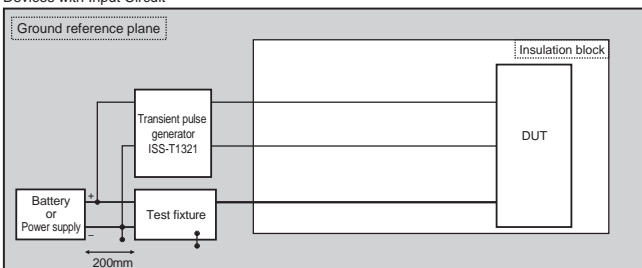
• Devices with a Single Power Supply Circuit



• Devices with Two Power Supply Connections



• Devices with Input Circuit



* Please go through the Standard if the more details are required.

FORD Standard CI250 Transformer Unit
06-N1588

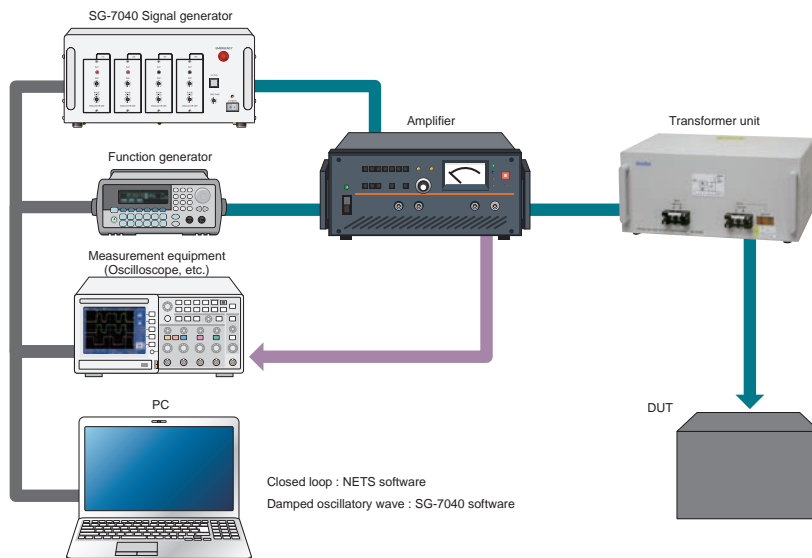
Ground offset transformer to perform CI250 test as required in FORD Standard (EMC-CS-2009)



Outside appearance

Basic specification

Frequency Characteristics	30 Hz ~ 250 kHz
Input Signal	200 W max
Output Current	DC 50 A max
Coupling Ratio	4 : 1 (Input : Output)
Dimensions	Approx.(W)430 × (D)322 × (H)200 mm (protrusion excluded)



Generators or measurement systems correspondent to the other standards shall be responded upon request.

DC Power Supply Voltage Fluctuation Simulators

SG-7040A System

Simulator to reproduce power supply voltage fluctuation to electronics devices in a vehicle and evaluate the immune resistibility against the fluctuation.

Max. 4 channels not only +B connection but also ACC, IG (and IG2), etc. can be synchronized for the reproduction.

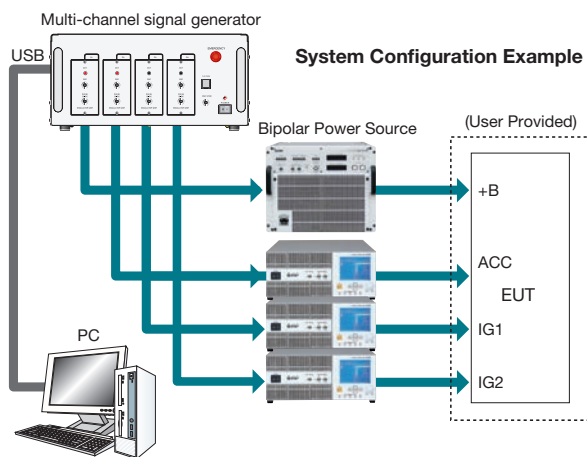
- ISO 16750 Standard compliant test (Possible to respond to private standards of the manufacturers).
- High resolution and high accuracy for the waveforms output realized with waveforms operation circuits built in the each channel.
- Easy and precise reproduction of the fluctuation phenomena not only in the Standard but also arbitrarily enabled with the software control (USB).
- Insures less than 1μs for the synchronizing variation among the channels.
- Enable to reproduce waveforms by using CSV data collected from real vehicle oscilloscope measurements.
- Automated testing operation can be customized for reducing the man-hour.

