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SECTION III
OPERATION

P69.4

3-1. INTRODUCTION

3-2. Operation of the 5300B is simplified through the use of only one multiple-function control. By itself, the 5300B is not useable for measurements, therefore refer to the pertinent operating information for the associated plug-on in Section IX.

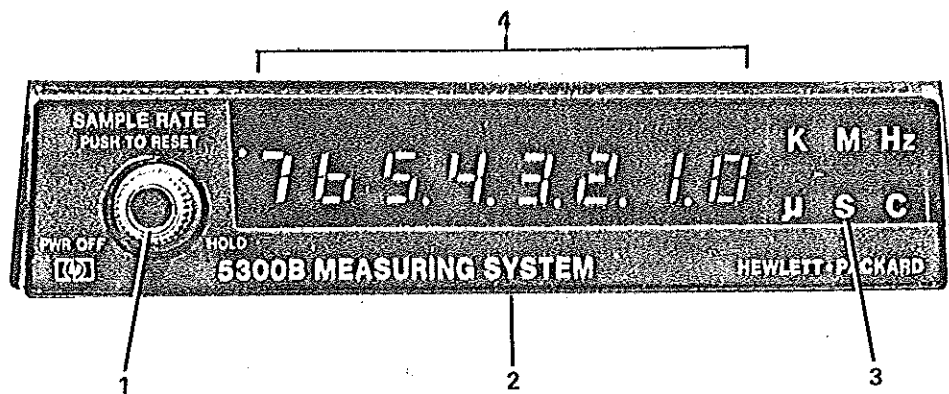
3-3. ACCURACY

3-4. The basic measuring accuracy is determined by

the plug-on module in use. Refer to Section IX for more information on specific plug-on accuracy.

3-5. FRONT PANEL

3-6. The 5300B front panel (Figure 3-1) contains the SAMPLE RATE control, which incorporates the power on-off (PWR OFF) function, the display-hold (HOLD) function, the LED display digit segments test, and the manual reset function. The eight-digit display and the display annunciators occupy the remainder of the front panel.



1. **SAMPLE RATE (PUSH TO RESET) (PWR OFF/HOLD) control.** Adjusts measurement sample rate from less than 50 msec to more than 5 seconds. PWR OFF position turns off battery or ac power; HOLD position retains a displayed value indefinitely. Push the SAMPLE RATE control knob to manually reset the instrument.

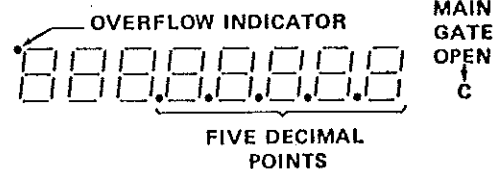
LED Display Digit Segments Test. All seven LED display digits segments can be tested by pressing the SAMPLE RATE - PUSH TO RESET control in until the switch clicks. All LED's will display the numeral 8 (eight), and five decimal points and the overflow indicator and "C" annunciator will be on.

NOTE

Pressing the SAMPLE RATE PUSH TO RESET control has two results.

1. The counting circuits are RESET to zero after the switch is released.

2. The LED display will show for a test:



2. **A1J1.** 50 pin connector provides interconnection with plug-on.
3. **Display/Annunciators.** Hz, kHz, MHz: lights when measurement occurs in Hz, kHz, or MHz range, respectively.

S, MS, μS: lights when measurements occur in seconds, milliseconds, microseconds, respectively.

C: lights when instrument Main Gate is open. "Counting" is occurring.

Overflow Light: Lights when the measurement exceeds the display capacity.

4. **Display.** 8-digit display of data.

Figure 3-1. Front Panel Controls and Indicators

3-7. REAR PANEL

3-8. The rear panel (Figure 3-2) contains the ac input power connector, the fuse, the external oscillator jack, and the oscillator frequency adjustment.

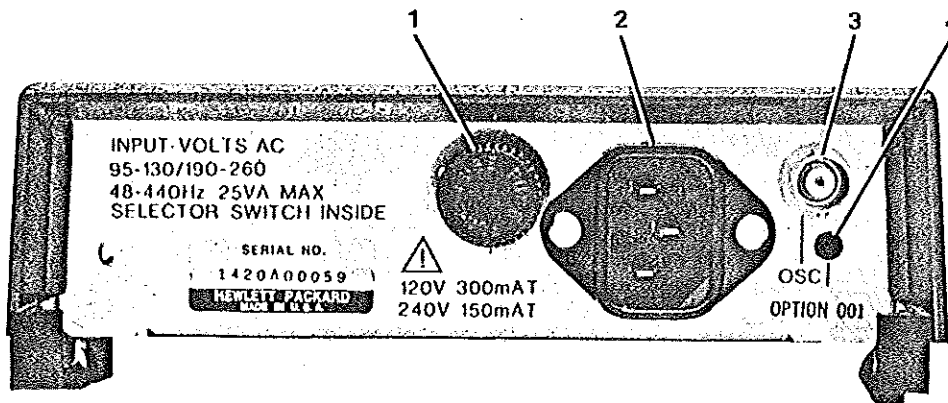
3-9. INT-EXT Switch. The INT-EXT switch located near the power transformer allows the use of an external 10 MHz frequency source instead of the internal oscillator.

3-10. 5300B OPERATING PROCEDURES

3-11. The operating procedures for the 5300 Measuring System and its plug-ons are located in the documentation supplied for the respective plug-on in Section IX. For example, the operating information for HP Model 5301A 10 MHz Counter is Section IXA. The operating information for the HP Model 5302A 50 MHz Universal Counter is Section IXB.

3-12. 5310A OPERATING PROCEDURES

3-13. Refer to paragraph 2-15 for 5310A Battery Pack installation and operating instructions.



1. **Fuse.** Use a Listed 0.3 Amp slow-blow fuse for 115 Vac or a Listed 0.15 Amp slow-blow fuse for 230 Vac.
2. **Ac Power Connector.** Connect the source of ac power to the rear-panel ac power connector.
3. **OSC Jack.** When INT-EXT switch located near the power transformer is in INT, the instrument uses its internal 10 MHz Oscillator, and a 10 MHz signal, 1V rms into 100 ohms,

is available at the BNC jack. When the switch is in EXT, the internal oscillator is disabled and an external 1 MHz to 10 MHz, 1V rms into 500 ohms frequency source can be used.

4. **OSC ADJ.** Adjust internal 10 MHz oscillator frequency. (With Option 001 Units, the adjustment is inside the instrument.) Refer to the adjustments in Section V for procedures.

Figure 3-2. Rear Panel Connectors

SECTION IX B
5302A UNIVERSAL COUNTER
SUBSECTION III
OPERATION

9B-3-1. OPERATING INFORMATION

9B-3-2. The 5302A Universal Counter Plug-on may be used to measure frequencies up to 50 MHz, Period and Period Average to 1 MHz, Time Interval from 500 nsec to 1000 seconds or Ratio measurements from 10 Hz to 10 MHz. The instrument may also be used to Totalize input signals.

