Make EMC Test Easier!

NoiseKen
www.noiseken.com

Automotive Transient Testing

Complete in ONE Unit

ISS-7800 Series

ISO Transient Surge Simulator

Surge testing and inspections can be completed with a single PC.

ISO Transient Surge Simulator ISS-7800 Series

ISS-7800 series output transient surges required by the International Standard ISO 7637,
Used to evaluate the noise immunity of in-vehicle electronic equipment.

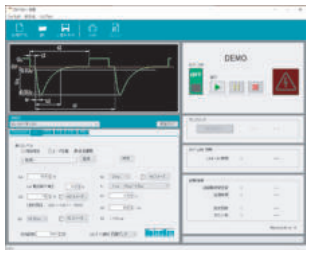
Dedicated PC control software
Makes surge testing easier and more flexible.

Easily perform various test pulses tests required by the Standard. Creating test sequences by combining pulses and levels also available.
Sweep settings for parameters such as surge voltage enable detailed testing.
Specific tests can be performed efficiently because the set test conditions can be saved and reused.
In addition, Test Report generation function facilitates management of the test results.

Sequence Test

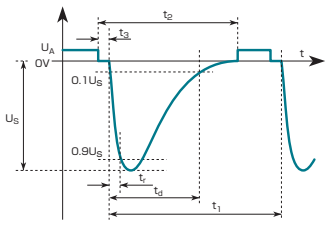
Test pulses and test levels can be tested in any order.

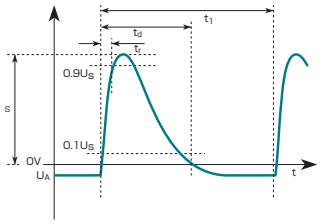
Sweep Test

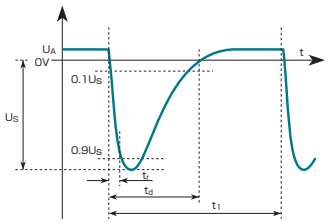


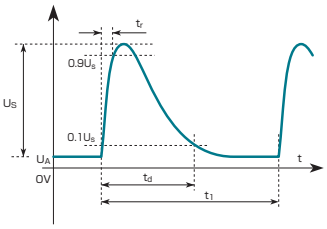
You can perform tests while sweeping parameters such as surge voltage and internal impedance.

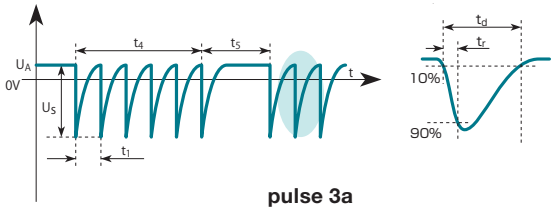
Transient Pulses lineup

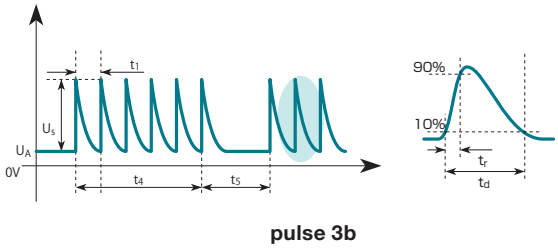


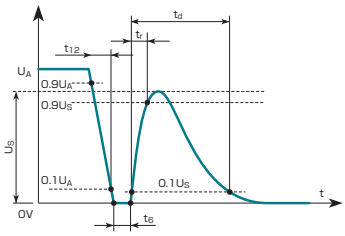


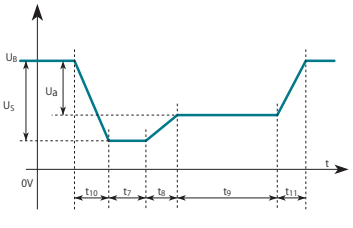


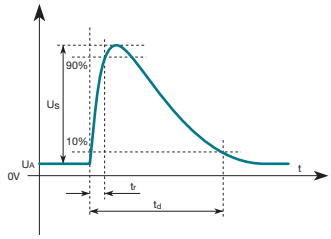


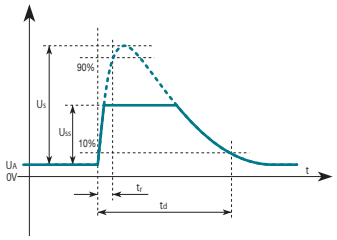












Secure Pre-check Kit

Make your daily Inspections Easier !

Reduces the burden of daily inspections and supports more reliable testing.

