

Automotive Transient Surge Simulator

# ISS-7600 Series

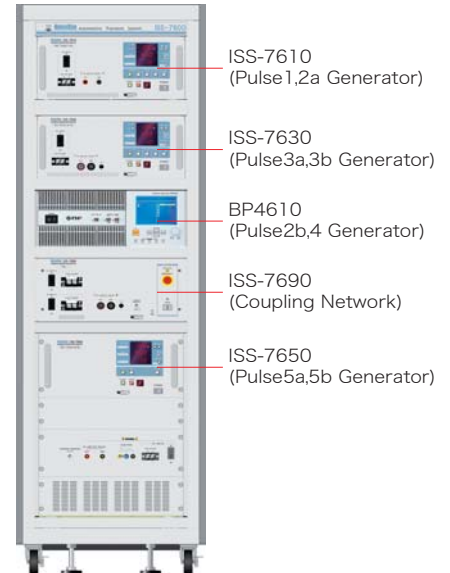


Automotive Transient Surge Simulator conforming to ISO7637-2

# ISS-7600 Series

Designed to meet and exceed the testing needs to ISO7637-2 (2004), 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 12V/24V/42V systems
- 60V/50A Coupling Network
- Up to 200A 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 150kHz.
- Japanese software is also available.



## Specifications

### MODEL : ISS-7610 (Pulse 1, 2a Generator)

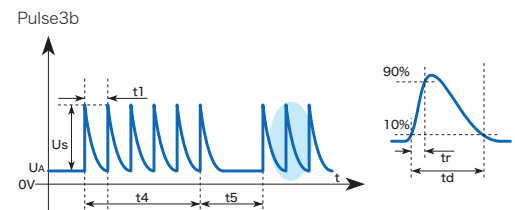
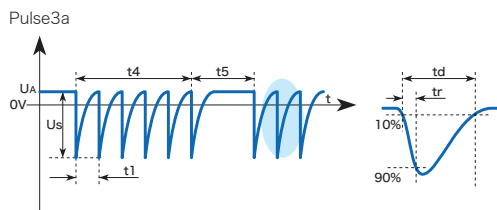
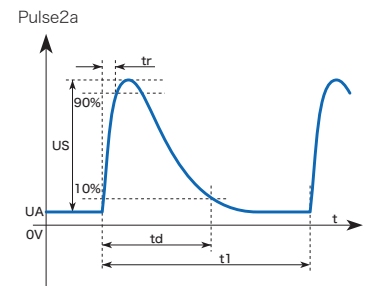
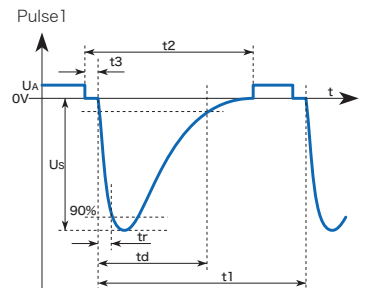
- Pulse 1 and Pulse 2a generating unit
- A built-in 60V/30A Coupling Network allows independent operation.
- Wide variety of selections of the output resistances  $R_i$  and Pulse Widths  $t_d$  and their combinations

Parameters	Specifications (Pulse 1)	Specifications (Pulse 2a)
Output Voltage ( $U_s$ )	-5V ~ -720V (-1V step)	5V ~ 300V (1V step)
Output Resistance ( $R_i$ )	10 $\Omega$ , 30 $\Omega$ , 50 $\Omega$	2 $\Omega$ , 4 $\Omega$ , 10 $\Omega$ , 30 $\Omega$ , 50 $\Omega$
Duration ( $t_d$ )	50 $\mu$ s, 200 $\mu$ s, 300 $\mu$ s, 500 $\mu$ s, 1ms, 2ms	50 $\mu$ s, 200 $\mu$ s, 300 $\mu$ s, 500 $\mu$ s
Rise time ( $t_r$ )	1 $\mu$ s : -0.5 $\mu$ s / +0.5 $\mu$ s, 3 $\mu$ s : -1.5 $\mu$ s / +0.5 $\mu$ s	1 $\mu$ s : -0.5 $\mu$ s / +0 $\mu$ s
Pulse period ( $t_1$ )	0.5s ~ 99.9s (0.1s step)	0.1s ~ 99.9s (0.1s step)
DUT Capacity	DC60V/30A	
Dimensions	(W) 430 × (H) 200 × (D) 522mm	
Weight	Approx. 20kg	

