

MODEL 5121
ALIGNMENTSCOPE
OPERATION MANUAL

印刷表紙使用のこと

KIKUSUI ELECTRONICS CORP.

Power Requirements of this Product

Power requirements of this product have been changed and the relevant sections of the Operation Manual should be revised accordingly.

(Revision should be applied to items indicated by a check mark)

Input voltage

The input voltage of this product is _____ VAC,
and the voltage range is _____ to _____ VAC. Use the product within this range only.

Input fuse

The rating of this product's input fuse is _____ A, _____ VAC, and _____.

WARNING

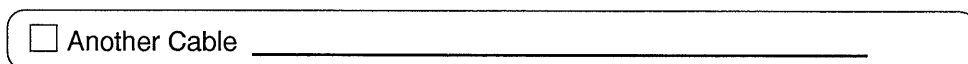
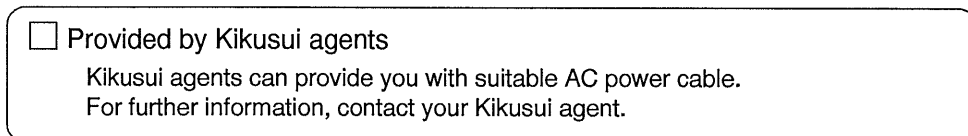
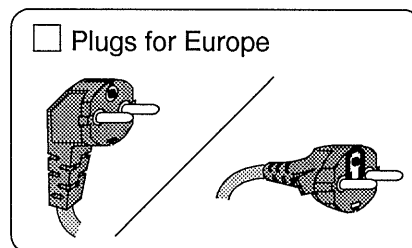
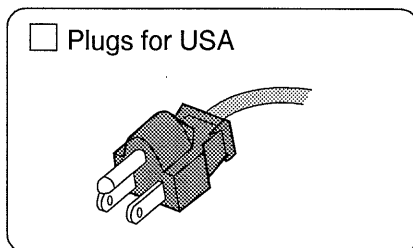
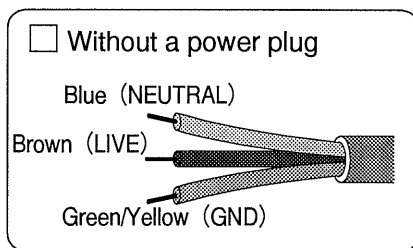
- To avoid electrical shock, always disconnect the AC power cable or turn off the switch on the switchboard before attempting to check or replace the fuse.
- Use a fuse element having a shape, rating, and characteristics suitable for this product. The use of a fuse with a different rating or one that short circuits the fuse holder may result in fire, electric shock, or irreparable damage.

AC power cable

The product is provided with AC power cables described below. If the cable has no power plug, attach a power plug or crimp-style terminals to the cable in accordance with the wire colors specified in the drawing.

WARNING

- The attachment of a power plug or crimp-style terminals must be carried out by qualified personnel.



SPECIFICATIONS

VERTICAL AXIS

SENSITIVITY More than 5 mV_{p-p}/cm, built in
-20 dB ATTEN

FREQ. CHARACTERISTICS DC - 10 kHz -3 dB

POSITION SELECTOR INT \longleftrightarrow REMOTE

HORIZONTAL AXIS

SENSITIVITY More than 100 mV_{p-p}/cm, built in
-20 dB ATTEN

FREQ. CHARACTERISTICS DC - 1 kHz -3 dB

LINE SWEEP Phase shift range, approx. 130°

MARKER SIGNAL Intensity modulation (polarity; auto)

CALIBRATION VOLTAGE 100 mV_{p-p} square wave (applied to
vertical input)

DEFLECTION DISTORTION AND LINEARITY HORIZ. VERT. Less than 5% within
graticule

ANGLE BETWEEN HORIZ. AND VERT. TRACE 90° \pm 2°, center of graticule

CRT 310DMB4

DIMENSIONS (MAX.) 420 (420) W x 250 (265) H x 310 (477) D mm

WEIGHT Approx. 13 kg

POWER CONSUMPTION Voltage _____ V 50/60 Hz,
approx. 150 VA

ACCESSORIES Hood 1
Plug for remote position 1

EXPLANATION OF FRONT PANEL

POWER

A push-button switch. When it is pressed, line power is turned on and the green lamp lights.

Pressing this switch again unlocks the button to turn off power supply.

INTENSITY

An intensity adjusting knob. Its clockwise rotation increases intensity. The intensity adjusting circuit starts operating to brighten the CRT screen when input signal is fed to the horizontal amplifier. Therefore, the intensity adjusting circuit does not operate as long as input signal is not fed to the horizontal amplifier. In such a case, adjust intensity by setting the switch, which is provided in this instrument, to LINE SWEEP so that input signal may be fed to the horizontal amplifier.