9B-3-3. The instrument front panel contains several controls and connectors used to make measurements with Channel A or Channel B or are used to control both channels. Some of these controls are used in signal conditioning to enable the user to take advantage of the instrument's built-in precision.


9B-3-4. There are three basic signal conditioning controls used in both Channel A and/or Channel B. There are:

- a. Sensitivity controls for Channel A and B.
- b. Waveform controls for Channel A and B.
- c. TIME BASE control for Channel A and B.

9B-3-5. SENSITIVITY CONTROLS (Both Channels). A typical signal may contain large harmonics or noise, which can introduce inaccuracies in the reading. These sources of error may be minimized by correct use of the various signal conditioning controls.

9B-3-6. The input amplifiers and trigger circuits of both channels include a "dead band" or hysteresis. In order to trigger the counter, the input signal must pass completely through this "dead band". Any noise or unwanted signal, cannot cause a false trigger unless the amplitude of the noise is greater than the "dead band". The SENSITIVITY control adjusts the width of the dead band so that it is small enough to trigger on the signal but large enough to reject noise and harmonics (as shown in Figure 9B-3-1).

9B-3-7. To set the SENSITIVITY control for the best reading, set the control full ccw and increase the SENSITIVITY (cw) until stable triggering occurs. Increase the SENSITIVITY a fraction more to allow for amplitude variations in the signals. If the signal contains large amplitude modulation, the sensitivity must be adjusted to trigger on all cycles of the carrier frequency. In this case, it may be preferable to begin with the highest sensitivity setting (full cw) then decrease the sensitivity (ccw) to reject any noise until the display is stable. The sensitivity setting is more easily adjusted with a fast gate time such as .1-second. Gate time may be increased for finer resolution.

9B-3-8. WAVEFORM CONTROLS (Both Channels). This switch is normally used in the "  " position and for most signals including sine wave, square wave, sawtooth

wave, and pulses which have an approximate 50% duty-cycle. The hysteresis dead band in this position is centered on the average value of the signal. Since the amplifier is ac coupled, a dc offset in the signal does not effect triggering.

9B-3-9. The two pulse positions on the waveforms switch should be used only with positive or negative pulses where the pulse width is short compared to the spacing between pulses. In this case, the average value of the signal is close to the baseline of the pulse which is not the optimum point to trigger the counter. In the positive pulse position, the dead band is offset to respond only to the positive segment of the pulse above the average value. In the negative pulse position, the dead band is offset to respond to the negative part of the signal. In either case, the effect of the SENSITIVITY control is to move the center of the dead band, as well as its width, so that the trigger circuits still respond only to the positive part or the negative part of the signal as shown in Figure 9B-3-1.

9B-3-10. TIME BASE CONTROL. The TIME BASE control switch provides four gate time positions (black) and seven multiplier settings (N white) for Ratio mode. It also provides decade-step resolution settings from .1 μ sec to 1 ms (blue) for Period or Time Interval measurements. These various positions are selectable for Channel A and/or B through the FUNCTION switch. These are:

a. AUTO. This is the most useful setting for measuring an unknown frequency. It will automatically select a gate time of:

- 1-second for frequencies up to 900 kHz when using Channel B and up to 9 MHz when using Channel A.
- 0.1-second for frequencies between 900 kHz and 9 MHz when using Channel B and 9 MHz to 50 MHz when using Channel A.

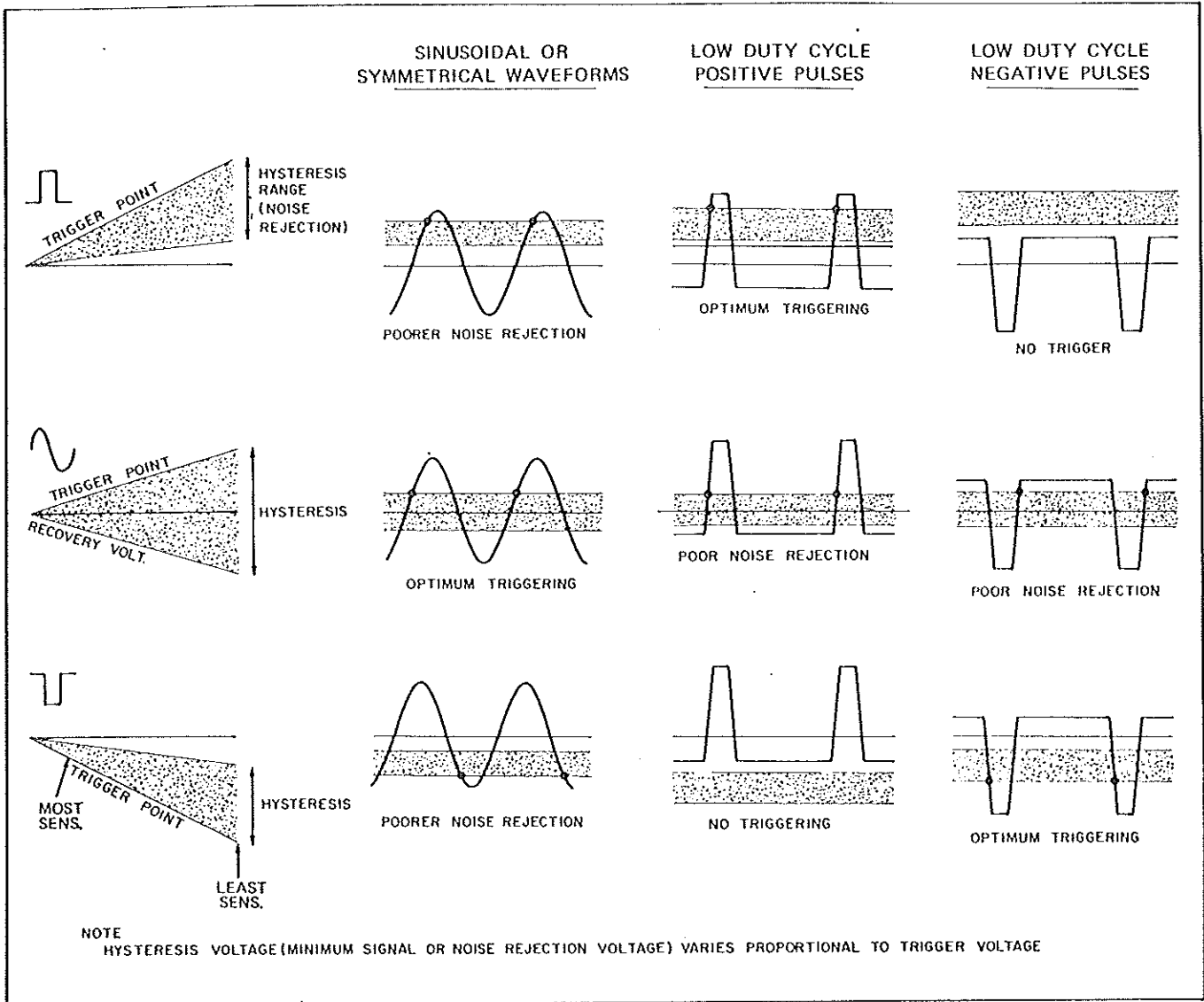
The display will never overflow in the AUTO position. The recycle time is held constant at 1-second plus the sample rate time for all frequencies.

