SPECIFICATIONS

All the specifications in this section are:

1). applicable to the both units of the SS-7611 and the SS-7607 if not specified.
2). valid within +10°C to +35°C, unless noted.
3). valid after 30-minute warm-up time.

ELECTRICAL SPECIFICATIONS

Vertical deflection system (Y axis)

Mode : CH1, CH2, CH3, CH4, ALT, CHOP, ADD, X-Y
(CHOP switching frequency : 800kHz ±5%)

CH1 and CH2

Deflection factor : 5mV/div to 5V/div in a 1-2-5 sequence of 10 steps
1mV/div and 2mV/div with ×5MAG
5mV/div to 12.5V/div (continuously variable with VARIABLE)

Accuracy

5mV/div to 5V/div : ±2%
±5% (−10℃ ~ +50℃)
1mV/div, 2mV/div : ±4%
±8% (−10℃ ~ +50℃)

Frequency response :

SS-7611

Sensitivity	Bandwidth
1mV/div、2mV/div	DC~ 50MHz (−3dB)
10mV/div~2V/div	DC~100MHz (−3dB)
5mV/div、5V/div	DC~100MHz (−3.5dB)

SS-7607

Sensitivity	Bandwidth
1mV/div、2mV/div	DC~30MHz (−3dB)
5mV/div~2V/div	DC~60MHz (−3dB)
5V/div	DC~60MHz (−3.5dB)

<Note>

- The lower cutoff frequency (-3dB) at AC coupling is 4Hz.
- When the bandwidth limit is on, the bandwidth is limited to 20MHz.

Rise time : At 10mV/div
SS-7611 : 3.5ns
SS-7607 : 5.8ns
(Rise time is calculated from : Bandwidth × Rise time = 0.35)

Pulse response : At 10mV/div
Overshoot : 3%
Sag (at 1kHz) : 1%
Other distortions : 3%

Signal delay : 30ns or greater (delay time on the screen)

Input coupling : **AC, DC, GND**

Input RC : 1MΩ±1.5% // 25pF±2pF (without probe)
10MΩ±3% // 14.5pF±2pF (with SS - 080R probe)

Maximum input voltage : ±400V (DC+AC peak) (without probe)
±600V (DC+ACpeak) (with SS - 080R probe)
±1000V (DC+ACpeak) (with SS - 081R probe)

Drift : 0.1div/hour or 2mV/hour, whichever is greater after 30 minute warm-up (typical value)

Polarity : CH2 only

Common mode rejection ratio : At 10mV/div
50:1 (1kHz sine wave)
15:1 (20MHz sine wave)

CH3 and CH4

Deflection factor : 0.1V/div and 0.5V/div
Accuracy : ±4%
±8% (−10℃ to +50℃)

Frequency response : SS-7611
0.1V/div DC to 100MHz (-3dB)
0.5V/div DC to 100MHz (-3.5dB)
SS-7607
0.1V/div DC to 60MHz (-3dB)
0.5V/div DC to 60MHz (-3dB)
<Note>
- The lower cutoff frequency (-3dB) at AC coupling is 4Hz.
- When the bandwidth limit is on, the bandwidth is limited to 20MHz.

Pulse response : The value in the parentheses is for the SS-7607.

	0.1V/div	0.5V/div
Overshoot	7% (6%)	8% (6%)
Sag (at 1kHz)	2%	2%
Others	5%	6% (10%)

Input coupling : **AC, DC**

Input RC : 1MΩ±1.5% // 25pF±3pF (without probe)
10MΩ±3% // 14.5pF±2pF (with SS - 080R probe)

Maximum input voltage : ±400V (DC+ACpeak) (without probe)
±600V (DC+ACpeak) (with SS - 080R probe)
±1000V (DC+ACpeak) (with SS - 081R probe)

Triggering

A triggering

Trigger sensitivity:

The value in the parentheses is for the SS-7607.