### MODEL : ISS-7630 (Pulse 3a, 3b Generator)

- Pulse 3a and Pulse 3b generating unit
- A built-in 60V/30A Coupling Network allows independent operation.
- <3.5ns rise time pulse available
- Runs in pulse repetition frequencies sweep mode from 1 kHz to 100 kHz (ISS-7601 software required)

Parameters	Specifications
Output Voltage ( $U_s$ )	-20V ~ -350V (-1V step) 20V ~ 350V (1V step)
Output Resistance ( $R_i$ )	50 $\Omega$
Duration ( $t_d$ )	150ns $\pm$ 45ns
Rise time ( $t_r$ )	5ns $\pm$ 1.5ns
Pulse period ( $t_1$ )	10 $\mu$ s ~ 999 $\mu$ s (1 $\mu$ s step)
DUT Capacity	DC60V/30A
Dimensions	(W) 430 × (H) 200 × (D) 522mm
Weight	Approx. 17kg



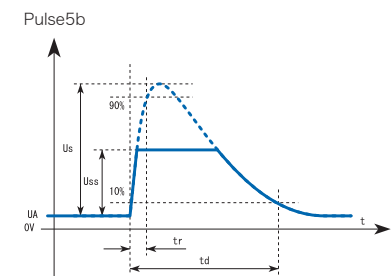
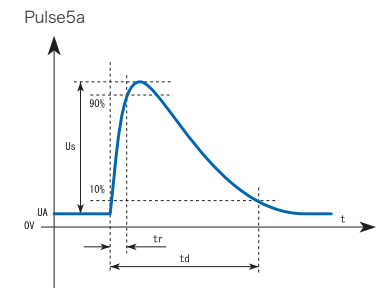
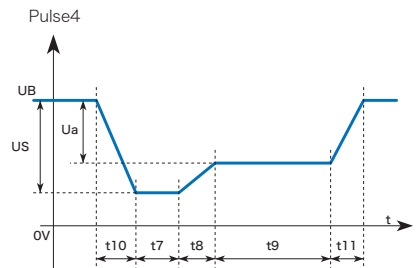
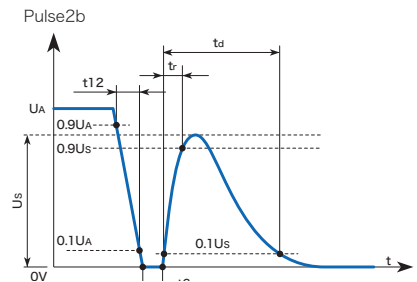
## MODEL : BP4610 (Pulse 2b, 4 Generator)

- Pulse 2b and Pulse 4 generating unit
- +60V 10A DC - 150kHz built-in bipolar amplifier
- Functions as the DUT power supply for testing with the other pulses.
- Upgradeable to 15A or 30A by use of an optional external power supply

\*Please contact us for details of 100A and 200A types.

Parameters	Specifications	
Pulse 2b	$U_A, U_s$ ※	0V ~ 60.0V ± 10% ± 0.5V In steps of 0.1V
	Ri	0 Ω ~ 0.05 Ω
	Td	0.1s, 0.2s, 0.5s, 1s, 2s, 4s ± 20%
	t12, tr, t6 ※	1ms, 2ms, 5ms ± 50%
Pulse 4	$U_B$	0V ~ 60.0V ± 10% ± 0.5V In steps of 0.1V
	$U_s, U_a$	0V ~ - $U_B$ ± 10% ± 0.5V In steps of 0.1V
	Ri	0 Ω ~ 0.02 Ω (Factory setting)
	t7, t8, t10, t11 ※	1ms ~ 999ms ± 10% In steps of 1ms
	t9	0.1s ~ 99.9s ± 10% In steps of 0.1s
Dimensions	(W)430 × (H) 177 × (D)550mm	
Weight	Approx. 26kg	

※ Each item can be set separately.



