

# Specifications

## 1-1 GENERAL

The Iwatsu SS-5706 is 30 MHz triple event observation oscilloscopes.

Their precision and performance are comparable to high grade models and they can be used for a variety of measurement applications such as production line, maintenance, research, and development.

The SS-5706 has the following features:

### ■ High precision and stability

- Vertical and horizontal axis sensitivity is within  $\pm 2\%$ . (at  $10^{\circ}\text{C}$  to  $35^{\circ}\text{C}$ )
- High precision calibrator  
Frequency accuracy  $\pm 1\%$  (at  $10^{\circ}\text{C}$  to  $35^{\circ}\text{C}$ )  
Voltage amplitude accuracy  $\pm 1\%$  (at  $10^{\circ}\text{C}$  to  $35^{\circ}\text{C}$ )

### ■ Variety of high grade functions

- Highest acceleration voltage in its class 12 KV  
High intensity 6 inch rectangular CRT with illuminated scale
- Displaying of 6 traces with the use of triple event alternate sweep function

- Sweep delay function

Usability not attainable with trigger delay method

- Triple even display and ADD operation

Vertical axis sensitivity magnification (CH-1) 1 mV/div

- First in this class to use jitterless synchronization circuit

Enables measurement of high speed signals with little or no jitters

- Hold off variable function

Effective when synchronizing with complicated signals.

Video signal separation circuit

- CH-1 signal output function

Useful when use together with counter

- Maximum sweep time of 10 ns/div

- Single sweep function, beam finder function, trace rotation function

- Fix synchronization circuit

### ■ Small and light weight

### ■ Practical design for ease of operation

## 1-2 ELECTRICAL SPECIFICATIONS

### 1-2-1 Cathode-Ray Tube (CRT)

Shape	Rectangular, 6 inches
Display Area	8 div x 10 div (1 div = 10 mm), with internal graticule of parallax-free type
Phosphor	B31
Accelerating Voltage	Approximately 12 kV

### 1-2-2 Vertical Deflection System

Modes	CH 1, CH 2, ADD, DUAL/ TRI (ALT, CHOP), X-Y CHOP switching rate: approximately 130 kHz
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#### Channels 1 and 2

Deflection Factor	5 mV/div to 10 V/div, in 11 calibrated steps in a 1-2-5 sequence Accuracy: $\pm 2\%$ (at 10°C to 35°C) 5 mV/div to 25 V/div, con- tinuously variable with the VARIABLE control x5 MAG (CH1 only) 1 mV/ div Accuracy: $\pm 4\%$ (at 10°C to 35°C)
Frequency Response	DC to 30 MHz, -3 dB (5 mV/div to 0.2 V/div) DC to 20 MHz, -3 dB 1 mV/div, 2 mV/div (in the x5 MAG mode) Notes • 10°C to 35°C • AC coupling: The lowest useable frequency is 4 Hz.

Pulse Response	Overshoot: 7% Sag (at 1 kHz): 2% Other distortions: 5% (5 mV/div, 10°C to 35°C)
Signal Delay	—
Input Coupling	AC, DC, GND
Input RC	Direct: 1 M $\Omega$ $\pm 2\%$ // 32 pF $\pm 3$ pF With probe: 10 M $\Omega$ $\pm 3\%$ // 21 pF $\pm 3$ pF
Maximum Input Voltage	Direct: 400V (DC + peak AC) With probe: 600V (DC + peak AC)
Drift	0.5 div/hour (5 mV/div) or 2.5 div/hour (1 mV/div) 30 minutes after power is turned on (Standard)
Common Mode Rejection Ratio	5 mV/div 40 : 1 (1 kHz sine wave) 15 : 1 (5 MHz sine wave)
Polarity Inversion	CH 2 only
<b>Channel 3</b>	
Deflection Factor	0.1 V/div Accuracy: $\pm 3\%$ (at 10°C to 35°C)
Frequency Response	DC to 30 MHz, -3 dB Notes • 10°C to 35°C • AC coupling: The lowest usable frequency is 4 Hz.
Pulse Response	Overshoot: 10% Sag (at 1 kHz): 3% Other Distortions: 9% (10°C to 35°C)
Input Coupling	AC, DC
Input RC	Direct: 1 M $\Omega$ $\pm 2\%$ // 32 pF $\pm 8$ pF With probe: 10 M $\Omega$ $\pm 2\%$ // 21 pF $\pm 3$ pF

**Maximum Input Voltage**

Direct:

400 V (DC +peak AC)

With probe:

600V (DC +peak AC)

**1-2-3 Triggering**

Signal Source	CH 1, CH 2, CH 3, LINE, (External trigger can be used by selecting CH 3 with SOURCE switch.)
Coupling	AC, DC, HF REJ, TV (A-sweep: TV-V, B-sweep TV-H)
Slope	Positive-going (+), Negative-going (—)
Minimum Trigger Sensitivity	As shown in Table 1-2-3

Table 1-2-3 (at 10°C to 35°C)

Frequency Range	Sensitivity	
	CH 1, CH 2	CH 3
DC to 5 MHz	0.5 div	1 div
5MHz to 30 MHz	1.5 div. (B: 2 div)	3 div

**Note**

- In TV-mode, synchronization is achieved when amplitude is more than 1 div when composite signal consisting of video signal 7 and synchronization signal 3 is input.
- Trigger signals are attenuated in the following frequency ranges depending on coupling  
AC: 10 Hz or less  
HF REJ: 10 kHz or higher
- AUTO sweep mode: The lowest useable frequency is 50 Hz.