Coupling	Frequency range	Maximum sensitivity
DC	DC to 10MHz	0.4 div
	10MHz to 100(60)MHz	1.0 div
AC	100Hz to 10MHz	0.4 div
	10MHz to 100(60)MHz	1.0 div
FIX (at sine wave)	100Hz to 10MHz	1.0 div
	10MHz to 60MHz	2.0 div
TV – V TV – H		Sync pulse amplitude 1.5div

<Note>

- The lower limit frequency at **AUTO** mode is 50Hz.
- At **REJ** coupling, the trigger signal is attenuated at the frequency of:

  HF REJ : 10kHz or higher

  LF REJ : 10kHz or lower
- The composite video signal amplitade consists of 70% video signal and 30% sync signal.

Trigger source : **VERT, CH1, CH2, CH3, CH4, LINE**

Coupling : **FIX, AC, DC, HF REJ, LF REJ, TV-V, TV-H**

Polarity : Positive(+), negative(-)

B triggering

Trigger sensitivity : Same as in the A trigger sensitivity.

Trigger source : **RUNS AFTER, CH1, CH2, CH3, CH4**

Coupling : **FIX, AC, DC, HF REJ, LF REJ, TV-H**

Polarity : Positive(+), negative(-)

Horizontal deflection system (X axis)

Horiz Display : A, ALT, B

A sweep

Sweep mode : AUTO, NORM, SINGLE

Sweep rate : 20ns/div to 0.5s/div in a 1-2-5 sequence of 23 steps

20ns/div to 1.25s/div (continuously variable with **VARIABLE**)

Accuracy I : (over center 8 divisions)
±2%

Accuracy II: (over any 2 divisions within center 8 divisions)
±5%

Holdoff time : Variable with **HOLD OFF**

B sweep

Delay : Continuous delay (**RUNS AFTER**) or triggered delay (**CH1, CH2, CH3, CH4**)

Sweep rate : 20ns/div to 50ms/div in a 1-2-5 sequence of 20 steps

Accuracy I : (over center 8 divisions)
±2%

Accuracy II: (over any 2 divisions within center 8 divisions)
±5%

Delay range : 0.2 to 10.2 div delay position at 1ms/div

Delay time accuracy : 1 μs/div to 0.5ms/div (A sweep rate) and 1 μs/div to 0.5ms/div (B sweep rate)
± 0.5% of reading ± 1% of full scale − 30ns

Delay jitter : 1/20,000 or less

Sweep magnification : 10 times (max. sweep rate: 2ns/div)

Accuracy I : (over center 8 divisions)

20ns/div, 50ns/div ±5%

0.1μs/div to 0.5s/div ±3%

Accuracy II: (over any 2 divisions within center 8 divisions)

20ns/div to 2μs/div ±8%

5μs/div to 0.5s/div ±5%

<Note>

The first 30nsec and last 40nsec of the sweep are not valid for this specification.

X-Y operation

X axis

Input : **CH1**

Deflection factor : Same as that of **CH1**

Accuracy : 5mV/div to 5V/div ±3%

Frequency response : DC to 4MHz (–3dB)

Input RC : Same as that of **CH1**

Max. input voltage : Same as that of **CH1**

Y axis

Input : **CH1, CH2, CH3, CH4, ADD**

Deflection factor : Same as that of **CH1 CH2, CH3,** and **CH4**

Frequency response : Same as that of **CH1 CH2, CH3,** and **CH4**

Input RC : Same as that of **CH1 CH2, CH3,** and **CH4**

Max. input voltage : Same as that of **CH1 CH2, CH3,** and **CH4**

Phase difference : Within 3° (at DC to 100kHz)

External intensity modulation (Z axis)

Min. modulation voltage : 0.5Vp-p

Polarity : Positive going signal decreases intensity, and negative going signal increases intensity.

Frequency range : DC to 5MHz

Input R : Approx. 4.6kΩ

Max. input voltage : ±30V

Signal output

Calibrator

Waveform : Square wave

Repetition rate : 1kHz

Accuracy : ±0.1%

Duty ratio : 45% to 55%

Output voltage : 0.6V

Accuracy : ±1%

CH1 signal output

Output voltage : 20mV±20% for 1 division screen amplitude (at 50Ω load)

Bandwidth : SS-7611

DC to 50MHz – 3dB

SS-7607

DC to 30MHz – 3dB

Output impedance : 50Ω±20%

Readout and cursor measurement

Readout

Vertical readouts : **CH1** through **CH4** deflection factors with automatic factor correction by using SS-080R or SS-081R probe, **UNCAL**, **×5MAG** with automatic factor correction, **AC**, **DC**, **GND**, **INV**, **VERT MODE**, **BW**

Horizontal readouts : **A** and **B** sweep rate, **UNCAL**, **×10MAG** with automatic factor correction, **DLY** time, **HOLD OFF**, **B ENDS A**

Cursors : Two voltage cursors (horizontal cursors) and two time cursors (vertical cursors)

Menu display : **TIME**, **VOLT**, and **SUB** menus

Frequency counter

Measurement channel : Same source as the A trigger source .