b. 0.1 SEC. This position provides the fastest recycle time with a constant 10 Hz resolution when using Channel B and 100 Hz resolution when using Channel A. It is most useful for monitoring fast changes in the input frequency and for setting the signal conditioning controls.

c. 1 SEC. Provides constant 1 Hz resolution when using Channel B and 10 Hz resolution when using Channel A. Since the recycle time is the same as in AUTO this position offers an advantage only for measuring signals above 900 kHz with a 1 Hz resolution. Display will overflow above 1 MHz.

d. 10 SEC. Provides 0.1 Hz resolution in Channel B and 1 Hz resolution in Channel A. This setting is not available in AUTO and must be selected manually if the extra precision is required.

Figure 9B-3-1. Signal Conditioning by Waveform Switch and Sensitivity Control



e. N (white). Provides decade-step multiplier settings when FUNCTION switch is set to RATIO.

f. PERIOD/T.I. (blue). Decade step resolution settings may be selected when using Period B or T.I. A to B modes.

9B-3-11. MODES OF OPERATION

9B-3-12. The 5302A offers seven modes of operation and a Self-Check position. Some of the modes are available on both channels while other modes are available only on one channel (either A or B). In all cases, the modes are selected by the FUNCTION switch. The modes are:

- a. Frequency (Channel A or B).
- b. Period (Channel B only).
- c. Time Interval (Channel A to B).
- d. Period Average (Channel B only).

9B-3-2

e. Ratio, $\frac{B}{A} \times N$ (Channel A and B)

f. Totalize, OPEN/CLOSE B (Channel B only).

g. Check Mode.

9B-3-13. Frequency Mode, Channel A

9B-3-14. Frequency measurements using Channel A enables the user to make frequency measurements from 10 Hz to 50 MHz. When using Channel A the input signal is prescaled by 10.

9B-3-15. Frequency Mode, Channel B

9B-3-16. Frequency measurements using Channel B enables the user to make frequency measurements from 10 Hz to 10 MHz. Since no prescaling occurs, higher resolution measurements can be made using Channel B.

9B-3-17. Period Mode, Channel B

9B-3-18. The period mode allows single period measurements to be made with frequencies of 10 Hz to 1 MHz into Channel B. In Period B measurements the Time Base gate time is selectable from .5 μ sec to 1 msec. The accuracy is ± 1 count \pm time base accuracy \pm trigger error.

9B-3-19. Time Interval Mode, Channel A to B

9B-3-20. The time interval mode allows time measurements, between points on one or two waveforms, to be made. The range of measurements is .1 μ sec to 1000 seconds with .1 μ sec to 1 msec resolution in decade steps. Channel A input signal opens the main gate and Channel B closes it. An output is available at the rear of the unit during the time the main gate is open. Accuracy is ± 1 count \pm time base accuracy \pm trigger error. The trigger error for any waveshape is less than

$$\pm \frac{0.005}{\text{Signal Slope (V/}\mu\text{s)}\mu\text{s}}$$

9B-3-21. Period Average Mode, Channel B

9B-3-22. The period average mode allows multiple period averages to be made with frequencies of 10 Hz to 1 MHz into Channel B. Periods averaged is automatically selected from 1 to 10^3 for maximum resolution. For frequencies less than 110 Hz, one period is measured; for frequencies from 110 Hz to 1100 Hz, ten periods are averaged; for frequencies from 1100 Hz to 11 kHz, 100 periods are averaged; for frequencies above 11 kHz, 1000 periods are averaged.

9B-3-23. Ratio Mode, Channel B/A

9B-3-24. The ratio of the Channel B input signals (from 10 Hz to 10 MHz) to the Channel A input signals (from 10 Hz to 1 MHz) times multiplier N, can be measured. Multiplier is selectable from 10 to 10^7 . Accuracy is ± 1 count of Frequency B, \pm trigger error of Frequency A.

9B-3-25. Totalizing Mode, Channel B

9B-3-26. Input Signals up to 10 MHz, applied to Channel B can be totalized. Totalizing is initiated by pressing the OPEN/CLOSE B switch and terminated by pressing the OPEN/CLOSE B switch a second time.

9B-3-27. CHECK Mode

9B-3-28. The Check mode provides a position where the instrument 10 MHz oscillator and counting logic is verified. The 5300A displays 10.0000 MHz ± 1 count when circuits are functioning properly.