*Please contact us for the specification details.

*Load dump test A and B pulses not available



Specification



The system is primarily comprised of the following three elements: multi-channel signal generator, bipolar power source(s), and arbitrary waveform creation software.

Appropriate bipolar power sources shall be selected and the multi-channel signal generator shall be configured according to test requirements.

1. Multi-channel signal generator

- Modular construction for a maximum of four channels
- Arbitrary waveform creation (DC, ramp wave, sine wave, exponential wave, frequency modulation, amplitude modulation)
- Waveform sequence creation

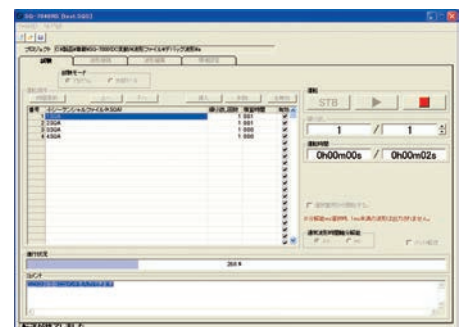
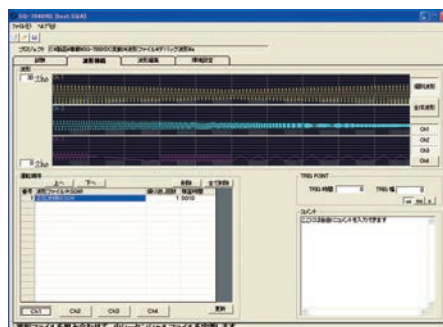
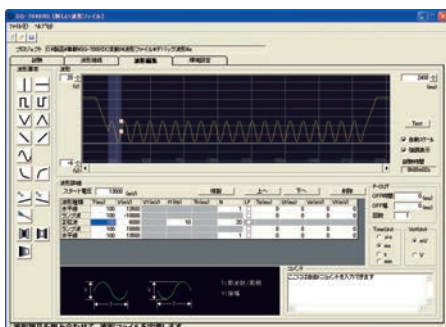
2. Arbitrary Waveform Creation Software

The arbitrary waveform creation software easily creates complicated waveforms with repeated voltage and time ramping with its superb GUI.

3. Bipolar Power Source

High-speed bipolar power source is selected according to the DUT power rating.

Software



SG-7040A System

Multi-channel signal generator SG-7040A

Specifications

Parameter	Specifications / Functions
Channel Number	1 ch ~ 4 ch
Oscilloscope Trigger Output	BNC Connector 0 ~ 5 V Set the desired point as the trigger point with the waveform creation software and monitor waveform generation with the external trigger function of the oscilloscope.
Waveform Generator Method	Sampling waveform output based on partial waveform memory and DSP circuit output CSV data
Output Voltage	0.00 ~ ± 6.00 V
Output Current	5 mA Max.
Output Impedance	50 Ω
Setting Resolution	0.01 V
Output Resolution	1.221 mV
Offset Voltage	± 6.0 V
Frequency Response	150 kHz Max. (± 6.00 V Amplitude Sine Wave)
Characteristics	150 kHz Max. (± 6.00 V Square Sine Wave)
Frequency Precision	± 20ns + 50 ppm (over the entire frequency rang)
Waveform Rise / Fall Time	Less than 100ns (0±1.00V Swing)
Slew Rate	20 V / μs
Synchronization accuracy	Adjustable at a step of 1.0uS up to 10uS, to compensate differences in response time of the amplifiers connected. Synchronization with <1.0uS accuracy at the outputs of the bipolar power amplifiers connected.
Calibration Output	1 kHz 1V (Test Use)
PC Interface	USB 1.1
Operating Temperature	25°C ± 10°C
Operating Humidity	20 ~ 90% RH
Drive Power Source	Local AC supply voltage ±10% 50 / 60Hz 15 VA
External Dimensions	approx. (W)430 × (D)400 × (H)200 mm
Weight	approx. 10 kg