## MODEL : ISS-7650 (Pulse 5a, 5b Generator)

- Pulse 5a and Pulse 5b generating unit
- A built-in 60V/30A Coupling Network allows independent operation.
- LCR circuit system in strict conformity with the standard and with the actual car environment.
- Equipped with a programmable clip circuit that can produce Pulse 5b clipped waveform in steps of 0.1V without externally attaching a zener diode.
- Pulse 5b clipped waveform is pre-eminent in smoothness.
- Serial or parallel pulse coupling selectable.
- Pulse repetitions controller provided (30s to 999s and 1 to 999 pulses)

Parameters	Specifications	
Pulse5a	12V system	24V system
Output Voltage (Us)	20V ~ 100V (0.5V step)	20V ~ 200V (0.5V step)
Output Resistance (Ri)	0.5Ω ~ 8Ω (0.5Ω step)	1Ω ~ 8Ω (0.5Ω step)
Duration (td)	40ms, 100ms, 200ms, 350ms, 400ms	100ms, 200ms, 350ms, 400ms
Pulse5b	12V system	24V system
Output Voltage (Uss)	10V ~ 40V (0.1V step)	
Rise time (tr)	10ms (+0, -5ms)	
Duration (td)	Varies dependent on Pulse 5a (1ms step)	
DUT Capacity	DC60V/30A	
Dimensions	(W) 488 × (H) 670 × (D) 660mm	
Weight	Approx. 100kg	

※ We take custom orders. Please contact us for details.

## MODEL : ISS-7690 (Coupling Network) ISS-7602 (System Rack)

- 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
- A built-in 60V 50A Coupling Network.
- 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
- All the system can be controlled through USB interface.

Parameters	Specifications
DUT Capacity	60V/50A
DC Input	2 channels (DC supply/Battery).
Pulse input	Pulse1, Pulse2a/2b, Pulse3a/3b, Pulse4, Pulse5a, Pulse5b
Supply interruption test	<1 μs fall time (available with DC supply interruption test only)
Current Monitor	Monitoring Terminal (BNC), Output 10mV/A, DC to 150kHz
Dimensions of rack	(W) 555 × (H) 1800 × (D) 790mm

**MODEL : AS-161 Series (High Speed Bipolar Amplifier)**

Model	Specifications
As-161-30	DC-15V-+ 60V 15A MAX/30Apeak Frequency Response Characteristic: DC ~ 150kHz
As-161-60	DC-15V-+ 60V 30A MAX/60Apeak Frequency Response Characteristic: DC ~ 150kHz

- ※ Please contact us for details of 100A and 200A types.
- ※ Withstanding capacitance is 100μF or less.
- ※ This product is manufactured by NF Corporation.
- ※ When AS-161 Series is used with ISS-7600 series, it is necessary to make alterations to ISS-7600 series main units.



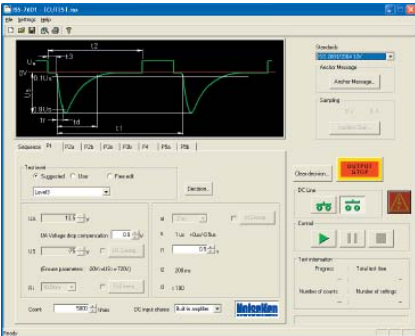
As-161-30 As-161-60

**Software**

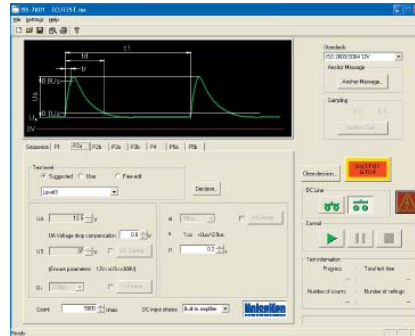
ISS-7601 is software to diversely run, control and support the ISS-7600 series Automotive Transient Surge Simulator System. Easily creates and manages tests and sequence of tests.