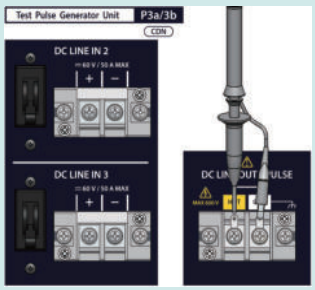
Daily inspections are important for test reliability. This product significantly improves that process. Easier replacement of load resistors reduces workload. In addition, the newly developed Pre-Check Software makes it easy to check waveforms and record daily data via PC operation. This will both increase the efficiency of inspection work and improve test quality.
(*This is not a standard-compliant measurement.*)

Normally, waveform measurement is time-consuming, requiring the replacement of fixtures for each waveform and measurement with an oscilloscope.
This Pre-Check Kit greatly reduces the time and effort of such complicated measurement work. It is designed to make routine inspections easier and simpler.
It streamlines daily test preparation and supports smooth test operations.
(*This is not checking of compliance to the ISO 7637 Standard*)

Connection Image（P1/P2）

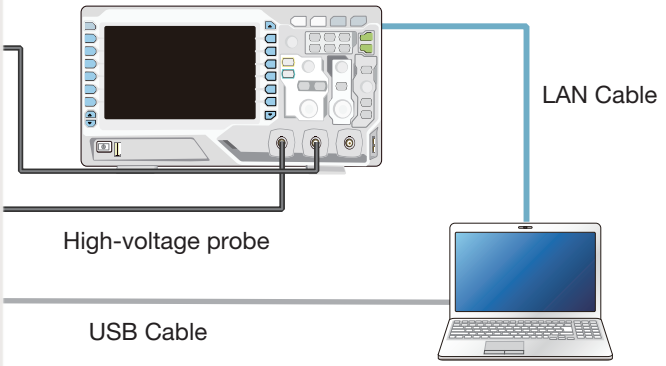
Connect to oscilloscope channel 2

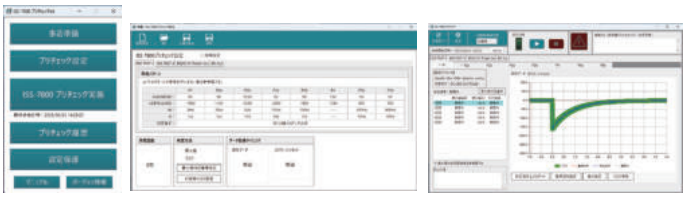
Connection Image（P3a/3b）



Connect to oscilloscope channel 1

Oscilloscope (RIGOL MODEL : DS1202Z-E)





Simple inspections can be performed without using dedicated load resistors or attenuators.
(*Not guaranteeing compliance to the ISO 7637 Standard*)

Pre-start Inspection - Optional Accessories - Easiy daily inspection

Test Pulse Verification Load Set MODEL：06-00095A

A set of resistors and attenuators for observing the pulses of Test Pulse 1 / Test Pulse 2a / Test Pulse 2b / Test Pulse 3a / Test Pulse 3b / Test Pulse 5a of ISS-7800 series.
1Ω resistor, 2Ω resistor, 10Ω resistor, 50Ω resistor, 2.5 kΩ 40 dB ATT, 50Ω 20 dB ATT × 2

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.
50 Ω 20 dB ATT × 2 (*Pulse 3a* / *Pulse 3b*)

No Load Waveform Verification Attenuator Model：00-00007A

The attenuator for observing high frequency and high voltage pulses of Test Pulse 3a / Test Pulse3b.
2.5 kΩ 40 dB ATT

Pre-Check Kit for ISS-7800 MODEL: 14-00073A

Pre-Check Kit to easily perform daily inspections of ISS-7800.
Pre-Check terminal, software, USB license key and LAN cable are included.
The measurement method is different from that of the ISO 7637 standard.
Requires an oscilloscope (*RIGOL MODEL:DS1202Z-E*), sold separately.

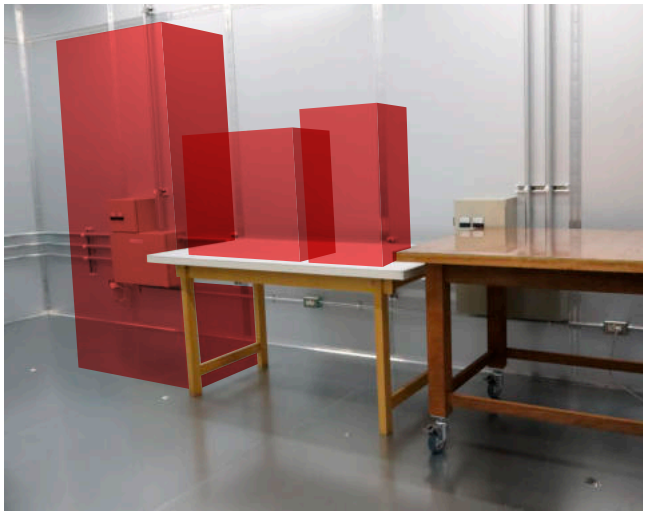
Space-saving design
For Easy Testing

Improved efficiency of testing operations and effective use of space.

Can be mounted horizontally on CISPR25 and ISO 11452 H900mm test tables, reducing test setup time. Space-saving design allows spacious use of limited space of test table . In addition, the rack with casters allow for quick placement only when needed and simple storage when not in use, maximizing the use of test room space.

Installation image

Other brands' products



NoiseKen ISS-7800

Wide variety of optional accessories
Test environment Easily built

ISO 7637 Test preparation - fully supported.

In addition to the Tester, test table and insulation supports are also available. We can provide the equipment necessary for testing to ISO 7637 Standard, and can offer total support for building of your testing environment.

Test Environment - Optional Accessories - Build a test environment easily

Test table

A test table with a ground plane (copper plate) on which DUTs and other materials are placed.
Customized production according to the customer's requirements is available.
**Please contact our sales representative for details.*
Since the ISO 7637-3 Standard specifies copper plate, we are offering copper ground plane for this table.