Accessory

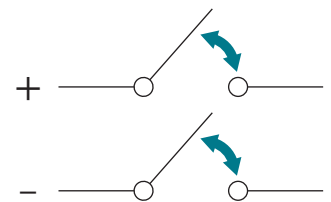
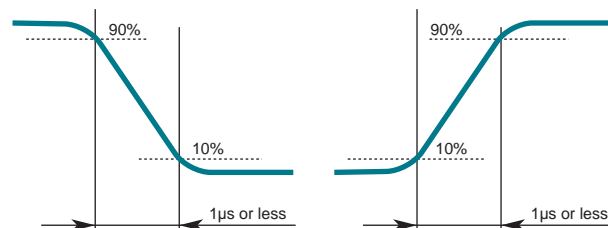
Item	Q'ty
Coaxial cable (BNC-BNC/2m)	For number of channel
Output cable (1m)	For number of channel
Crimping terminal (M4)	For number of channel × 2 pcs.
Crimping terminal (M6)	For number of channel × 2 pcs.
Crimping terminal (M8)	For number of channel × 2 pcs.
Fuse (3.15A)	1 pc.
Application software	1 pc.
AC cable	1 pc.
USB cable	1 pc.
Instruction manuals (for main unit and software operation)	Each 1 volume
Bag for accessories	1 pc.

DC Cut Module MODEL : SG-7044



- Disconnects DC supply circuits
- Open and Sink Modes
- Rise and fall time < 1μs
- Caontrollable from SG-7040A
- Sink currents up to -30 V
- DC 50 A

Optional equipment for the SG-7040A Series to carry out supply interruption test with <1uS rise/fall time requirement.



Specification

Parameter	Specification
Output voltage	0 ~ DC 60 V
Steady-state current	Max. 50 A
Short mode	Open / Short (Current intake)
Cut off mode	Only + / Only - / Both polarities
Cut time	Open : Input terminal or trigger switch Short : Set at short duration or set at 2 - 9999μs
Rise / Fall time	≤ 1μs (10 % - 90 % short mode output open at DC 12V)
Dimensions / Weight	(W)430 × (D)400 × (H)200 mm / approx. 10 kg

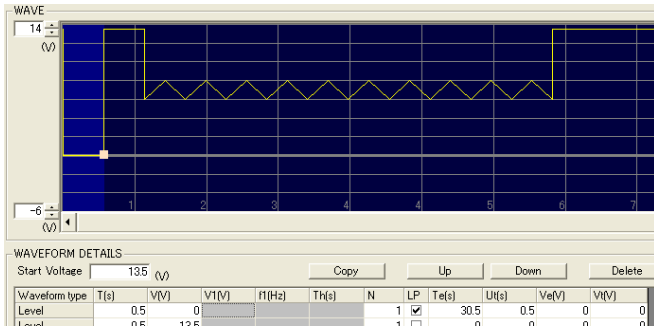
Accessory

Item	Q'ty
Coaxial cable (BNC-BNC / 2 m)	1 pc.
Output cable (1m)	1 pc.
Crimping terminal (M4)	4 pcs.
Crimping terminal (M8)	4 pcs.
Fuse (2 A)	2 pcs.
AC cable	1 pc.
Instruction manuals	1 volume
Bag for accessories	1 pc.

* In case the units are cabled in the rack, AC cable shall be connected inside of the rack.

SG-7040A System

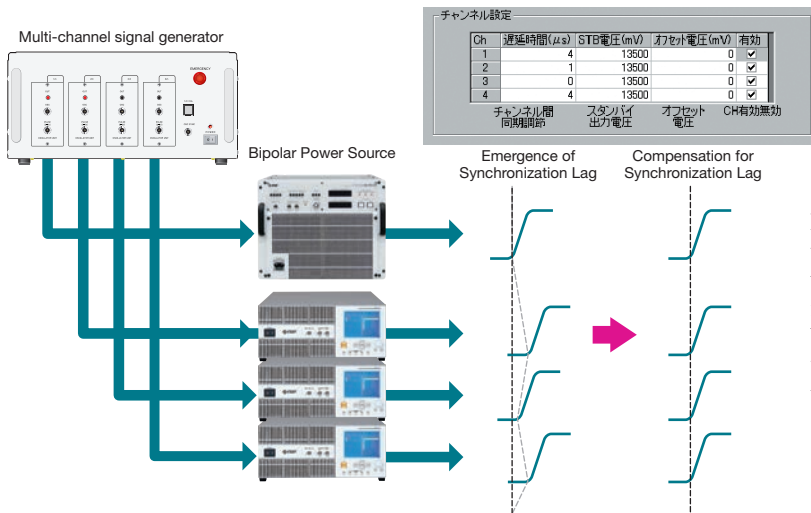
Sweep Setting Function



Easily and reliably creates a loop waveform using the sweep function detailed at left for a long test duration requiring varying T (times) and V (voltages).