SCALE ILLUM

A knob for graticule illumination. Its clockwise rotation increases illumination.

VERTICAL:

ATTEN/CAL

1

Vertical input signal is directly fed to the gain adjuster without passing through the attenuator.

1/10 An attenuator to lessen vertical input signal to 1/10. The signal is subsequently fed to the gain adjuster.

CAL 100 mV p-p square wave signal generated in this instrument is fed to the gain adjuster.

GAIN

A knob for adjusting amplitude of vertical input signal or calibration signal. Its clockwise rotation sets sensitivity to maximum while its counterclockwise rotation to minimum.

POSITION

A vertical positioning knob. Its clockwise rotation shifts the position upward while its counterclockwise rotation downward.

HORIZONTAL:

ATTEN/LINE SWEEP 1 Horizontal input signal is directly fed to the gain adjuster without passing through the attenuator.

1/10 An attenuator to lessen horizontal input signal to 1/10. The signal is subsequently fed to the gain adjuster.

LINE SWEEP

Input signal is phase-adjusted in the instrument by utilizing the sine wave of line voltage and then fed to the horizontal amplifier.

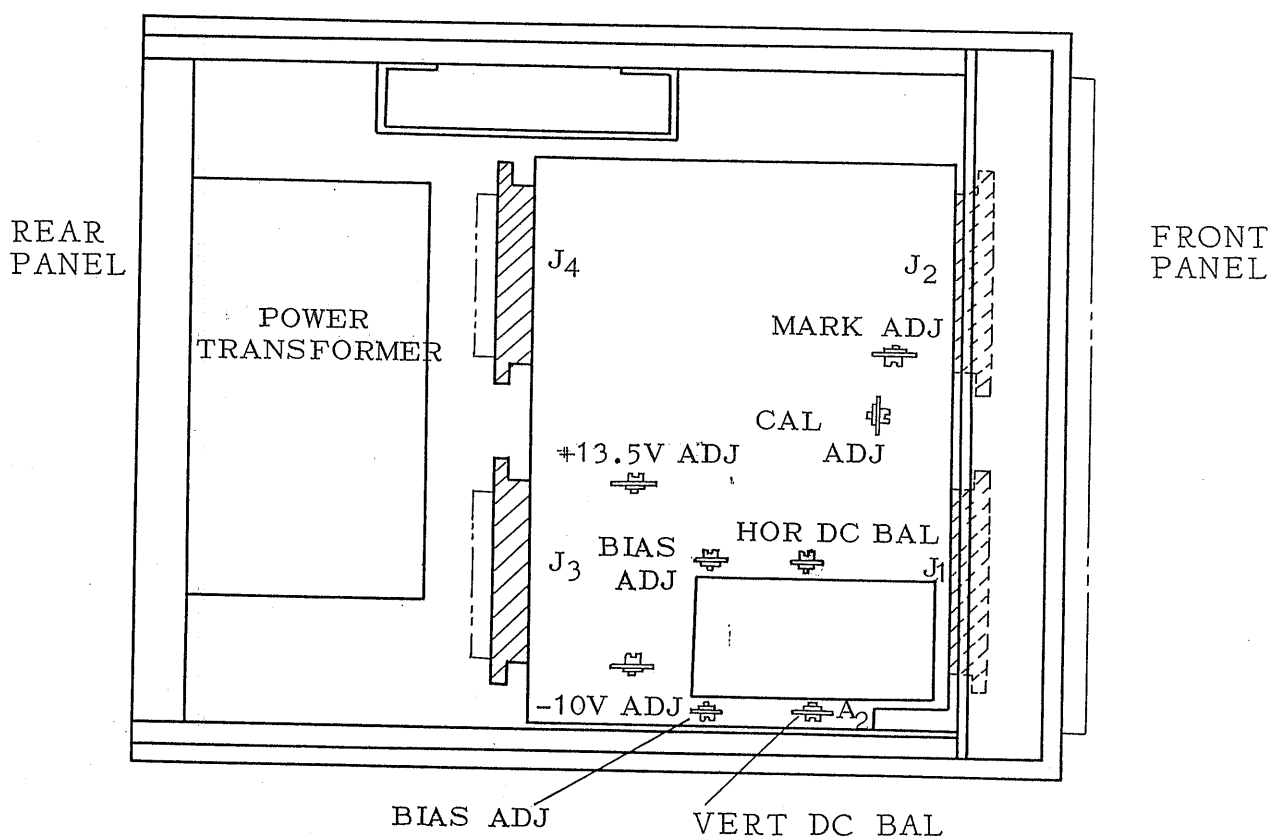
PHASE	A knob for phase adjustment in case of the above LINE SWEEP.
GAIN	A knob for adjusting amplitude of horizontal input signal or line sweep signal. Its clockwise rotation sets sensitivity to maximum while its counterclockwise rotation to minimum.
POSITION	A horizontal positioning knob. Its clockwise rotation shifts the position toward right while its counterclockwise rotation toward left.
MARKER	A knob for adjusting input amplitude of marker signal. Level of intensity-modulated marker signal can be properly adjusted by this knob regardless of positive or negative polarity of the signal.
FOCUS	A knob for adjusting focus to obtain sharp traces or spots.