Insulating block MODEL：03-00054A

Keep the EUT and its wirings afloat above the ground plane

Size: W300 × D300 × H50 mm
Material: foamed polyethylene
5 pcs per set

Optional Accessories - Others -

Tri-color pilot light MODEL：11-00016A

Tri-color pilot light for ISS-7800 series.
Three colors indicate corresponding simulator's test status change.

Warning Lamp MODEL：11-00017A

Warning lamp for ISS-7800 series. The warning lamp illuminates when high voltage is generated at the time of test.

ISO Standard Automotive Transient Surge Simulator

ISS-7800 Series

Features

- Perform testing in compliance with ISO 7637-2 and ISO 7637-3 Standards.
- Compatible with ISO 16750-2 2012 Ed. Load dump Test A/B (ISS-7820/7821).
- Supports many individual manufacturer Standards
- Perform tests for 12 V / 24 V systems.
- Pulses 2b and 4 can be output by incorporating BP4610.
  (ISS-78xx-L models without BP4610 also available.)
- Mounted on a space-saving vertical rack.
- A wide range of optional accessories such as coupling clamps and waveform verification equipment is available.
- PC control software (included) allows setting of individual test sequences.
- Integrated PC Software with an intuitive user-friendly interface.
  *Contact our sales representative for more details.

System overview

The ISS-7800 series is a test system with different pulse units mounted on a single rack. Additional pulse units (such as 5a/5b and slow pulse +/-) can be added to the rack if necessary. Sequence testing and report creation is available by controlling the entire system with the PC Software.

MODEL	ISO 7637-2					ISO 7637-3			
	2011 edition			2004 edition		2007 edition			
	pulse 1/2a	pulse 2b *1	pulse 3a/3b	pulse 4 *1	pulse 5a/5b	Fast pulse a	Fast pulse b	Slow pulse +	Slow pulse −
ISS-7810	○	○	○	○	—	○	○	—	
ISS-7820	○	○	○	○	○	○	○	—	
ISS-7821 *2	○	○	○	○	○	○	○	○	

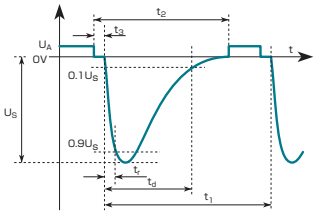
*1 : BP4610 is required to output 2b and 4 Pulse waveforms.
*2 : ISS-7821 also has Pulse 1bis equipped.

Specifications

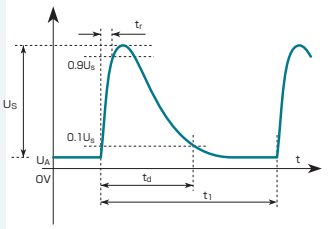
Test Pulse Generator Unit P1/2a

Test Pulse Generator Unit P1/2a

Parameter		Specifications			
		pulse 1 (12 V/24 V)		pulse 2a (12 V / 24 V)	
Output voltage (U_S)	12 V	−10 V ～ −330 V Step −1 V		20 V ～ 330 V Step 1 V *setting available from 12 V	
	24 V	−20 V ～ −600 V Step −1 V			
Internal impedance (R_i)	12 V	4, 10, 20, 30, 50, 90 Ω		2, 4, 10, 20, 50, 90 Ω	
	24 V	10, 20, 30, 50, 90 Ω			
Pulse width (t_d)		1, 1.75, 2, 6 ms[±20%]		0.05, 1, 2 ms	
Rise time (t_r)		1 µs (+0/-0.5 µs) 2 µs (+0/-1.0 µs) 3 µs (+0/-1.5 µs) td: 10 µs at 6 ms (+0 , -5 µs)		1 µs (+0 / −0.5 µs)	
Pulse repetition time (t_1)		0.5 s ～ 99 s Step 0.1 s		0.2 s ～ 99 s Step 0.1 s	
Battery off time (t_2)		2 ～ 1000 ms Step 1 ms		—	
Surge delay time (t_3)		< 100 µs		—	
Pulse Count		1 to 99999 times			
Waveform Specifications	12 V	No load U_S : -100 V [±10 V] t_r : 1 µs [+0 , −0.5] t_d : 2000 µs [±400 µs]	10 Ω load U_S : -50 V [±10 V] t_r : — t_d : 1500 µs [±300 µs]	No load U_S : 50 V [±5 V] 75 V [±7.5 V] t_r : 1 µs [+0 , −0.5 µs] t_d : 50 µs [±10 µs]	2 Ω load U_S : 25 V [±5 V] 75 V [±7.5 V] t_r : — t_d : 12 µs [±2.4 µs]
	24 V	No load U_S : -600 V [±60 V] t_r : 3 µs [+0 , −1.5] t_d : 1000 µs [±200 µs]	10 Ω load U_S : -300 V [±30 V] t_r : — t_d : 1000 µs [±200 µs]		



