

6. SPECIFICATIONS

SPECIFICATIONS

All the specifications in this section are:

- 1). applicable to the both units of the SS-7610 and the SS-7606 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 \pm 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 $\times 5$ MAG
5mV/div to 12.5V/div (continuously variable with **VARIABLE**)

Accuracy

5mV/div to 5V/div : $\pm 2\%$
 $\pm 5\%$ ($-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$)
1mV/div, 2mV/div : $\pm 4\%$
 $\pm 8\%$ ($-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$)

Frequency response :

SS-7610

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-7606

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-7610 : 3.5ns

SS-7606 : 5.8ns

(Rise time is calculated from : Bandwidth \times 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	: $1\text{M}\Omega \pm 1.5\% // 25\text{pF} \pm 2\text{pF}$ (without probe) $10\text{M}\Omega \pm 3\% // 14.5\text{pF} \pm 2\text{pF}$ (with SS - 080R probe)
Maximum input voltage	: $\pm 400\text{V}$ (DC + AC peak) (without probe) $\pm 600\text{V}$ (DC + ACpeak) (with SS - 080R probe) $\pm 1000\text{V}$ (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 : $\pm 4\%$ $\pm 8\%$ (-10°C to $+50^{\circ}\text{C}$)
Frequency response	: SS-7610 0.1V/div DC to 100MHz (-3dB) 0.5V/div DC to 100MHz (-3.5dB) SS-7606 0.1V/div DC to 60MHz (-3dB) 0.5V/div DC to 60MHz (-3dB) <Note> <ul style="list-style-type: none"> • 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-7606.

	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	: $1\text{M}\Omega \pm 1.5\% // 25\text{pF} \pm 3\text{pF}$ (without probe) $10\text{M}\Omega \pm 3\% // 14.5\text{pF} \pm 2\text{pF}$ (with SS - 080R probe)
Maximum input voltage	: $\pm 400\text{V}$ (DC + ACpeak) (without probe) $\pm 600\text{V}$ (DC + ACpeak) (with SS - 080R probe) $\pm 1000\text{V}$ (DC + ACpeak) (with SS - 081R probe)

Triggering

A triggering

Trigger sensitivity:

The value in the parentheses is for the SS-7606.

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		Sync pulse
TV – H		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 amplitude 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.

6

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)

$\pm 2\%$

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

$\pm 5\%$

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)

$\pm 2\%$

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

$\pm 5\%$

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

Delay time accuracy : 1 μ s/div to 0.5ms/div (A sweep rate) and 1 μ s/div to 0.5ms/div
(B sweep rate)

$\pm 0.5\%$ of reading $\pm 1\%$ of full scale – 30ns

Delay jitter : 1/20,000 or less

6

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 : $\pm 0.1\%$
Duty ratio	:	45% to 55%
Output voltage	:	0.6V Accuracy : $\pm 1\%$

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 , $\times 5\text{MAG}$ with automatic factor correction, AC, DC, GND, INV, VERT MODE, BW
Horizontal readouts	:	A and B sweep rate, UNCAL , $\times 10\text{MAG}$ with automatic factor correction, DLY time, HOLD OFF, B ENDS A
Cursors	:	Two voltage cursors (horizontal cursors) and two time cursors (vertical cursors)

Cursor measurement

Delta time, Frequency ($\Delta t, 1/\Delta T$)	:	$\pm 0.5\%$ of reading $\pm 1.3\%$ of full scale
Delta voltage (ΔV)	:	$\pm 0.5\%$ of reading $\pm 1.6\%$ of full scale
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.

Data memory	:	Backup by built-in batteries
Storage data	:	Last setup memory at power-off
Battery life	:	Approx. 40,000 hours (at room temperature)

CRT

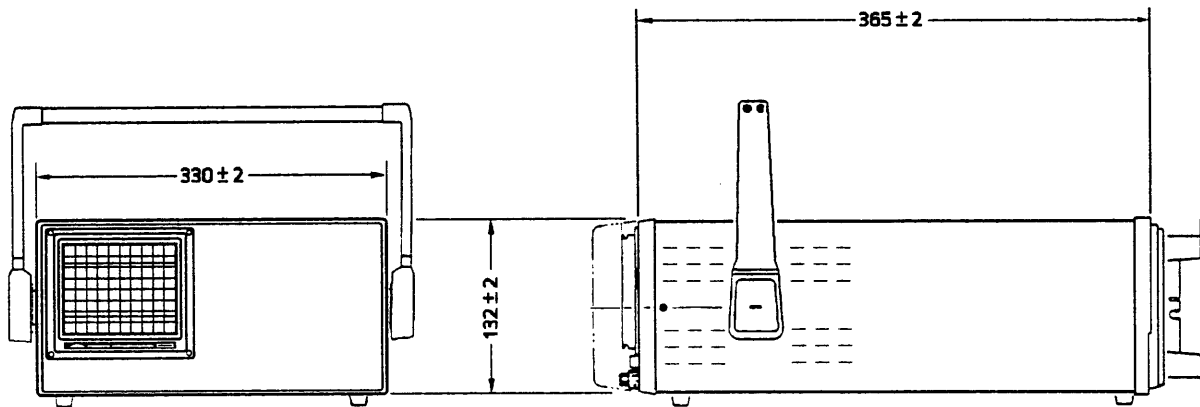
Shape	:	Rectangular, 6 inches
Display area	:	8 div \times 10 div (1div = 10mm) Non-parallax internal graticule with scale illumination
Phosphor	:	B31
Accelerating voltage	:	Approx. 16kV

Power supply

Voltage range	:	90V to 250V AC
Frequency range	:	50Hz to 440Hz
Power consumption	:	Approx. 75W (at 100V AC)

WEIGHT AND DIMENSIONS

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



ENVIRONMENTAL CHARACTERISTICS

Operating temperature	:	-10°C to $+50^{\circ}\text{C}$
Operating humidity	:	90% at 40°C (relative humidity)
Storage temperature	:	-20°C to $+70^{\circ}\text{C}$
Altitude	:	Operating : 5,000m; barometric pressure of 405 hPa Non-operating : 15,000m; barometric pressure of 90 hPa
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.

6

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