**1-2-4 Horizontal Deflection System**

Modes	A, A INTEN, B (DLY'D)
<b>A-Sweep</b>	
Sweep Modes	AUTO, NORM, SINGLE
Sweep Rates	0.1 $\mu$ sec/div to 0.5 sec/div, in 21 calibrated steps in a 1-2-5 sequence 0.1 $\mu$ sec/div to 1.25 sec/div, con- tinuously variable with the VARIABLE control Accuracy I (Over center 8 divi- sions): $\pm 2\%$ (at 10°C to 35°C) Accuracy II (Over any 2 of the center 8 divisions): $\pm 5\%$ (10°C to $\pm 35^\circ\text{C}$ )
Hold-Off Time	Variable with the HOLDOFF control
<b>B-Sweep</b>	
Delay	Continuous delay (RUNS AF- TER DELAY), triggered delay (TRIG'D)
Sweep Rates	0.1 $\mu$ sec/div to 50 msec/div, in 18 calibrated steps in a 1-2-5 sequence Accuracy I (Over center 8 divi- sions): $\pm 3\%$ (at 10°C to 35°C) Accuracy II (Over 2 of the cen- ter 8 divisions): $\pm 5\%$ (at 10°C to + 35°C)
Delay Jitter	1/20,000 or less
Sweep Magnification	5 times (Maximum sweep rate: 20 nsec/ div) Accuracy I of magnified sweep rate (Over center 8 divisions) $\pm 5\%$ at 20 nsec/div to 0.1 sec/div (at 10°C to 35°C) Exclude the first 2 divisions for 20 ns/div.

Accuracy II of magnified sweep rate (Over any 2 of the center 8 divisions):  
 $\pm 6\%$  at 0.2  $\mu\text{sec}/\text{div}$  to 0.1  $\text{sec}/\text{div}$  (at 10°C to 35°C)

### 1-2-5 X-Y Operation

Signal Input	X axis: CH1, Y axis: CH 2
X Axis	X axis: CH1, Y axis: CH 2
Deflection Factor	Same as that of CH 1 Accuracy: $\pm 5\%$ (at 10°C to 35°C)
Frequency Response	DC to 2 MHz, $-3\text{ dB}$
Input RC	Same as that of CH 1
Maximum input voltage	Same as that of CH 1
Y Axis	same as CH 2
X-Y Phase Difference	$3^\circ$ or less (at DC to 50 kHz)

### 1-2-6 External Brightness Modulation

Input Voltage	3 Vp-p
Polarity	Positive decreases intensity negative increases intensity
Frequency Range	DC to 1 MHz
Input Resistance	10 k $\Omega$ $\pm 20\%$
Maximum Input Voltage	50 V (DC +peak AC)

### 1-2-7 Calibrator

Waveform	Square wave
Repetition Frequency	1 kHz Accuracy: $\pm 1\%$ (at 10°C to 35°C)
Duty Ratio	40% to 60%
Output Voltage	0.3 V Accuracy: $\pm 1\%$ (at 10°C to 35°C)
CH 1 Signal Output	
Output Voltage	50 mV $\pm 20\%$ per displayed amplitude division
Bandwidth	DC to 10 MHz, $-3\text{ dB}$

### 1-2-8 Power Supply

Voltage Range	100V ( 90 to 110 V)/ 115V (103 to 128 V)/ 220V (195 to 242 V)/ 230, 240V (207 to 264 V)/AC One of these voltage ranges can be selected with voltage selector plug (A, B, C, D)
Frequency Range	50 to 440 Hz
Power Consumption	Approximately 48 W (at 100 VAC)

**1-3 PHYSICAL CHARACTERISTICS**

Weight	Approximately 7.2 kg
Dimensions	282 ±2 (W) x 152 ±2 (H) x 403 ±2 (L) (mm)
	See Figure 1-3-1.

**1-4 ENVIRONMENTAL CHARACTERISTICS**

Operating Temperature	0°C to 40°C
Operating Humidity	40°C, 90% Relative Humidity
Storage Temperature	-20°C to 70°C
Storage Humidity	70°C, 80% Relative Humidity

Altitude	Operating: 5,000 m maximum (atmospheric pressure 428 mm Hg) Non-operating: 15,000 m maximum (atmospheric pressure 87 mmHg)
Vibration	From 10 Hz to 55 Hz and back in 1 minute; double amplitude 0.63 mm; for 15 minutes each in vertical, horizontal, and longitudinal directions for a total of 45 minutes
Impact	One side is raised to an elevation angle of 30° (10 cm maximum), and let fall on a piece of hard wood. Each side is put to this test 3 times.
Drop	A package ready for transportation is dropped from a height of 90 cm.

Figure 1-3-1 Dimensional Diagram