Pulse 1



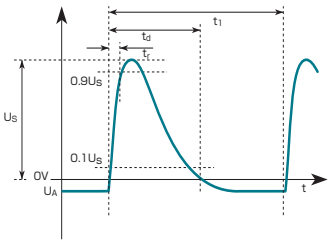
Pulse 2a

Test Pulse Generator Unit P1bis P/N *ISS-7821 only

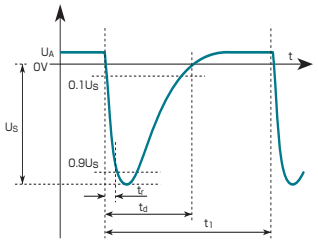
Test Pulse Generator Unit P1 bis P/N

Parameter	Specifications	
	P1bis P	P1bis N
Output voltage (U_s)	20 V ～ 150 V Step 1 V (±10% at 100 V)	−20 V ～ -150 V Step -1 V (±10% at -100 V)
Internal impedance (R_i)	10 Ω	
Pulse width (t_d)	2 ms±20%	
Rise time (t_r)	≦ 1 μs	
Pulse repetition time (t_1)	0.2 s ～ 99.0 s Step 0.1 s	0 s ～ 99.0 s Step 0.1 s
Pulse Count	1 ～ 99999 times	
Waveform Specifications	No load U_s : 100 V ±10 V t_r : 1 (+0/-1) μs t_d : 2 ms ±0.4 ms	No load U_s : -100 V ±10 V t_r : 1 (+0/-1) μs t_d : 2 ms ±0.4 ms
	10 Ω load U_s : 50 V ±10 V t_r : − t_d : 1.5 ms ±0.3 ms	10 Ω load U_s : −50 V ±10 V t_r : − t_d : 1.5 ms ±0.3 ms

Pulse 1bis P



Pulse 1bis N

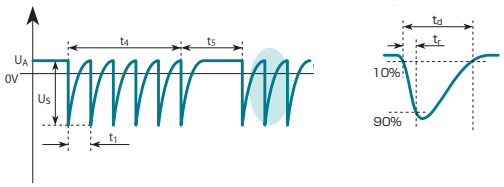


Test Pulse Generator Unit P3a/3b & Fast pulse

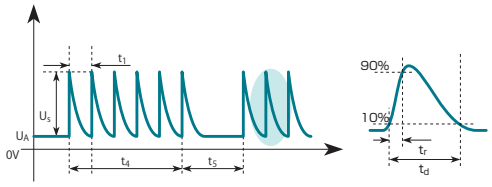
Test Pulse Generator Unit P3a/3b & Fast pulse

Parameter	Specifications	
	pulse 3a (12 V / 24 V) Fast Pulse 3a(a)	pulse 3b (12 V / 24 V) Fast Pulse 3b(b)
Output voltage (U_s)	−10 V ～ −350 V Step −1V	10 V ～ 350 V Step 1 V
	CCC selection −10 V ～ −150 V Step −1 V DCC selection −10 V ～ −200 V Step −1 V	CCC selection 10 V ～ 150 V Step 1 V DCC selection 10 V ～ 200 V Step 1 V
Internal impedance (R_i)	50 Ω	
Pulse width (t_d)	0.15 (±0.045) μs	
Rise time (t_r)	5 ns Setting : 5 ns [±1.5 ns] Guaranteed : U_s = ±20 ~350 V	
	<3.5 ns Setting: Less than 3.5 ns Guarantee: U_s = ±50 to 300 V	
Pulse repetition time (t_1)	10 μs ～ 1000 μs Step 0.1 μs *Sweep setting available	
Pulse ON (t_4)	1.0 ms～10.0 ms (Step 0.1 ms) [10 μs ≦ t_1 ≦ 99.9 μs] 1.0 ms～50.0 ms (Step 0.1 ms) [100 μs ≦ t_1 ≦ 499.9 μs] 1.0 ms～99.0 ms (Step 0.1 ms) [500 μs ≦ t_1 ≦ 1000 μs]	
Pulse OFF (t_5)	90 ms ～ 9990 ms Step 1 ms	
Test time	1 s - 16 h 40 min 00 s Step 1 s Error: 5 s Max (@25℃)	
Waveform Specifications	No load U_s : −200V±20V t_r : 5ns±1.5ns t_d : 150ns±45ns	No load U_s : 200 V±20 V t_r : 5 ns±1.5 ns t_d : 150 ns±45 ns
	50Ω load U_s : −100 V ±20 V t_r : 5 ns±1.5 ns t_d : 150 ns±45 ns	50Ω load U_s : 100 V±20 V t_r : 5 ns±1.5 ns t_d : 150 ns ±45 ns
DUT power capacity	DC60 V / 50 A(CDN)	

Pulse 3a & Fast pulse 3a



Pulse 3b & Fast pulse 3b



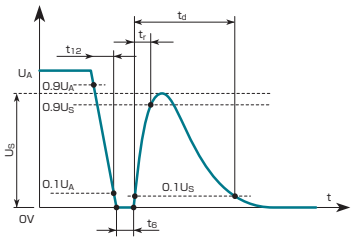
Repetition period (t1) sweep settings available.