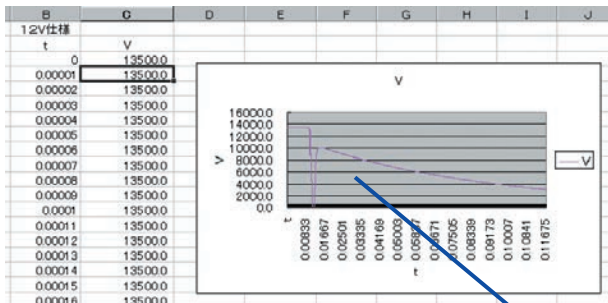
- T(ε) = Start
- Te(ε) = Stop
- Ut(ε) = Step
- N = Loop Number
- LP = Loop Setting

Delay Set Function

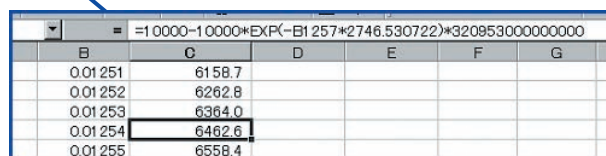


In multichannel tests it is important to ensure each individual channel is precisely synchronized. This system guarantees a synchronization delay of 1μs or less by compensating for output timing differences from the power amplifiers being connected, whereas other systems are not equipped with similar capability, which often leads to an erroneous test.

CSV Waveform EXCEL Operation Example



Imports non-standard test waveforms such as waveforms data collected in vehicle environments as CSV files, and generates these waveforms from the signal generator. Not available thus far with existing conventional equipment due to the limited memory capacity, the SG-7040A with 512 k words memory is a perfect solution to accurately perform complex voltage variations, fluctuations, dips and dropouts.



