

1. GENERAL

1.1 Description

Model GOS-622/623 Oscilloscope is a dual-channel oscilloscope with frequency bandwidth DC - 20MHz (-3 dB), maximum sensitivity 1mV/DIV, and maximum sweep time 20 nsec/DIV. Model GOS-623 has a sweep magnification feature with B sweep. The oscilloscope employs a 6-inch rectangular type cathode-ray tube with red internal graticule.

The oscilloscope is sturdy, easy to operate, and exhibits a high operation reliability. It is incorporated with the various convenient features and excellent functions, making itself an ideal instrument for diversified types of research and development work of electronic devices and equipment it can also be efficiently used for production lines and for maintenance and service.

1.2 Features

- (1) **Compact, light, but sturdy:**
The oscilloscope is made of aluminium diecast and it is compact, light, but sturdy.
- (2) **Excellent operability:**
Light torque types of lever switches and pushbutton switches are used. These and other controls are laid out in the most rational locations taking purposes and frequencies of their uses into consideration, thereby attaining an excellent operability.
- (3) **High intensity CRT with high acceleration voltage:**
The CRT is a high beam transmission, high intensity type with a high acceleration voltage of 2.2 kV. It displays clearly readable traces even at high sweep speeds.
- (4) **High stability with less drift:**
The oscilloscope employs a newly-developed temperature compensation circuit, thereby greatly reducing drift of base lines and DC balance disturbance caused by temperature change.
- (5) **A trigger level lock function which makes triggering adjustment procedure unnecessary:**
A new trigger level lock circuit is incorporated. This circuit eliminates the requirement of troublesome triggering adjustment procedure not only for display of regular signals but also for that of video signals and large duty cycle ratio signals.
- (6) **TV sync triggering:**
The oscilloscope has a sync separator circuit and triggering for TV V signal and TV H signal can be automatically switched being linked to the TIME/DIV switch.
- (7) **Linear focus:**
Once the beam focus is adjusted to the optimum position, it is automatically maintained irrespective of intensity change.

2. SPECIFICATIONS

Vertical axis

Item	Specification	Remarks
Sensitivity	NORM: 5 mV · 5 V/DIV x5 MAG: 1 mV · 1 V/DIV	1-2-5 sequence, 10 ranges
Sensitivity accuracy	NORM: ±3% or better x5 MAG: ±5% or better	10 to 35°C (50 to 95°F), 1 kHz, at 8 DIV
Vernier vertical sensitivity	To 1/2.5 or less of panel indicated value	
Frequency bandwidth	NORM: DC - 20 MHz, within -3 dB x5 MAG: DC - 15 MHz, within -3 dB AC coupling: Low limit frequency 10 Hz	With reference to 100 kHz, 8 DIV
Rise time	NORM: Approx. 17.5 nsec x5 MAG: Approx. 23 nsec	
Input impedance	1MΩ ±2%, Approx. 30pF	
Square wave characteristics	Overshoot: Not greater than 3% Other distortions: Not greater than 2% (At 10 mV/DIV range)	Other ranges: 3% added to the left values. 10 to 35°C (50 to 95°F)
DC balance shift	NORM: ±0.5 DIV x5 MAG: ±2.0 DIV	
Linearity	±0.1 DIV or less of amplitude change when waveform of 2 DIV at graticule center is moved vertically.	
Display modes	CH1: CH1 single channel CH2: CH2 single channel	When CH1 POSITION knob is pulled out (CHOP ONLY position), the two traces are displayed in the CHOP mode

	DUAL: CHOP: 0.5 sec-1 msec/DIV ALT: 0.5 sec-0.2 μ sec/DIV	at all ranges. When ALT push switch is pushed in, the two traces are displayed in the ALT mode at all range, but the priority is lower than chop only statement
	ADD: CH1 + CH2 algebraic addition	
Chopping repetition frequency	Approx. 250kHz	
Input coupling	AC/GND/DC	
Maximum allowable input voltage	400 V (DC + AC peak)	AC: 1 kHz or lower
Common mode rejection ratio	50:1 or better at 50 kHz sinusoidal wave	When sensitivities of CH1 and CH2 are set equal
Isolation between channels	At least 1000:1 at 50 kHz At least 30:1 at 20 MHz	At 5 mV/DIV range
CH1 signal output	Approx. 100mV/DIV when open; approx. 50 mV/DIV when 50-ohm termination	
CH2 INV BAL	Balanced point variation, 1 DIV or less	PULL CH2 POSITION (Reference at center graticule)