Bipolar Power Supply BP4610 P2b/4

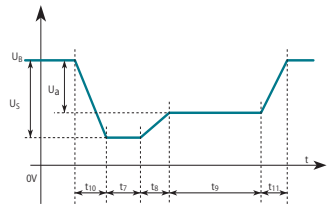
Bipolar Power Supply BP4610 P2b/4

Parameter	Specifications	
	pulse 2b	
	12 V	24 V
U_A、U_S	0 V ～ 60.0 V(±10%)±0.5 V Step 0.1 V	
R_i	0 Ω ～ 0.05 Ω	
t_d	0.1 s、0.2 s、0.5 s、1 s、2 s、4 s (±20%)	
t_{12}, t_r, t_6	1 ms、2 ms、5 ms (±50%)	
t_1 *1	0.05 s ～ 99.99 s (±10%)Step 0.01 s ($t_1 > t_{12} + t_6 + t_r + t_d$ *3 $+ t_3$)	
t_3 *1	0.10 s ～ 85.00 s(±10%) Step 0.01 s	
Pulse Count	1 ～ 999 times	
Waveform Specifications	No load U_s : 10 V ±1 V t_r : 1 ms ±0.5 ms t_d : 2 s ±0.4 s	No load U_s : 20 V ±1 V t_r : 1 ms ±0.5 ms t_d : 2 s ±0.4 s
	1Ω load *2 U_s : 10 V ±0.5 V t_r : 1 ms ±0.5 ms t_d : 2 s ±0.4 s	2Ω load *2 U_s : 20 V ±0.5 V t_r : 1 ms ±0.5 ms t_d : 2 s ±0.4 s

Parameter	Specifications	
	pulse 4 *3	
	12 V	24 V
U_B	0 V ～ 60.0 V (±10%) Step 1 V	
U_s、U_a	0 V ～ 60 V (±10%) ±0.5 V Step 1 V ($U_B \geqq$)	
R_i	0 Ω ～ 0.02 Ω	
t_7, t_8, t_{10}, t_{11}	1 ms ～ 999 ms (±10%) Step 1 ms	
t_9	0.1 s ～ 99.9 s (±10%) Step 1 s	
t_1 *1	30 s ～ 999 s (±10%) Step 1 s	
Pulse Count	1 ～ 999 times	
Waveform Specifications	No load U_s : −6 V ～−7 V No tolerance specified U_a : −2.5 V ～−6 V in the range of $\|Ua\| \leqq \|Us\|$ No tolerance specified	No load U_s : −12 V ～−16 V No tolerance specified U_a : −5 V ～−12 V in the range of $\|Ua\| \leqq \|Us\|$ No tolerance specified



pulse 2b



pulse 4

*1 Timing defined by NoiseKen.

*2 Waveform verification defined by NoiseKen.
Since the output current of BP4610 is limited to 10 A, the waveforms are verified by connecting 1Ω for 12 V systems and 2 Ω for 24 V systems.

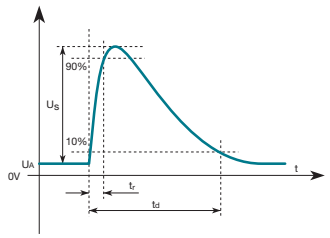
*3 The ISO Standard does not specify waveform verification for Pulse 4.
NoiseKen only specifies the verification method in the "No Load" condition, and does not specify the method in the load connected condition.

Test Pulse Generator Unit 5a/5b *ISS-7820/7821 only

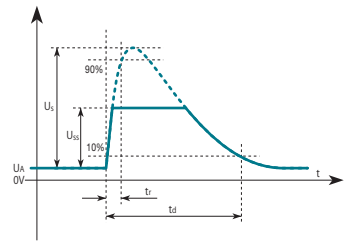
Test Pulse Generator Unit 5a/5b

Parameter		Specifications	
		pulse 5a	pulse 5b
Output voltage (U_s)	12 V	30 V to 105 V Step 1V Range : 20 to105 V	30 to 210 V Step 1V Range : 20 to105 V
	24 V	30V to 210V Step 1V Range : 20 ～ 105V	30 to 210 V Step 1 V Range : 35.1to 210 V
Output voltage (U_{ss})	12 V	—	15 V to 100 V Step 0.1 V $U_{ss} < U_s$
	24 V		
Internal impedance (R_i)	12 V	0.5 Ω to 40 Ω Step 0.5 Ω	
	24 V	1 Ω to 40 Ω Step 0.5 Ω	
Pulse width (t_d)		40 ms to 400 ms	
Rise time (t_r)		5 ms to 10 ms Step 1 ms	
Pulse repetition time (t_1)		15 ～ 600s Step 1 s	
Pulse Count		1 ～ 999 times	
Waveform Specifications	12 V	No load U_s : 100 V ±10 V t_r : 10 ms +0 ms/-5 ms t_d : 400 ms ±80 ms	—
		2 Ω load U_s : 50 V ±10 V t_r : — t_d : 350 ms ±70 ms	
	24 V	No load U_s : 200 V ±20 V t_r : 10 ms +0 ms/-5 ms t_d : 350 ms ±70 ms	
		2 Ω load U_s : 100 V ±20 V t_r : — t_d : 350 ms ±70 ms	

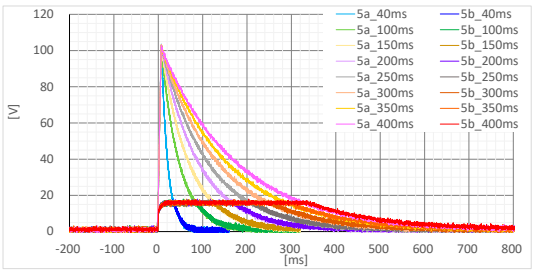
pulse 5a



pulse 5b



Actual waveforms of pulse 5a and pulse 5b superimposed.
[Conditions] U_s:100 V, U_{ss}:15 V, R_i:2 Ω, t_r:7 ms, t_1:15 s, Disc:1 time, CDN output end RL:0 Ω