- Controls ISS-7600 series by a PC.
- Capable of controlling each pulse generator unit.
- Edits, saves and recalls test conditions.
- Test report generation with preview or printout capability

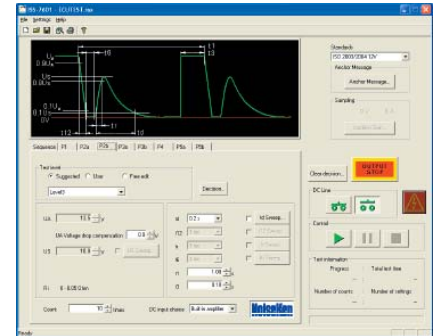
pulse1 Setting Screen



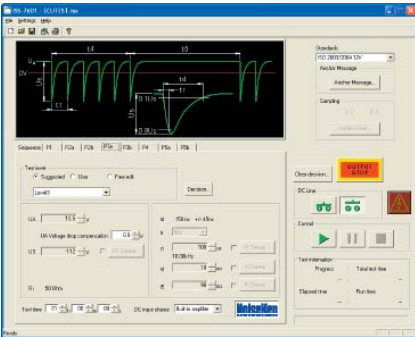
pulse2a Setting Screen



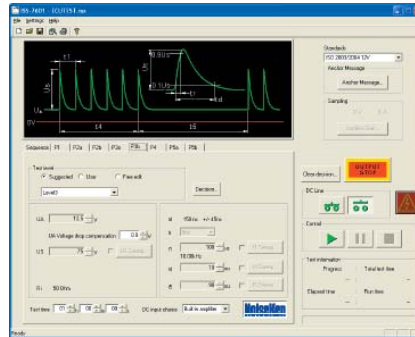
pulse2b Setting Screen



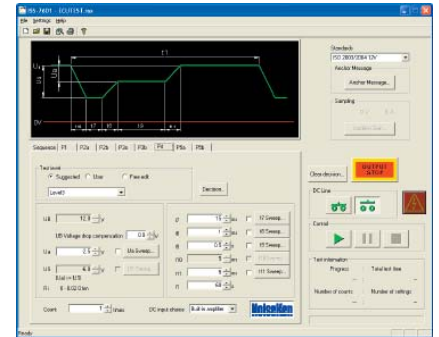
pulse3a Setting Screen



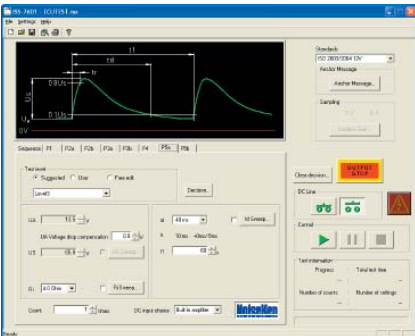
pulse3b Setting Screen



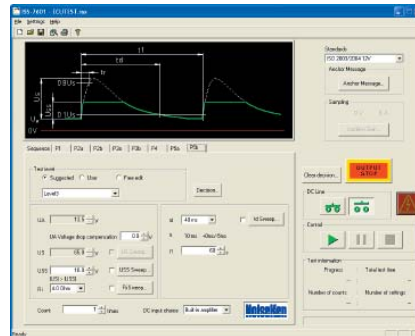
pulse4 Setting Screen



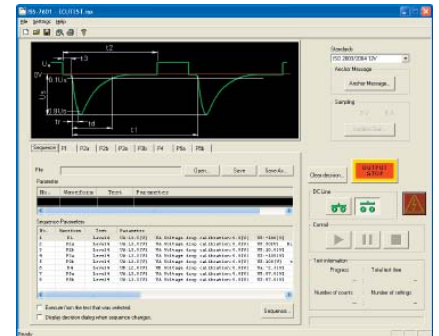
pulse5a Setting Screen



pulse5b Setting Screen

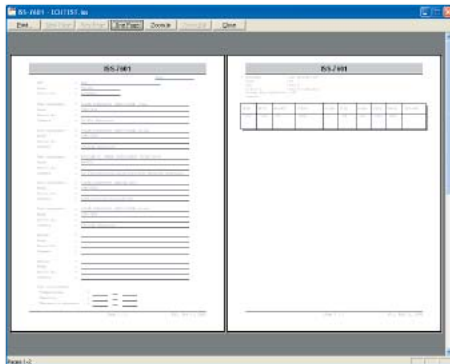


Sequence Setting Screen

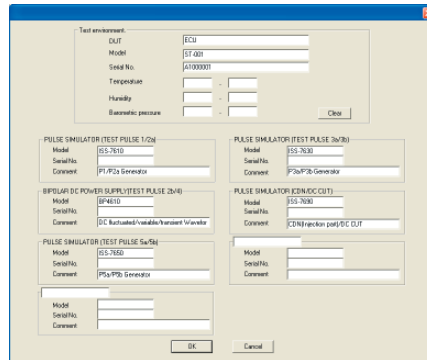


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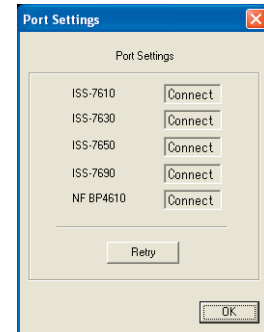
Preview Screen for Test Result Printing