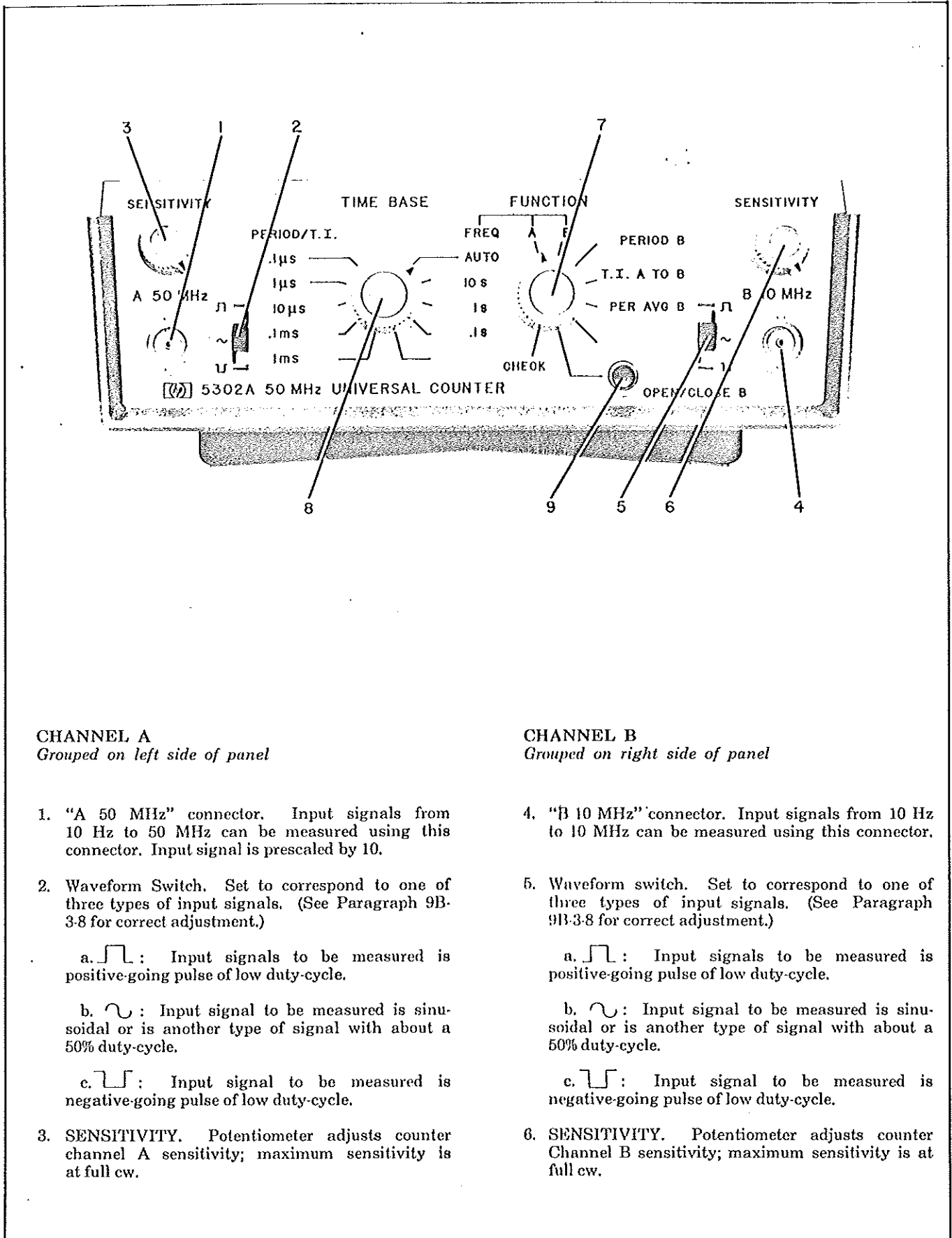
9B-3-29. CONTROLS AND CONNECTORS

9B-3-30. Figures 9B-3-2 and 9B-3-3 list the various front panel controls and connectors and the rear panel connector.

9B-3-31. OPERATING PROCEDURES

9B-3-32. The operating procedures for making measurements in the various modes are listed in Figures 9B-3-4 through 9B-3-10.

Figure 9B-3-2. Front Panel Controls and Connectors



CHANNEL A
Grouped on left side of panel

1. "A 50 MHz" connector. Input signals from 10 Hz to 50 MHz can be measured using this connector. Input signal is prescaled by 10.
2. Waveform Switch. Set to correspond to one of three types of input signals. (See Paragraph 9B-3-8 for correct adjustment.)
 - a. : Input signals to be measured is positive-going pulse of low duty-cycle.
 - b. : Input signal to be measured is sinusoidal or is another type of signal with about a 50% duty-cycle.
 - c. : Input signal to be measured is negative-going pulse of low duty-cycle.
3. SENSITIVITY. Potentiometer adjusts counter channel A sensitivity; maximum sensitivity is at full cw.

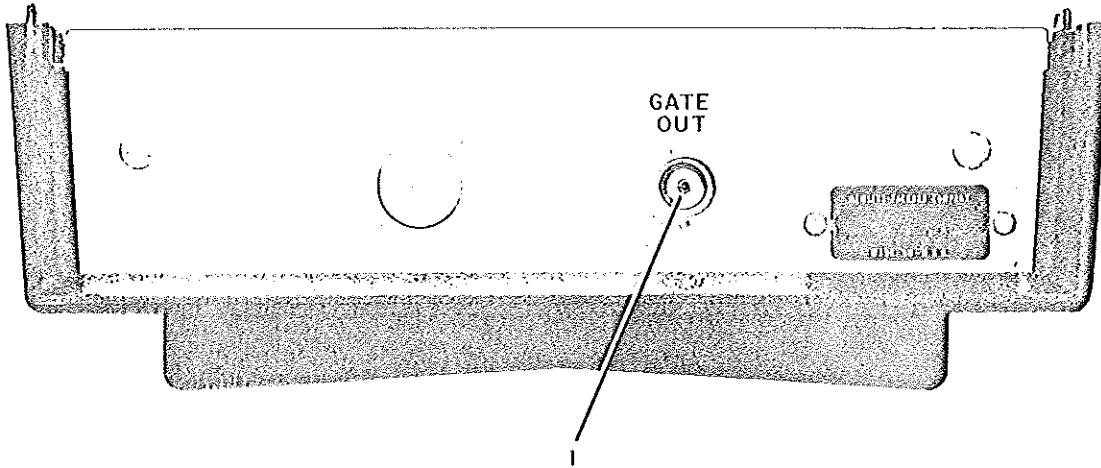
CHANNEL B
Grouped on right side of panel

4. "B 10 MHz" connector. Input signals from 10 Hz to 10 MHz can be measured using this connector.
5. Waveform switch. Set to correspond to one of three types of input signals. (See Paragraph 9B-3-8 for correct adjustment.)
 - a. : Input signals to be measured is positive-going pulse of low duty-cycle.
 - b. : Input signal to be measured is sinusoidal or is another type of signal with about a 50% duty-cycle.
 - c. : Input signal to be measured is negative-going pulse of low duty-cycle.
6. SENSITIVITY. Potentiometer adjusts counter Channel B sensitivity; maximum sensitivity is at full cw.

Figure 9B-3-2. Front Panel Controls and Connectors (Continued)