- 3 -

Triggering

Item	Specification	Remarks
Triggering source	CH1, CH2, LINE, and EXT (CH1 and CH2 can be selected only when the vertical mode is DUAL or ADD. In other cases, triggering source is automatically selected by the VERT MODE switch)	In DUAL or ADD mode, if the ALT push switch is pushed in, it can be used for alternate triggering of two different source input signals.
Coupling	AC, HF REJ, TV, DC	
Polarity	+ or -	
Sensitivity	DC- 5MHz: 0.5 DIV (0.1V) 5 -20MHz: 1.5 DIV (0.2V) Video signal: 2.0 DIV (0.2V) AC coupling: Attenuate signal components of lower than 10 Hz HF REJ: Attenuate signal components of higher than 50 kHz	The values enclosed in the parentheses are the input sensitivities when in the EXT triggering mode.
Triggering modes	AUTO: Sweeps run in the free mode when no triggering input signal is applied.	Satisfies the sensitivity for signal repetition frequency of 50 Hz or over.
	NORM: When no triggering signal is applied, the trace is in the READY state and not display. SINGLE: One-shot sweep with triggering signal. Can be reset to the READY state by means of RESET switch. The READY lamp (LED)	

- 4 -

	turns on when in the READY state or in the sweep operation.	
LEVEL LOCK	Satisfies the value of the above trigger sensitivity plus 0.5 DIV (0.05V) for signal of duty cycle 20:80 and repetition frequency 50 Hz - 20 MHz.	
ALT Triggering		
EXT Triggering signal input	EXT HOR input terminal is used in common.	
Input impedance	1 M Ω \pm 2%, approx. 30 pF	
Maximum allowable input voltage	100 V (DC + AC peak)	AC frequency not higher than 1 kHz.
B triggering signal	The A triggering signal of main sweep is used as the B triggering signal	GOS-623 only

Horizontal axis

Item	Specification	Remarks
Horizontal axis display	A, A INT, B, B TRIG'D	GOS-623 only
A sweep (main sweep) Sweep time	0.2 μ sec-0.5 sec/DIV	1-2-5 sequence, 20 ranges
Sweep time accuracy	\pm 3%	10 to 35°C (50 to 95°F)
Vernier sweep time control	To 1/2.5 or slower of panel-indicated value	
Holdoff time	Continuously variable to 2 times or over of sweep length (time) at 0.2 μ sec/DIV 1 msec/DIV ranges	

- 5 -

B sweep Delay system	Continuous delay and triggered delay.	GOS-623 only. Triggered by A triggering signal.
Sweep time accuracy	NORM: \pm 3%.	10 to 30°C (50 to 95°F)
Delay time	2 μ sec~5msec/DIV.	
Delay jitter	1/10000 or less $\frac{B \text{ sweep time}}{A \text{ sweep time}} \times \frac{\text{jitter width}}{10 \text{ DIV}}$	
Sweep magnification	10 times (maximum sweep time 20 nsec/DIV)	
Magnified sweep time accuracy	1 μ sec/DIV - 0.5 sec/DIV ranges: \pm 5% 0.2 μ sec/DIV - 0.5 μ sec/DIV ranges: \pm 8%	10 to 35°C (50 to 95°F)
Linearity	NORM: \pm 3% x10 MAG: \pm 5% (\pm 8% for 0.2 μ sec and 0.5 μ sec/DIV)	
Position shift caused by sweep magnification	Within 2 DIV at CRT screen center	
X-Y mode	X-axis: CH1 input signal Y-axis: CH2 input signal	
Sensitivity	Same as CH1 vertical axis	
Sensitivity accuracy	NORM: \pm 4% x5 MAG: \pm 6%	10 to 35°C (50 to 95°F)
Frequency bandwidth	DC-1 MHz (-3dB)	
X-Y phase difference	Not greater than 3° at DC - 50 kHz	