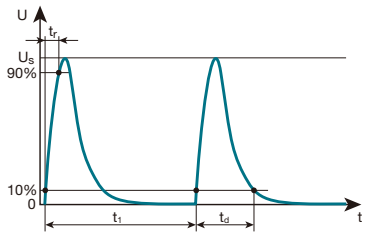


Test Pulse Generator Unit Slow pulse +/-

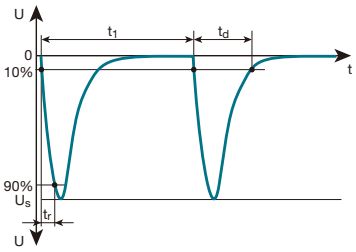
*ISS-7821 only

Test Pulse Generator Unit Slow pulse +/-

Parameter		Specifications	
		Slow pulse +	Slow pulse -
Output voltage (U_s)		DCC selection: 5 V ～ 100 V Step 0.1 V ICC selection 3 V ～ 50 V Step 0.1 V	DCC selection: −5 V ～ −100 V Step 0.1 V ICC selection −3 V ～−50 V Step 0.1 V
Internal impedance (R_i)		2 Ω	
Pulse width (t_d)		DCC selection: 50 µs +0%, −30% ICC selection: 7 µs +30%, −0%	
Rise time (t_r)		DCC selection : 1 (+0/−0.5) µs ICC selection : ≦ 1.2 µs	
Pulse repetition time (t_1)		0.2 s ～ 5 s ±10% Step 0.1 s	
Pulse Count		5 min - 1 h 00 min 00 s (1 s step)	
Waveform Specifications		No load U_s: 75 V ±7.5 V [50 V±5 V] t_r: 1 (+0/-0.5) µs t_d: 50 µs ±10 µs	No load U_s : −75 V ±7.5 V [50 V±5 V] t_r: 1 (+0/-0.5) µs t_d: 50 µs ±10 µs
		2 Ω load U_s: 37.5V ±7.5V [25V±5V] t_r : — t_d: 12 µs ±2.4 µs	2 Ω load U_s : −37.5 V ±7.5 V [25 V±5 V] t_r : — t_d: 12 µs ±2.4 µs
Waveform Specification	12 V 24 V 42 V	t_r : 7 ±30% t_d : ≦ 1.2 Slow + and Slow - are injected into the primary side of the calibration test fixture to verify the waveform on the secondary side.	



Slow pulse +



Slow pulse −

DC cut specifications

Apart from ISO Standard test pulses, the DC voltage output from the CDN section can be cut (stepped down to 0 V) arbitrarily at high speed by a switching element.
ISO standard has no waveform specifications.

Parameter	Parameter
Coupling method	FET DC OFF
U_A (DC voltage)	12.0 ～ 60.0 V (±10%) Step 0.1 V Setting range: 0 to 60.0V
t_f (fall time)	1 µs or less, Guaranteed: at No Load, U_A=12.0 V to 60.0 V range
Reverse Withstand Voltage in Inductive Loads	0 V ～ −800 V Note) Withstand voltage when reverse voltage is generated from the DUT (load) during DC cut and DC off in Pulse 1.

PC Control Software Specifications

Parameter		Specifications
Operating environment	OS	Microsoft® Windows® 10 / 11 (English or Japanese versions)
	CPU	Intel Core™ i5 or higher
	RAM	16 GB or more recommended
	HDD	min. 10 GB of free space
	Display	Full HD resolution (1920 x 1080) required
Functions	Main functions	Standard selection, waveform selection Severity level selection (*standard-defined/user-defined/free editing*)
	Sweep function	Surge voltage, output resistance, pulse width Sweep parameters order is fixed.
	Sequence function	Same Standard pulses can be executed consecutively
	Report generation function	Printing, print preview (*fixed format*)

- Software operation using cloud services or online storage not guaranteed.
- USB port must be available. (*Occupies one port.*)

Safety features

Parameter	Specifications
Emergency stop button	Push-lock illuminated pushbutton switches
Interlock	Pulse output and DC LINE ON/OFF can be externally controlled No-voltage contact : b contact Voltage contact: Open collector; Low: 0V - approx. 2V High : approx.3V - 5V
Terminals for optional accessories	Connector for optional accessories Equipped with connector for 3-color pilot light and warning lamp
Breaker	DC LINE IN 2, DC LINE IN 3: Rated current 60A