7. **FUNCTION.** Eight position switch used to select the desired mode of operation. The positions are:
- a. **FREQ A.** Enables frequency measurements of 10 Hz to 50 MHz to be made using Channel A connector and signal conditioning controls.
 - b. **FREQ B.** Enables frequency measurements of 10 Hz to 10 MHz to be made using Channel B connector and signal conditioning controls.
 - c. **PERIOD B.** Enables single period measurements to be made from Channel B with frequencies of 10 Hz to 1 MHz.
 - d. **T.I. A to B.** Enables time interval measurements to be made between signals into Channel A and signals into Channel B. Channel A starts measurements, Channel B stops it.
 - e. **PER AVG B.** Enables multiple period averages to be made from Channel B with frequencies of 10 Hz to 1 MHz. Periods averaged is a automatically selected from 1 to 10^3 .
 - f. **RATIO $\frac{B}{A}$ X N.** Enables the ratio of Channel B signals to Channel A signals to be taken. Channel A input is 10 Hz to 1 MHz and Channel B input is 10 Hz to 10 MHz. Multiplier (N) is selectable from 10 to 10^7 .
 - g. **OPEN/CLOSE B.** Enables input signals to Channel B (10 Hz to 10 MHz) to be totalized. Totalizing is initiated by pressing the OPEN/CLOSE B switch and terminated by pressing this switch a second time. Restarted by pressing the switch a third time.
 - h. **CHECK.** Self-Check position verifies that the 5300A 10 MHz crystal oscillator and the counting logic is functioning correctly.
8. **TIME BASE.** This 10-position switch performs three functions:
- a. Gate time controls for frequency measurements.
 - b. Period/Time Interval resolution control.
 - c. Ratio Multiplier control for ratio measurements.
- FREQ. (black) Gate time positions are:**
- a. **AUTO.** Automatically selects the measurement gate time needed to fill the display for maximum resolution for the signal being measured with a maximum time of 1 second.
 - b. **10S, 1S, .1S.** Counter gate time is 10 seconds, 1-second, or .1-second corresponding to the switch position.
- PERIOD/T.I. (blue) positions are:**
- .1 μ s, 1 μ s, 1 ms, 1 ms. In Period measurements and Time Interval measurements, the resolution of the measurement is adjustable from .1 μ sec to 1 msec in decade steps.
- "N" Multiplier (white) positions are:**
- 10, 10^2 , 10^3 , 10^4 , 10^5 , 10^6 , 10^7 . In Ratio mode the multiplier is selectable, in decade steps, from 10 to 10^7 .
9. **OPEN/CLOSE B Pushbutton switch,** effective in indicated position of FUNCTION switch. Totalizing of Channel B input signals started by pressing this switch and terminated by pressing it a second time. Restarted by pressing the switch a third time.

Figure 9B-3.3. Rear Panel Connector

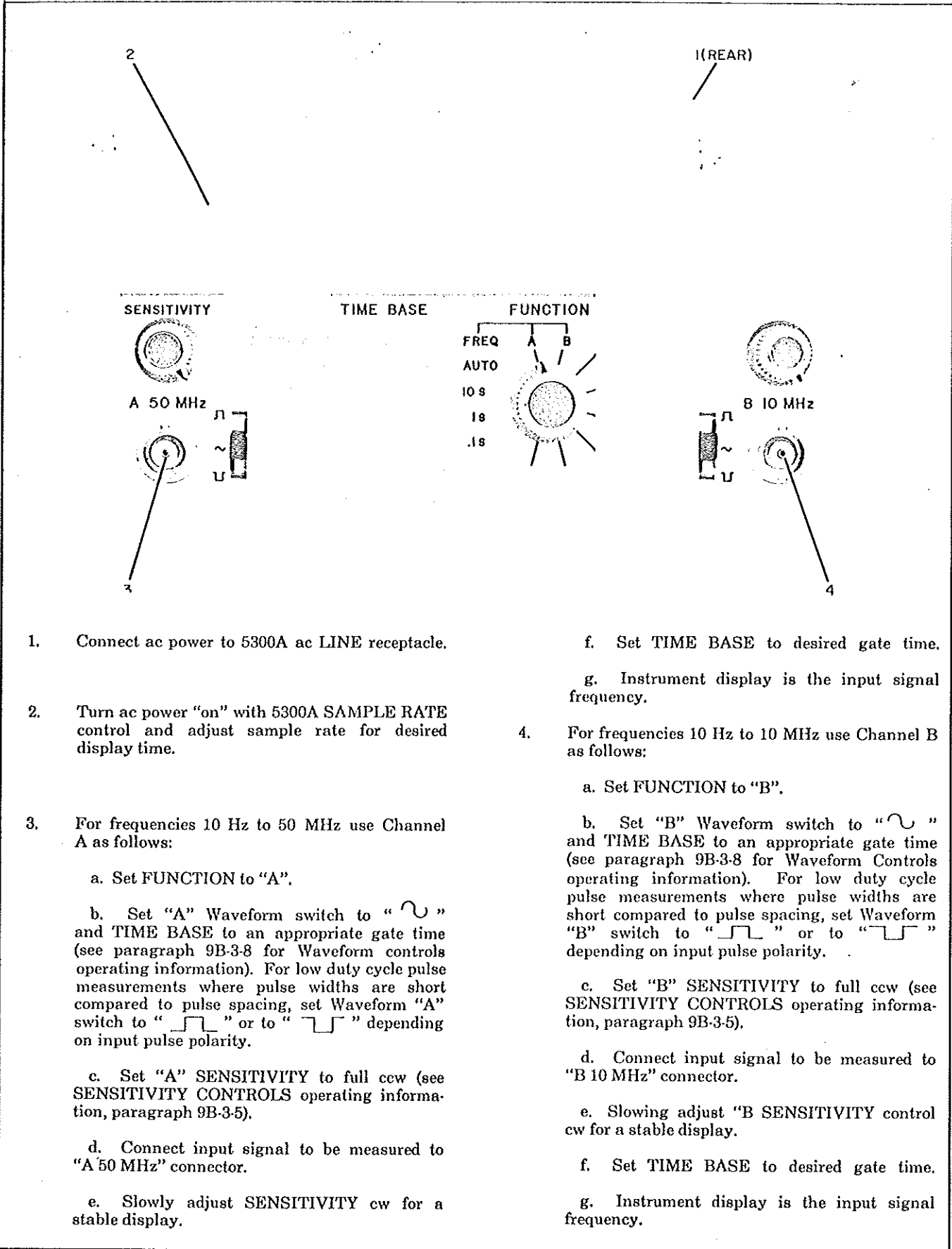


1. GATE OUT: A TTL-LOW level is available while the instrument gate is open.

Caution

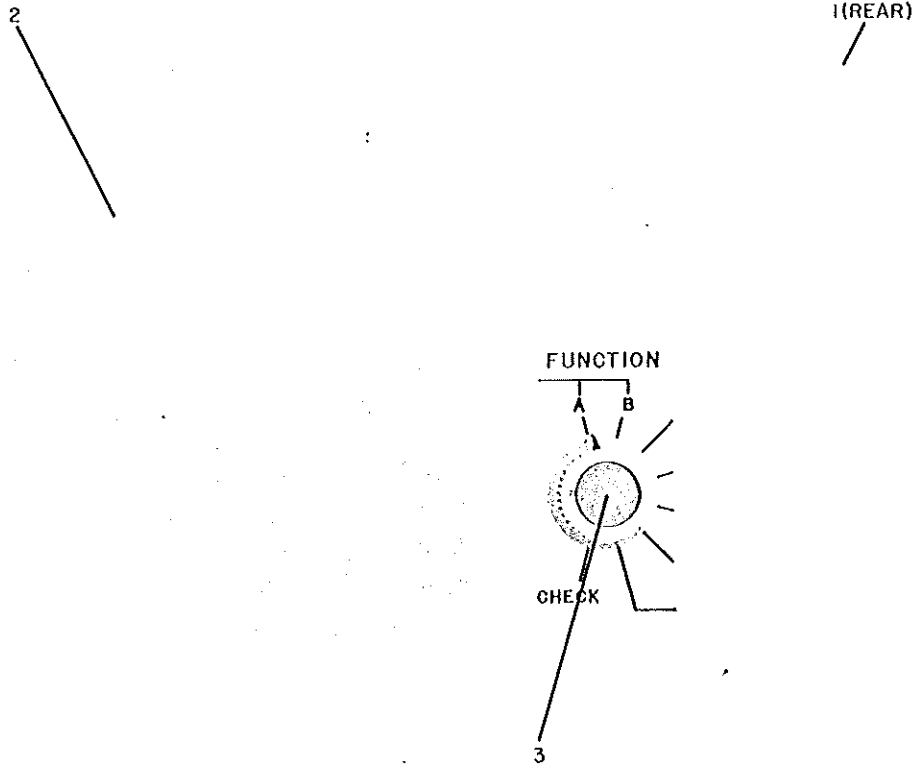
DO NOT CONNECT EXTERNAL VOLTAGES TO GATE-OUT CONNECTOR.