SG-7040A System

Automated Simulations

Example 1: CAN Communication Control

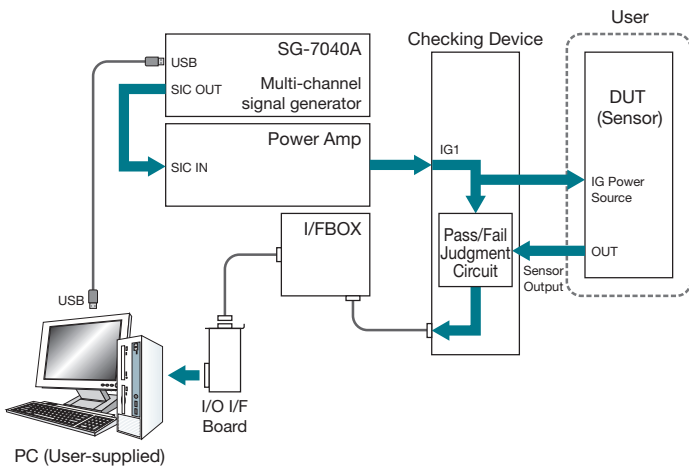
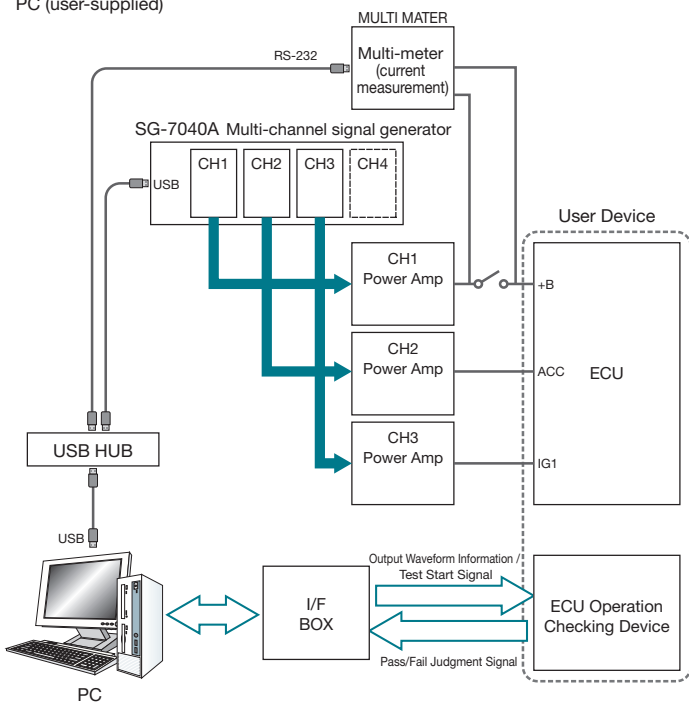
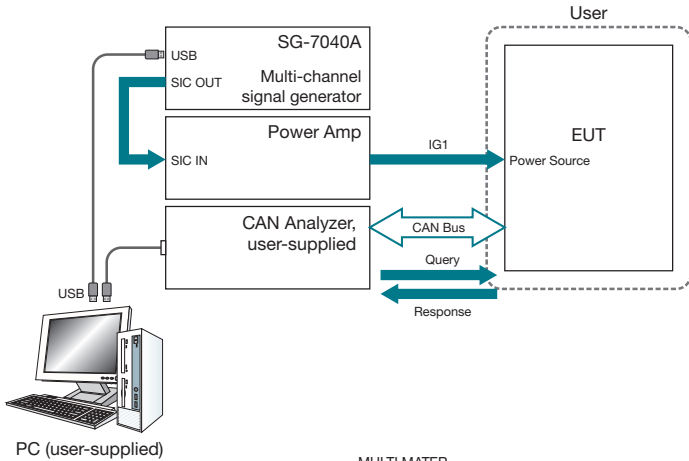
CAN is one of the most widely adopted system bus in automotive technology. Automated testing can be done by reading CAN communication protocols into the software and defining malfunction of the DUT.

Example 2: "Dark Current" Measurement

Some automobile manufacturers implement "Dark Current" measurements. This system allows dark current measurements in conjunction with voltage fluctuation simulations.

Example 3: Check Device

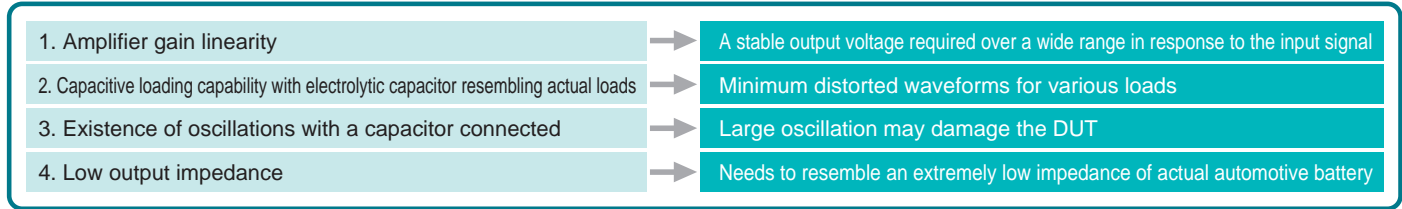
Automated testing by incorporating Pass/Fail judgment circuit with received signals from the DUT such as voltage, current, and frequency.



SG-7040A System

Regarding the Bipolar Power Source

Points to be considered for bipolar power source for automotive test applications



In order to meet the above requirements, NoiseKen recommends NF Corporation' s bipolar power sources