Testing Environment Setting Entry Screen

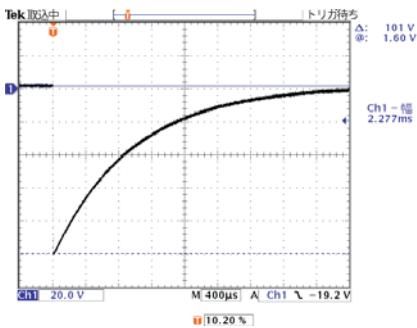


Communication Setting Screen

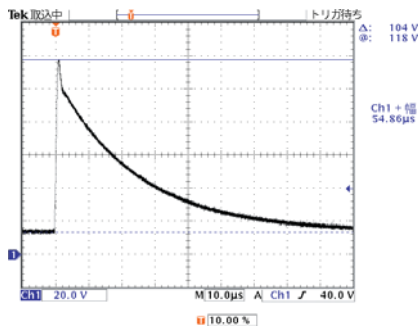


## Waveform Photos

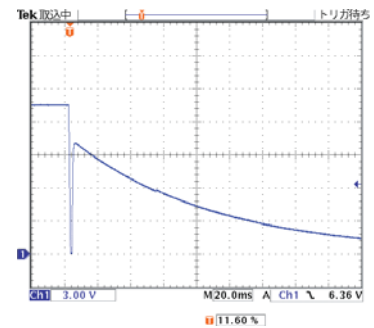
pulse1



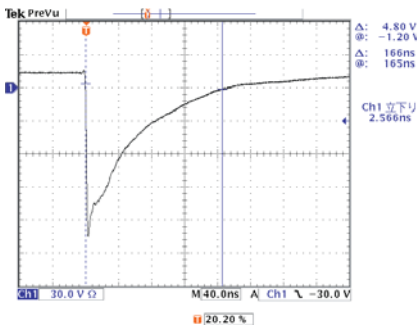
pulse2a



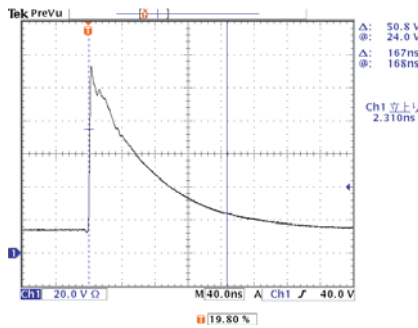
pulse2b



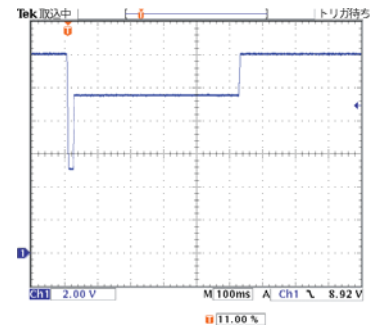
pulse3a (Tr setting =<3.5ns) ※



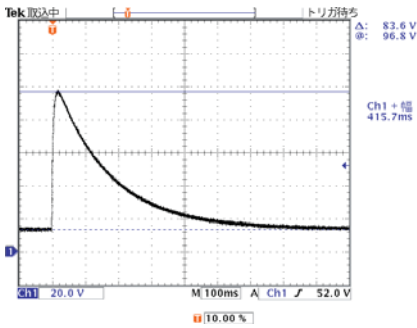
pulse3b (Tr setting =<3.5ns) ※



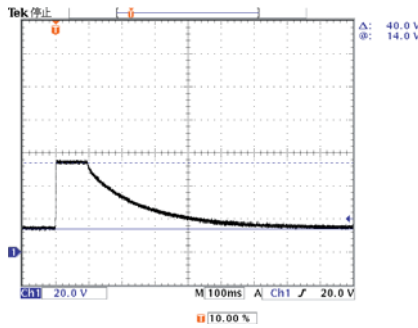
pulse4



pulse5a



pulse5b



※ The optional Waveform Verification Attenuator (for no load conditions) (00-00007A) was used



## Options

### 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 0.1m, 50Ω 5W Terminator, Metal Fasteners

● Supporting Model: ISS-7630

### Waveform Verification Set **MODEL : 06-00059A**



A set of resistors and attenuators required for measuring Test Pulse 1/Test Pulse 2a/Test pulse 2b/Test Pulse 3a/Test Pulse 3b/Test Pulse 5a from ISS-7610, BP4610, ISS-7630 and ISS-7650.

Contents: 1Ω, 2Ω, 10Ω and 50Ω resistors, 2.5kΩ 40dB attenuator and 2 x 50Ω 20dB attenuators

● Supporting Models: ISS-7610, ISS-7630, ISS-7650 and BP4610

### Waveform Verification 1Ω Load **MODEL : 06-00060A**



Resistor required for measuring Test Pulse 2b from BP4610. Contents: 1Ω Resistor and connecting cables (Pulse 2b 12V)

● Supporting Model: BP4610

### Waveform Verification 2Ω Load **MODEL : 06-00061A**



Resistor required for measuring Test Pulse 2a/Test Pulse 2b/Test Pulse 5a from ISS-7610, BP4610, and ISS-7650.