	Frequency range	Maximum sensitivity
SS-7611	10 Hz to 10 MHz	0.8 div
	10 MHz to 100 MHz	2.0 div
SS-7607	10 Hz to 10 MHz	0.8 div
	10 MHz to 60 MHz	2.0 div

Display digit : Six digits

Maximum count time : 0.1s

Frequency range : SS-7611

10Hz to 100MHz

SS-7607

10Hz to 60MHz

Period range : SS-7611

0.1s to 10ns

SS-7607

0.1s to 17ns

Measurement error : 10MHz or higher, or 0.1μs or slower

Base oscillator accuracy ± 1 count

10MHz or lower, or 0.1μs or faster

$$\text{Base oscillator accuracy} \pm \frac{\text{trigger error} \pm 1 \text{ base oscillotor period}}{\text{input frequency} \times 0.1\text{s}}$$

Base oscillator

Frequency : 10MHz

Aging rate : ±3ppm / year

Temperature stability: ±10ppm / 0℃ to 50℃

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Peak voltage measurement

The value in the parentheses in the left column is for the SS-7607

Measurement	Accuracy
DC voltage	± (0.5% of reading + 1.6% of full scale + 20% of one division) within center 6 vertical divisions
+ PEAK, -PEAK 45Hz to 100(60)MHz and one division or more screen amplitude	± (0.5% of reading + 1.6% of full scale + 20% of one division + 0dB/-2dB* + CH1 and/or CH2 vertical frequency response) within center 6 vertical divisions <Note> 0dB/-2dB*: is the value befween 0dB and -2dB, and follows the curve of the peak detector frequency response. The cursor may jump 0.2 div or so depending on the some input frequency.
GATED + PEAK, GATED -PEAK 45Hz to 100(60)MHz and one division or more screen amplitude in the gated period and one cycle or more display signal	± (0.5% of reading + 1.6% of full scale + 30% of one division + 0dB/-2dB* + CH1 and/or CH2 vertical frequency response) within center 6 vertical divisions and one horizontal division or more gated period at 5ms/div to 0.2 µs/div sweep rate <Note> 0dB/-2dB*: is the value befween 0dB and -2dB, and follows the curve of the peak detector frequency respouse. The cursor may jump 0.3 div or so depending on the some input frequency.

<Note>

- The accuracy mentioned above are specified after executing the **AUTO CAL** function.
- The peak voltage measurement accuracy includes the cursor disposition error, or ± 20% or 30% of one division.

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Cursor measurement

TIME cursor measurement

Delta time (Δt)	± 0.5% of reading ± 1.3% of FS
Frequency (1/Δt)	Calculated from the delta time value.
Phase (PHASE)	
Period ratio (RATIO)	
Rise time and fall time (Tr,Tf)	
Duty ratio (DUTY)	

VOLT

Delta voltage (ΔV)	± 0.5% of reading ± 1.6% of full scale
Delta voltage from GND (ΔV⏚)	Calculated from the delta voltage value.
Voltage ratio (V RATIO)	

Cursor position range

: VOLT cursors : ± 3.6 divisions or more from the screen center

TIME cursors : ± 4.5 divisions or more from the screen center

<Note>

The cursor tracking mode, which allows to position the cursors maintaining the span between the cursors, is available.