General Specifications

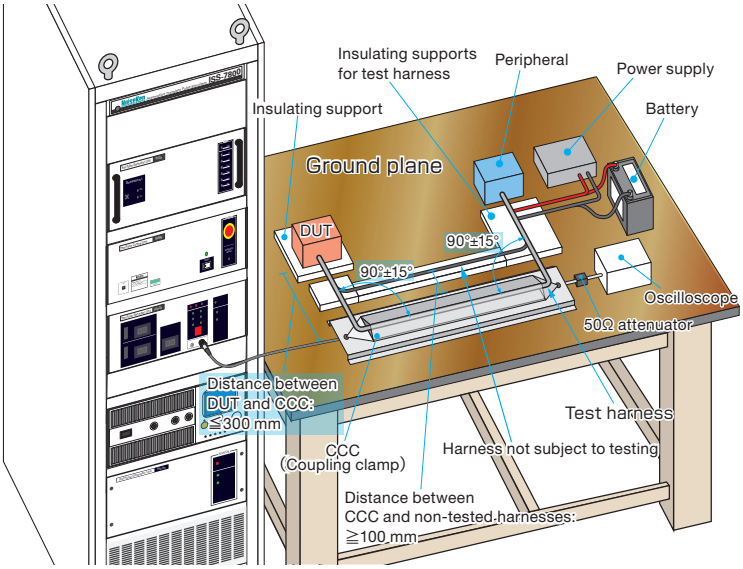
Parameter	Specifications
DUT power capacity	Built-in amplifier : DC60 V max, 10 A max; when using BP4610 (built-in device: sold separately)
	DC60 V max, 50 A max
USB connector	Type-B Interface: USB 2.0 (full speed)
Expansion terminal	Connector for external amplifier control D-sub 15-pin socket type
DC input terminal	Terminal block screw size M5 with breaker
Output terminal	DC LINE OUT/PULSE（HOT、GND） Terminal block screw size M5 with breaker
FG Terminal	Enclosure ground terminal; Screw size: M6
Current monitor	Output unit: 10 mV/A Frequency response : DC to 150 kHz approx. -3dB Tolerance range: ±5% (rdg) / ±0.8 Amax (offset), at 25 °C Withstand voltage : DC60V Reference voltage (0 V), isolated from the FG Connector shape : BNC connector Waveform observation with oscilloscope (input resistance 1 MΩ) is assumed.
Operating environment	Operating temperature environment: 23±5 °C Operating humidity environment: 25 to 75 %RH (no condensation)
Power supply 1	AC100 V ～ AC120 V±10% (50 Hz/60 Hz ±10%) Inlet shape with 3-pin ground terminal Separate protective grounding terminal common to the enclosure grounding terminal (with continuity ** AC220V and other configurations available per customer's request.*
AC input terminal (200 V)	AC200 V±10% (50 Hz/60 Hz ±10%) Terminal block screw size M4 ** The ISS-7820 (-L) and ISS-7821 (-L) require a 200 V power supply in addition to the drive power supply (1).*
Power consumption	100 V in standby: 500 VA Waveform output: 1300 VA 200 V in standby: 160 VA Waveform output: 4000 VA
Dimensions	(W) 555 mm × (D) 790mm × (H) 1800 mm (*excluding protrusions*)
Weight	ISS-7810：180 kg ／ ISS-7810-L：155 kg ISS-7820：220 kg ／ ISS-7820-L：195 kg ISS-7821：220 kg ／ ISS-7821-L：195 kg

ISS-7800 Series
Optional Accessories

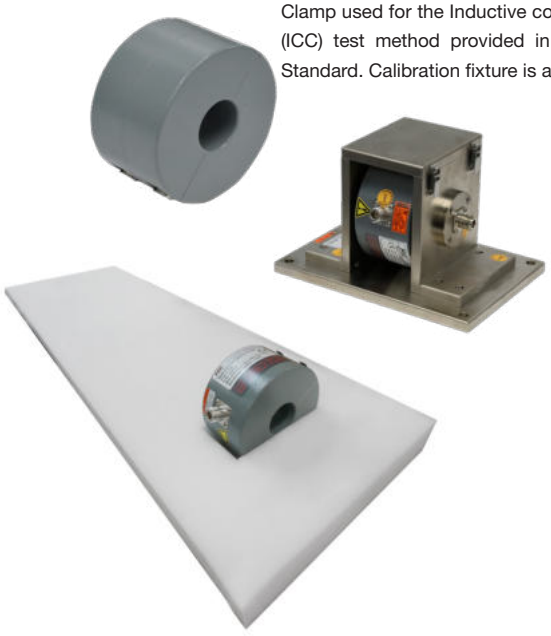
Coupling Clamp MODEL：ISS-7630-CUP

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 0.5 m, BNC coaxial cable 0.1 m, 50 Ω 5 W terminator, Metal fasteners

Test image
Capacitive coupling clamp method (CCC/Fast Pulse only)



Injection Probe MODEL：F120-6A



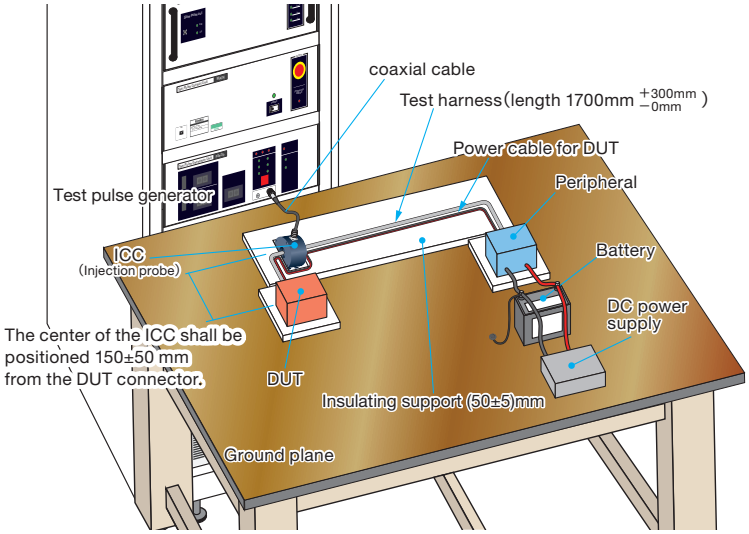
Clamp used for the Inductive coupling clamp (ICC) test method provided in ISO 7637-3 Standard. Calibration fixture is also available.