Contents: 2Ω Resistor and connecting cables (Pulse 2a/Pulse 2b 24V/Pulse 5a)

● Supporting Models: ISS-7610, ISS-7650 and BP4610

### Waveform Verification 10Ω Load **MODEL : 06-00062A**



Resistor required for measuring Test Pulse 1 from ISS-7610. Contents: 10Ω Resistor and connecting cables (Pulse 1 12V)

● Supporting Model: ISS-7610

### Waveform Verification 50Ω Load **MODEL : 06-00063A**



Resistor required for measuring Test Pulse 1 from ISS-7610. Contents: 50Ω Resistor and connecting cables (Pulse 1 24V)

● Supporting Model: ISS-7610

### Waveform Verification Attenuator under no load conditions **MODEL : 00-00007A**



Attenuator required for measuring high frequency and high voltage Test Pulse 3a/Test Pulse 3b from ISS-7630. Contents: 2.5 kΩ 40dB attenuator

● Supporting Model: ISS-7630

### Waveform Verification Attenuator under matched conditions **MODEL : 00-00006A**



Two pieces of attenuators required for measuring high frequency and high voltage Test Pulse 3a/Test Pulse 3b from ISS-7630.

Contents: 2 pieces x 50Ω 20dB attenuator

● Supporting Model: ISS-7630

### Warning Light **MODEL : 11-00008A**



Warning light warning the presence of high voltages during testing.

● Supporting Models: ISS-7602, ISS-7650

### USB Optical Module Kit **MODEL : 07-00022A**



This is a connecting adaptor to remote control the ISS-7600 series simulator by a PC.

Contents: USB-Optical adapter, optical Fiber Cable 5m

● Supporting Models: ISS-7600 series

Designs and specifications are subject to change without notice.