Figure 9B-3-5. Making Frequency Measurements Using Channel A or B



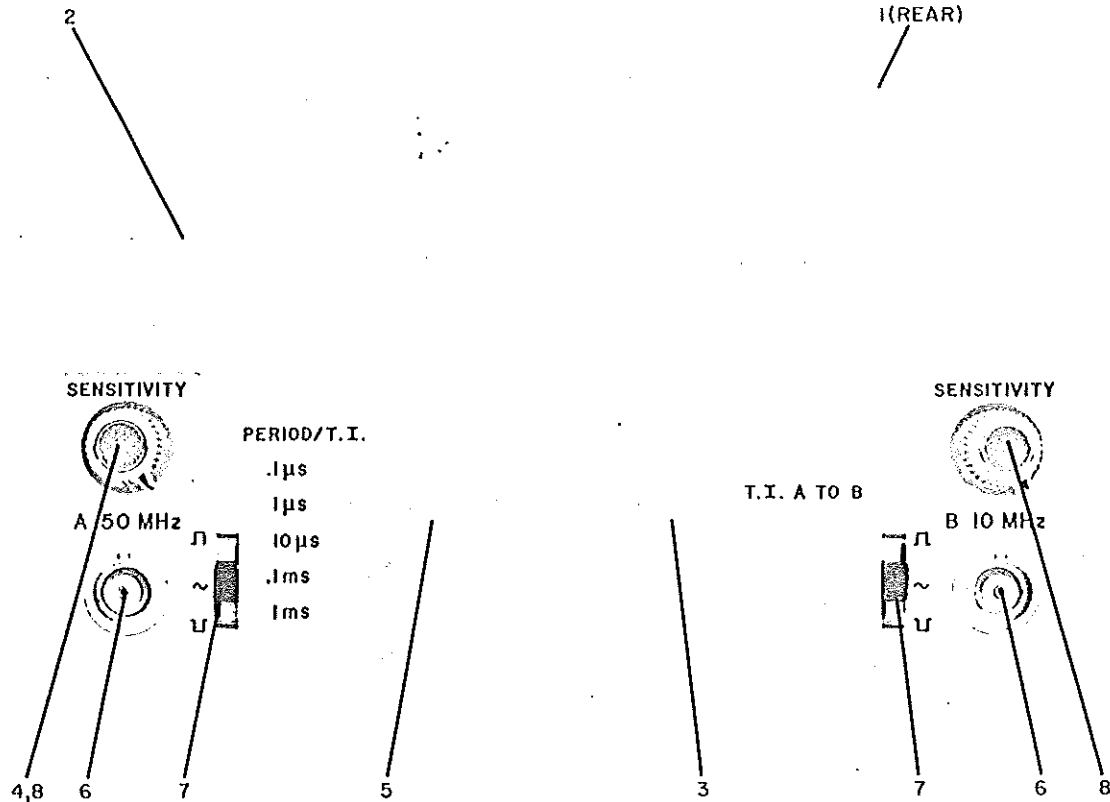
1. Connect ac power to 5300A ac LINE receptacle.
2. Turn ac power "on" with 5300A SAMPLE RATE control and adjust sample rate for desired display time.
3. For frequencies 10 Hz to 50 MHz use Channel A as follows:
 - a. Set FUNCTION to "A".
 - b. Set "A" Waveform switch to " " and TIME BASE to an appropriate gate time (see paragraph 9B-3-8 for Waveform controls operating information). For low duty cycle pulse measurements where pulse widths are short compared to pulse spacing, set Waveform "A" switch to " " or to " " depending on input pulse polarity.
 - c. Set "A" SENSITIVITY to full ccw (see SENSITIVITY CONTROLS operating information, paragraph 9B-3-5).
 - d. Connect input signal to be measured to "A 50 MHz" connector.
 - e. Slowly adjust SENSITIVITY cw for a stable display.
 - f. Set TIME BASE to desired gate time.
 - g. Instrument display is the input signal frequency.
4. For frequencies 10 Hz to 10 MHz use Channel B as follows:
 - a. Set FUNCTION to "B".
 - b. Set "B" Waveform switch to " " and TIME BASE to an appropriate gate time (see paragraph 9B-3-8 for Waveform Controls operating information). For low duty cycle pulse measurements where pulse widths are short compared to pulse spacing, set Waveform "B" switch to " " or to " " depending on input pulse polarity.
 - c. Set "B" SENSITIVITY to full ccw (see SENSITIVITY CONTROLS operating information, paragraph 9B-3-5).
 - d. Connect input signal to be measured to "B 10 MHz" connector.
 - e. Slowly adjust "B SENSITIVITY control cw for a stable display.
 - f. Set TIME BASE to desired gate time.
 - g. Instrument display is the input signal frequency.

Figure 9B-3-4. Making Self-Check Measurements



1. Connect ac power to 5300A ac receptacle.
2. Turn ac power "on" with 5300A SAMPLE RATE control. Adjust SAMPLE RATE for desired display time.
3. Set 5302A FUNCTION SWITCH TO CHECK; TIME BASE switch may be set to any position. Display should be $10.0000 \text{ MHz} \pm 1 \text{ count}$.