** For ISO 7637-3 Slow Pulse Probe fixing jigs are also available.*

Adapter set for ICC MODEL：06-00118A

Set of adapters and cables for performing the Inductive Coupling Clamp (ICC) method regulated by the ISO 7637-3 Standard. Used in combination with an injection probe.

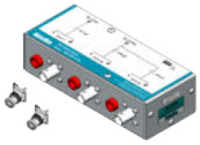
Test image
Inductive Coupling Clamp Method (ICC/Slow Pulse only)



DCC box for Fast Pulse MODEL: 06-00116A

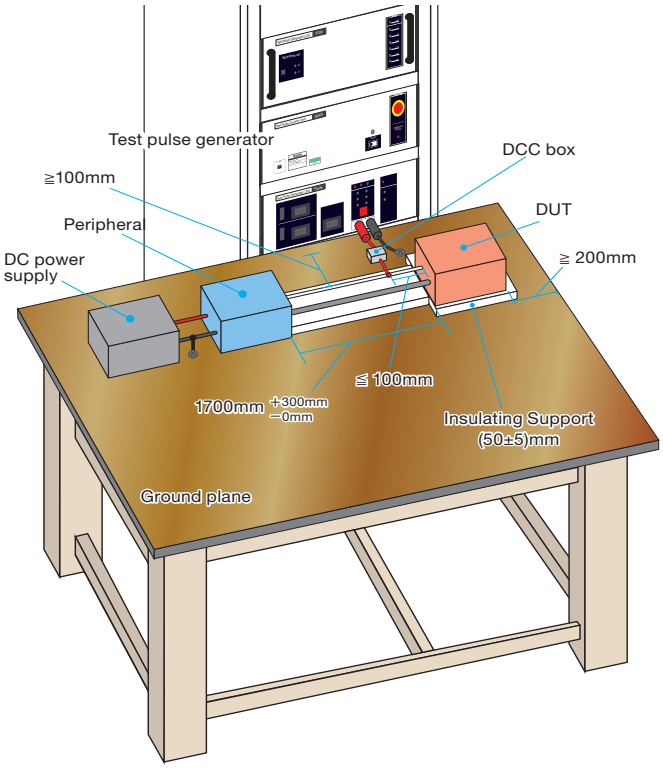
DCC box for the Direct Capacitive Coupling method of ISO 7637-3 Standard.
*Capacitor value : 100 pF

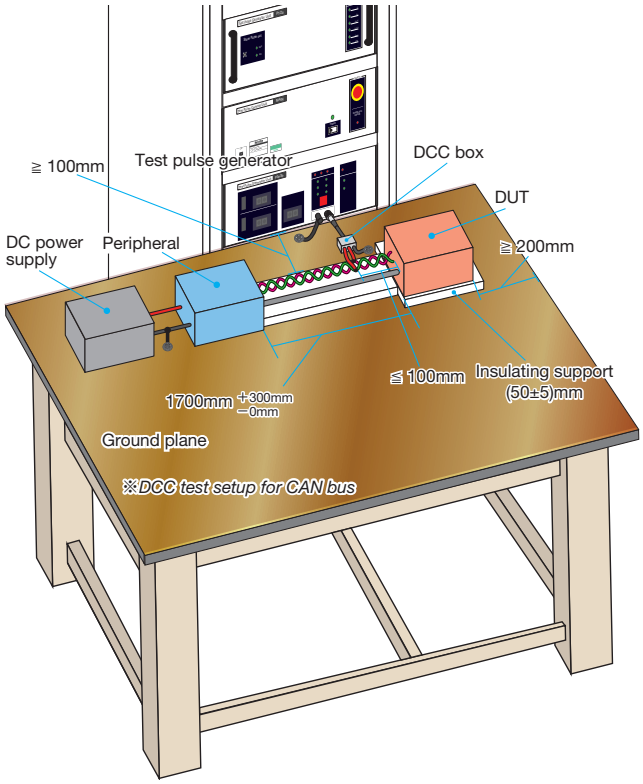
DCC box for Slow Pulse MODEL: 06-00117A



DCC box for the Direct Capacitive Coupling method of ISO 7637-3 Standard.
*Capacitor value : 0.1 μF

Test Image - Direct Capacitive Coupling (DCC/Fast Pulse and Slow Pulse)





NoiseKen
NOISE LABORATORY

NOISE LABORATORY CO., LTD. **http://www.noiseken.com**

Global Sales & Marketing Section
1-4-4 Chiyoda, Chuo-ku, Sagamihara City, Kanagawa Pref. 252-0237 Japan
TEL: +81-(0)42-712-2051 FAX: +81-(0)42-712-2050
E-mail : sales@noiseken.com

Authorized representative

Ver.202604