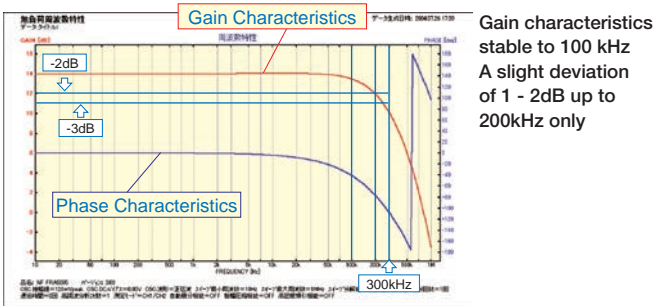


AS-161 Series line-up

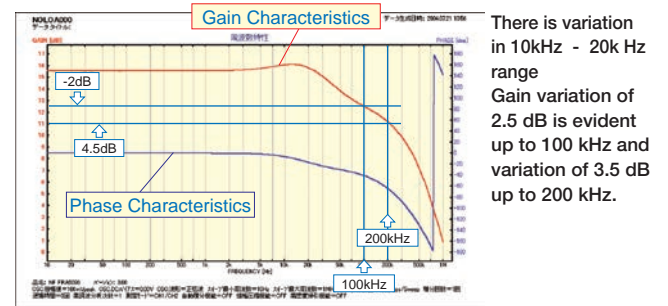
Model	Output voltage	Output Current		Frequency Characteristics
		peak current	DC	
As-161-30 / 60		±30 A	15 A	DC ~ 150 kHz
As-161-60 / 60	-15 V ~ +60 V	±60 A	30 A	
As-161-120 / 60		±120 A	60 A	DC ~ 100 kHz
As-161-60 / 30		±60 A	30 A	
As-161-120 / 30	-10 V ~ +30 V	±120 A	60 A	DC ~ 150 kHz
As-161-240 / 30		±240 A	120 A	

Competitive Comparison 1: Broadband Gain Characteristics

NF Corporation Model: As-161 Broadband Gain Characteristics (under no load conditions)



Company A: Broadband Band Gain Characteristics (under no load conditions)

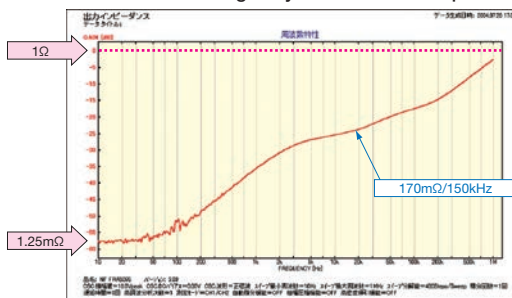


Obtaining gain linearity within the guaranteed frequencies prevents possible malfunctions other than from the intended simulations

Competitive Comparison 2: Impedance Characteristics

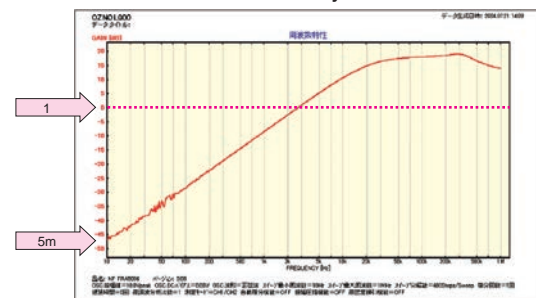
NF Corporation Model: As-161 Impedance Characteristics

Under 1 Ω value over a range beyond the 150 kHz specifications



Company A: Impedance Characteristics

Characteristics of 1 Ω or less are only achievable at 3 kHz or less.



A bipolar power amplifier with value close to the battery's impedance characteristics (≈0 Ω) performs testing to best resemble vehicles.

NoiseKen

NOISE LABORATORY

NOISE LABORATORY CO.,LTD

<http://www.noiseken.com>

International Sales & Marketing Section

1-4-4 Chiyoda, Chuo-ku, Sagamiara City, Kanagawa Pref. 252-0237 Japan

TEL: +81-(0)42-712-2051 FAX: +81-(0)42-712-2050

E-mail : sales@noiseken.com



[Note] ● It is prohibited to copy or reprint all or part of this catalog without permission. ● Product specifications and appearance are subject to change without notice. ● The model name and price may change or production may be discontinued due to various reasons. ● Please contact our sales office for any questions regarding your order or contract. ● We may not be liable for any responsibilities or responsibilities that arise without confirmation. ● Company names and brand names listed in the catalog are trademarks or registered trademarks. ● Our products listed in the catalog are commercial equipment and devices that are supposed to be used under the supervision of a supervisor who has sufficient knowledge in use. ● It is not a product designed and manufactured for general households and consumers. ● Due to printing reasons, there may be differences in color and texture between the photos listed in the catalog and the actual product. ● We make every effort to provide accurate information about the contents of the catalog, but if you notice any typographical errors or typographical errors, please contact our sales office.

Authorized representative