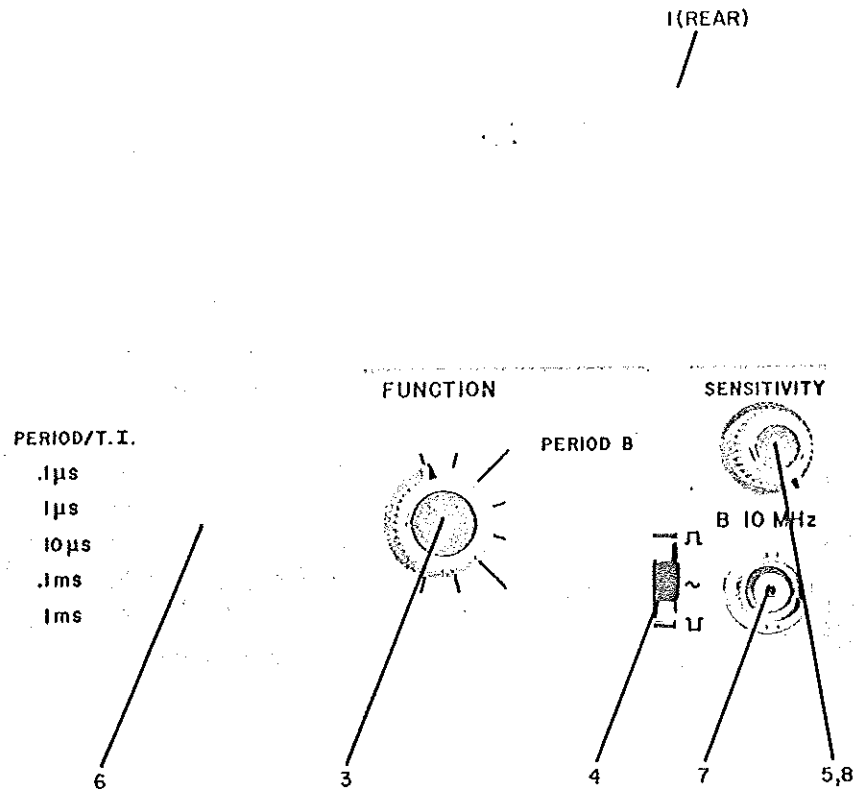
Figure 9B-3-7. Making Time Interval Measurements



1. Connect ac power to 5300A ac LINE receptacle.
2. Turn ac power "on" with 5300A SAMPLE RATE control and adjust sample rate for desired display time.
3. Set 5302A FUNCTION switch to T.I. A to B.
4. Adjust "A" SENSITIVITY control to full ccw and "B" SENSITIVITY controls to full cw (see paragraph 9B-3-5 for SENSITIVITY CONTROLS operating information).
5. Set TIME BASE to desired T.I. resolution to be counted (.1 μs to 1 ms).
6. If the Start and Stop signals are from separate sources connect the Start signal to "A 50 MHz"

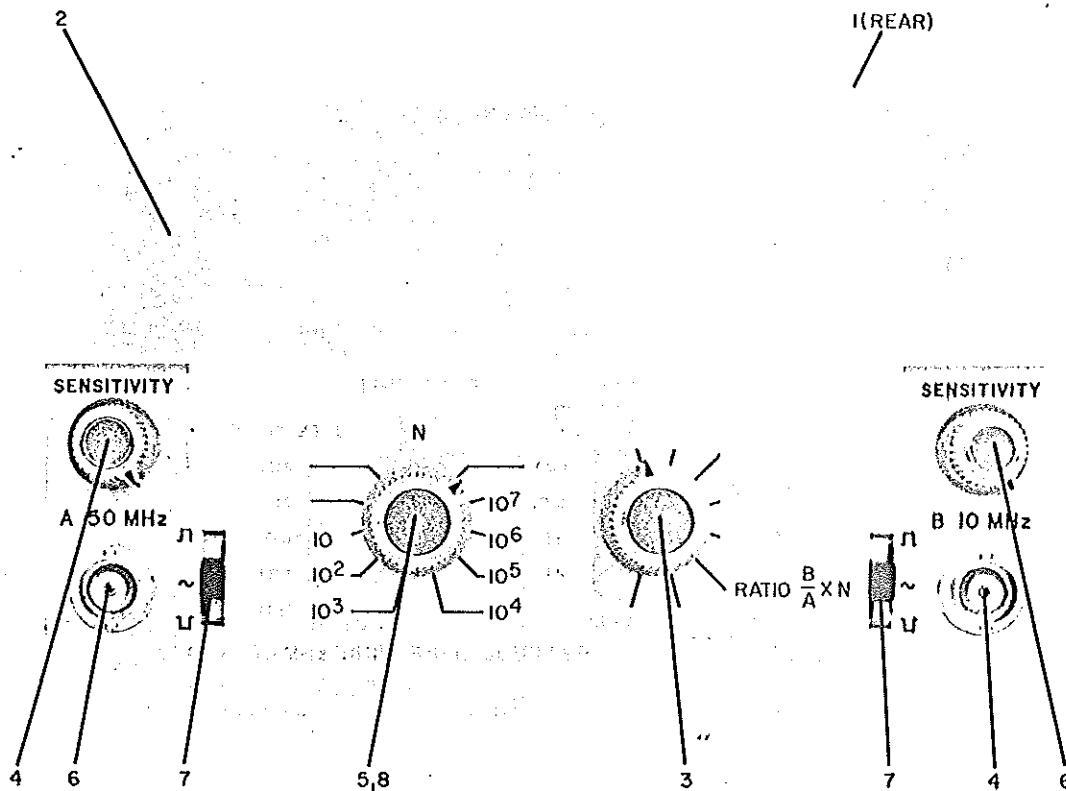
7. Set the "A" Waveform switch to correspond to the type of signal connected to A 50 MHz connector. Set the "B" Waveform switch to correspond to the type of signal connected to B 10 MHz connector.
8. Slowly adjust the "A" SENSITIVITY cw until a display is observed, then adjust "B" SENSITIVITY slowly ccw until the display is stable.
9. The Time interval is displayed in μsec, msec, or seconds depending on T.I. setting selected.