Date and time

Display format

: DD-MMM-YY HH : MM

- DD : day (2-digit number, 01 to 31)
- MMM : month (3-digit alphabet, Jan through Dec)
- YY : year (2-digit number, 00 to 99)
- HH : hour (2-digit number, 00 to 23)
- MM : minute (2-digit number, 00 to 59)

Leap year

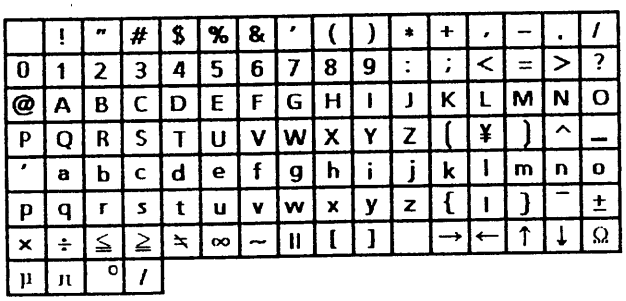
: Auto correction of a leap year

Comment display

Display area : 4th row through 14th row from the top of the screen

Number of characters : Up to 80 characters

Character set:



Data memory : Backup by built-in batteries

Storage data : 10 setup memories excluding the last setup at power-off

Battery life : Approx. 40,000 hours (at room temperature)

CRT

Shape : Rectangular, 6 inches

Display area : 8 div × 10 div (1div = 10mm) Non-parallax internal graticule with scale illumination

Phosphor : B31

Accelerating voltage : Approx. 16kV

Power supply

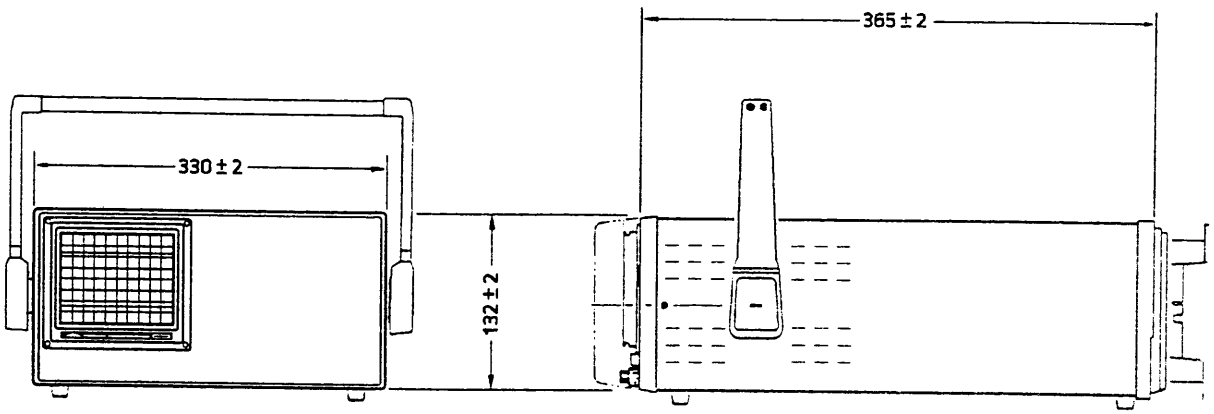
Voltage range : 90V to 250V AC

Frequency range : 50Hz to 440Hz

Power consumption : Approx. 85W (at 100V AC)

WEIGHT AND DIMENSIONS

Weight	:	Approx. 7.5kg (excluding the panel covers and accessories)
Size	:	330 ±2 mm (W) × 132 ±2 mm (H) × 365 ±2 mm (L)



ENVIRONMENTAL CHARACTERISTICS

Operating temperature	:	−10°C to +50°C
Operating humidity	:	90% at 40°C (relative humidity)
Storage temperature	:	−20°C to +70°C
Altitude	:	Operating : 5,000m; barometric pressure of 405hPa Non-operating : 15,000m; barometric pressure of 90hPa
Vibration test	:	Start from 10Hz to 55Hz and back in one minute. Peak-to-peak amplitude 0.67 mm; for 15 minutes each in vertical, horizontal, and longitudinal directions for a total of 45 minutes.
Shock test	:	Raise one side by 10 cm and let it fall onto a piece of a hard wood; 4 times for each side.
Drop test	:	Pack the instrument in the transportation carton and drop it from the height of 90 cm.

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ACCESSORIES

Power cord (3-core)	1
Fuse (2A/250V, slow blow)	2
Probe (SS-080R)	2
Panel cover	1
Instruction manual	1
Accessory bag	1