

## 1. INTRODUCTION

The LBO-522·LBO-523 Oscilloscopes are portable ones with the functions of 5 mV/div. (20[35] MHz), 500  $\mu$ V/div. (5 MHz), maximum sweep rate 40[20] ns/div. (MAG  $\times$  5[10]), equipped with a 6-inch rectangular [metal-back] CRT with high brightness, internal graticule and the vertical sensitivity magnifier.

The LBO-522, 523 have a wide range of application in production and service areas for measurements and testings of TV set, VTRs and computer peripheral equipments, since the TV synchronization separator, variable hold off and V-AXIS magnifier functions are provided.

## 2. SPECIFICATIONS

### CRT Display

#### Type

150 mm Rectangular, Internal-graticule Scale, [Aluminized Screen] and Flat Face with illumination lamps and Percentage scale.

#### Accelerating Potential

2kV. [7kV/2kV] regulated

#### Effective display area

8 x 10 div. (1 div. = 10 mm)

#### Beam Rotator

Adjustment on front panel

#### Graticule Illumination

Continuously variable

#### Intensity Modulation

Blanked by TTL Level Signal

### Vertical Amplifiers (CH-1 and 2)

#### Sensitivity

5 mV/div. to 5V/div. (all bandwidth), 0.5 mV/div. to 2 mV/div. (5 MHz: MAG  $\times$  10) with variable in 10 steps, 1-2-5 sequence, continuously variable between steps.

#### Calibration Accuracy

$\pm 3\%$  ( $\pm 5\%$ : MAG  $\times$  10)

#### Bandwidth ( $-3$ dB, 8 div.)

##### DC coupled

DC to 20[35] MHz

(DC to 5 MHz: MAG  $\times$  10)

##### AC coupled

10 Hz to 20 [35] MHz

#### Rise Time

17.5[10] ns (70 ns; MAG  $\times$  10)

#### Input Impedance

1 M $\Omega$   $\pm$  1.5%, 30 pF within  $\pm$  5 pF (Tolerance: within  $\pm$  2 pF)

#### Input Coupling

AC, GND, DC

#### Maximum Input

600V (DC + ACp-p)

#### Display Modes

CH-1, CH-2, CHOP, ALT, ADD

#### Polarity Invert

CH-2 INVERT

#### CH-1 Output

Approx. 0.1V/div. in to 50 $\Omega$  (DC to 20[35] MHz,  $-3$  dB)

### Horizontal Amplifier

#### Sweep Method

Trigger sweep and Automatic trigger sweep.

#### Sweep Time

0.2  $\mu$ s/div. to 0.2 s/div., 1-2-5 sequence 19 steps with continuous adjuster.

#### Calibration Accuracy

$\pm 3\%$

#### Hold-off variable

One sweep or more

#### Magnifier

5[10] times  $\pm 5\%$

#### Max. Sweep Time

40[20] ns/div. (MAG  $\times$  5[10] ON)

Signal Sources  
Coupling  
Slope  
Sensitivity

ALT, CH-1, CH-2, LINE, EXT.  
AC, HF-REJ, TV-V, TV-H  
+ or --

	Bandwidth	INT.	EXT.
NORM	30 Hz – 10 MHz 2 Hz – 20[35] MHz	0.5 div. 1.5 div.	0.2Vp-p 0.6Vp-p
AUTO	30 Hz – 10 MHz 30 Hz – 20[35] MHz	0.5 div. 1.5 div.	0.2Vp-p 0.6Vp-p

TV Synchronization

Extracts the synchronizing signal from composite video signal and provides stable synchronization. Slope switch is selected according to polarity of video signals.

X-Y Mode (X=CH-1, Y=CH-2)  
Sensitivity

X axis: 5 mV/div. to 5V/div.

Y axis: 5 mV/div. to 5V/div.

X axis Bandwidth

DC or 10 Hz to 1 MHz (–3 dB, ref. 8 div.)

X-Y phase

Less than 3° at 100 kHz

Calibrator

Output Voltage

0.5Vp-p ±2%

Frequency

Approx. 1 kHz, square wave

Power Requirements

Line Voltage

AC 100, 120, 200, 220, 240V 50/60 Hz

Power Consumption

50W

Size and Weight

160(H) x 290(W) x 375(D) mm, 8.5 kg

Supplied Accessories

Direct/Low capacitance probe LP-16 AX ..... 2  
BNC terminal adapter ..... 2  
Time lag fuse ..... 1  
Instruction manual ..... 1

Optional Accessories

Protective front cover

Accessories pouch