EXPLANATION OF REAR PANEL

VERT POSI	INT	When this switch is set to INT, vertical position can be adjusted by the VERTICAL POSITION knob on the front panel.
	REMOTE	It is possible to adjust vertical position from outside by connecting an external 5-K Ω variable resistor with the REMOTE connector. See Circuit Diagram for how to connect the connector pins.
VERT		An input connector for the vertical amplifier.
HOR		An input connector for the horizontal amplifier.
MARKER		An input connector for marker signal.
AC EXT		When this instrument is connected with a power source by means of a power cord, power is directly supplied to this AC EXT receptacle so as to be available for other instruments. The maximum current usable in this case is 1 A.

MAINTENANCE

Fig. 1



(Refer to Fig.1)

VERT DC BAL and HOR DC BAL

Adjust these so that the respective spots may be displayed substantially in the center of the graticule with both VERTICAL and HORIZONTAL POSITION knobs being turned to their center positions.

-10 V ADJ and +13.5 V ADJ

Semi-fixed variable resistors for adjusting DC power supplies of -10 V and +13.5V. As for the order, adjust -10 V first and then +13.5 V.

CAL ADJ

A semi-fixed resistor for adjusting amplitude of square wave signal for voltage calibration. In this instrument, this adjuster has been set to 100 mV p-p. It is capable of adjusting the square wave voltage ranging from 0 to 200 mV p-p.

MARK ADJ

This adjuster is a semi-fixed resistor for making adjustment so that the marker signal of negative polarity may be intensity-modulated in the same degree as the positive marker signal of the same amplitude.

Removal of printed-circuit board

To remove the A2 printed-circuit board in maintenance, first pull out the connectors J3 and J4, then take off the board from the connectors J1 and J2, and pull out the pin on the back of the board.

OPERATION

1. Press the POWER switch to turn on line power.
2. Set the HORIZONTAL ATTEN/LINE SWEEP switch to the LINE SWEEP side, and turn the HORIZONTAL GAIN and INTENCITY knobs clockwise, then a horizontal trace will appear.
3. Adjust the INTENSITY and SCALE ILLUM knobs properly.
4. Set the VERT POSI switch on the rear panel to INT, and adjust the trace properly on the upper or lower portion by means of the VERTICAL POSITION knob on the front panel.
5. Connect input signal with the VERT input connector, and turn the VERTICAL GAIN knob to increase gain. Then the waveform will appear on the CRT screen.
6. Subsequently adjust the phase by turning the PHASE knob.
7. In case of using marker signal, connect the marker signal with the MARKER input connector on the rear panel. When the intensity-modulated marker signal appears on the CRT screen, adjust the MARKER semi-fixed resistor on the front panel to a suitable value by means of a screw-driver.
8. When using external sweep, connect the external sweep signal with the HOR input connector, and set the HORIZONTAL ATTEN/LINE SWEEP switch to 1 or 1/10, and then adjust the HORIZONTAL GAIN knob so that a proper sweep trace may be obtained. In this case, operation of the other knobs and switches is the same as described above.

CAUTIONS

1. Never put any other instrument on Model 5121 in order to keep it well ventilated against heat.
2. As the neck portion of the CRT is mechanically weak, be careful not to give it any strong shock or impulse.
3. When the display is spot, CRT phosphor is burned. To protect the CRT phosphor, this instrument is so formed that the intensity circuit does not operate when no input signal is fed to the horizontal amplifier, and as the result, no spot may appear on the CRT screen. When input signal is fed to the horizontal amplifier and a trace is displayed on the CRT screen, and also when no input signal is fed to the vertical amplifier or square wave signal for voltage calibration is impressed there on, if the input signal being fed to the horizontal amplifier is suddenly cut off, the horizontal amplitude becomes minimum (spot) and at the next moment the spots disappear. However, there exists a certain (extremely short) period of time until the disappearance. For this reason, if the INTENSITY knob is in its maximum position at that time, the CRT phosphor is burned. In such operation as described above, therefore, it is desirable to keep the INTENSITY knob in the minimum position.
4. When the horizontal trace on the CRT screen is not parallel with the graticule, adjust it by turning the deflection yoke after loosening the screw. In this case, press the deflection yoke forward so that it may be completely in contact with the CRT.

HOOD ASSEMBLY

The hood which is supplied as an accessory of the Model 5121 Oscilloscope is used to shield the CRT screen against light incident from above. Refer to the below illustration to assemble the hood.