Figure 9B-3-6. Making Period Measurements



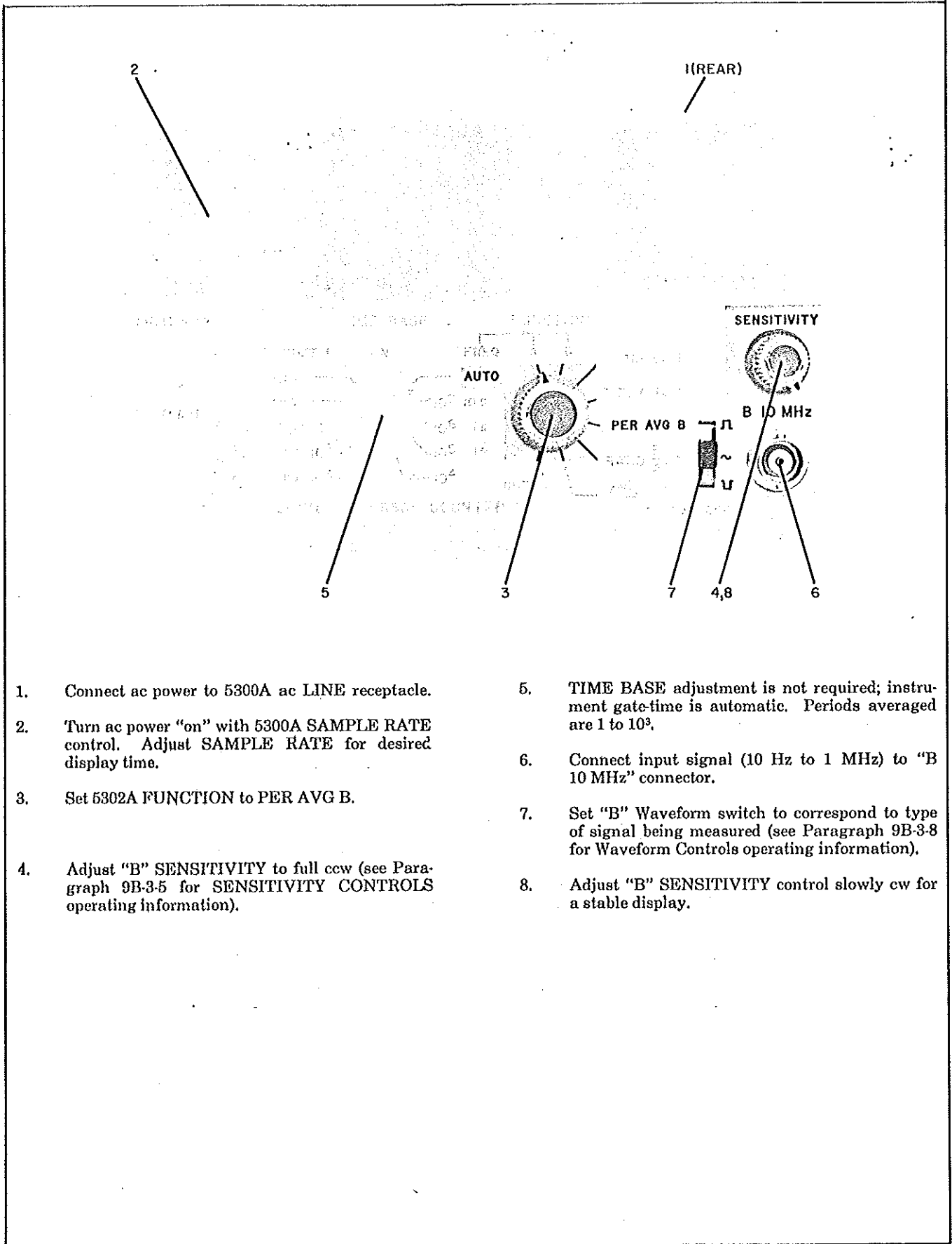
1. Connect ac power to 5300A ac LINE receptacle.
2. Turn ac power "on" with 5300A SAMPLE RATE control. Adjust SAMPLE RATE for desired display time.
3. Set 5302A FUNCTION switch to PERIOD B.
4. Set "B" Waveform switch to correspond to type of signal being measured (see Paragraph 9B-3-8 for Waveform Controls operating information).
5. Adjust "B" SENSITIVITY to full ccw (see Paragraph 9B-3-5 for SENSITIVITY CONTROLS operating information).
6. Set TIME BASE to desired PERIOD resolution (.1 μ s to 1 ms).
7. Connect input signal (10 Hz to 1 MHz) to "B 10 MHz" connector.
8. Adjust "B" SENSITIVITY control slowly cw for a stable display.

Figure 9B-3-9. Making Ratio Measurements



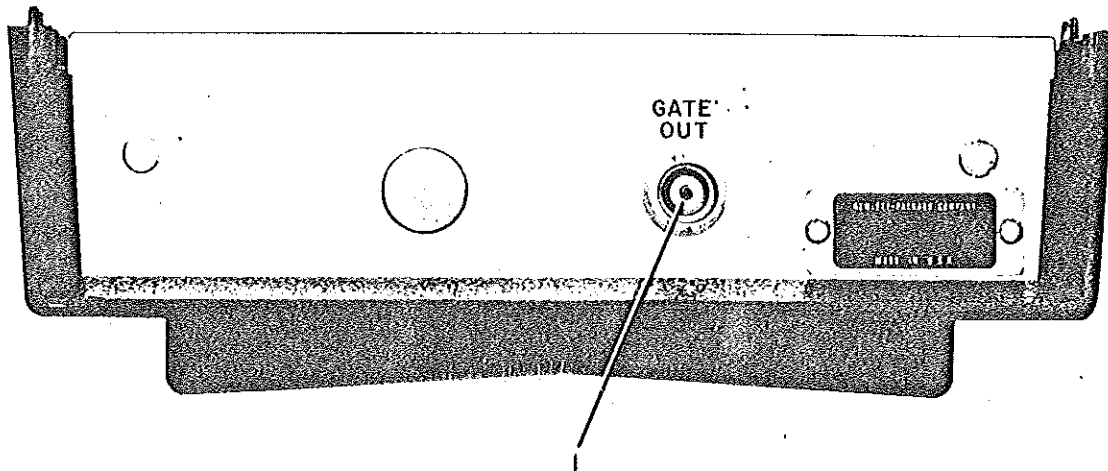
1. Connect ac power to 5300A LINE receptacle.
2. Turn ac power "on" with 5300A SAMPLE RATE control and adjust sample rate for desired display time.
3. Set 5302A FUNCTION switch to RATIO $\frac{B}{A} \times N$.
4. Set "A" and "B" SENSITIVITY controls full cw (see Paragraph 9B-3-5 for SENSITIVITY CONTROLS operating information).
5. Set TIME BASE N (white) to desired setting (10 white to 10⁷ white).
6. Connect lower frequency signal to "A 50 MHz" connector (10 Hz to 1 MHz); connect higher frequency signal to "B 10 MHz" connector (10 Hz to 10 MHz).
7. Set "A" and "B" Waveform switches to correspond to type of signals connected to "A" and "B" input connectors.
8. Divide display by N multiplier setting (white numbers) to obtain ratio.

Figure 9B-3-8. Making Period Average Measurements



1. Connect ac power to 5300A ac LINE receptacle.
2. Turn ac power "on" with 5300A SAMPLE RATE control. Adjust SAMPLE RATE for desired display time.
3. Set 5302A FUNCTION to PER AVG B.
4. Adjust "B" SENSITIVITY to full ccw (see Paragraph 9B-3-5 for SENSITIVITY CONTROLS operating information).
5. TIME BASE adjustment is not required; instrument gate-time is automatic. Periods averaged are 1 to 10³.
6. Connect input signal (10 Hz to 1 MHz) to "B 10 MHz" connector.
7. Set "B" Waveform switch to correspond to type of signal being measured (see Paragraph 9B-3-8 for Waveform Controls operating information).
8. Adjust "B" SENSITIVITY control slowly cw for a stable display.

Figure 9B-3-11. Using GATE OUT Connector



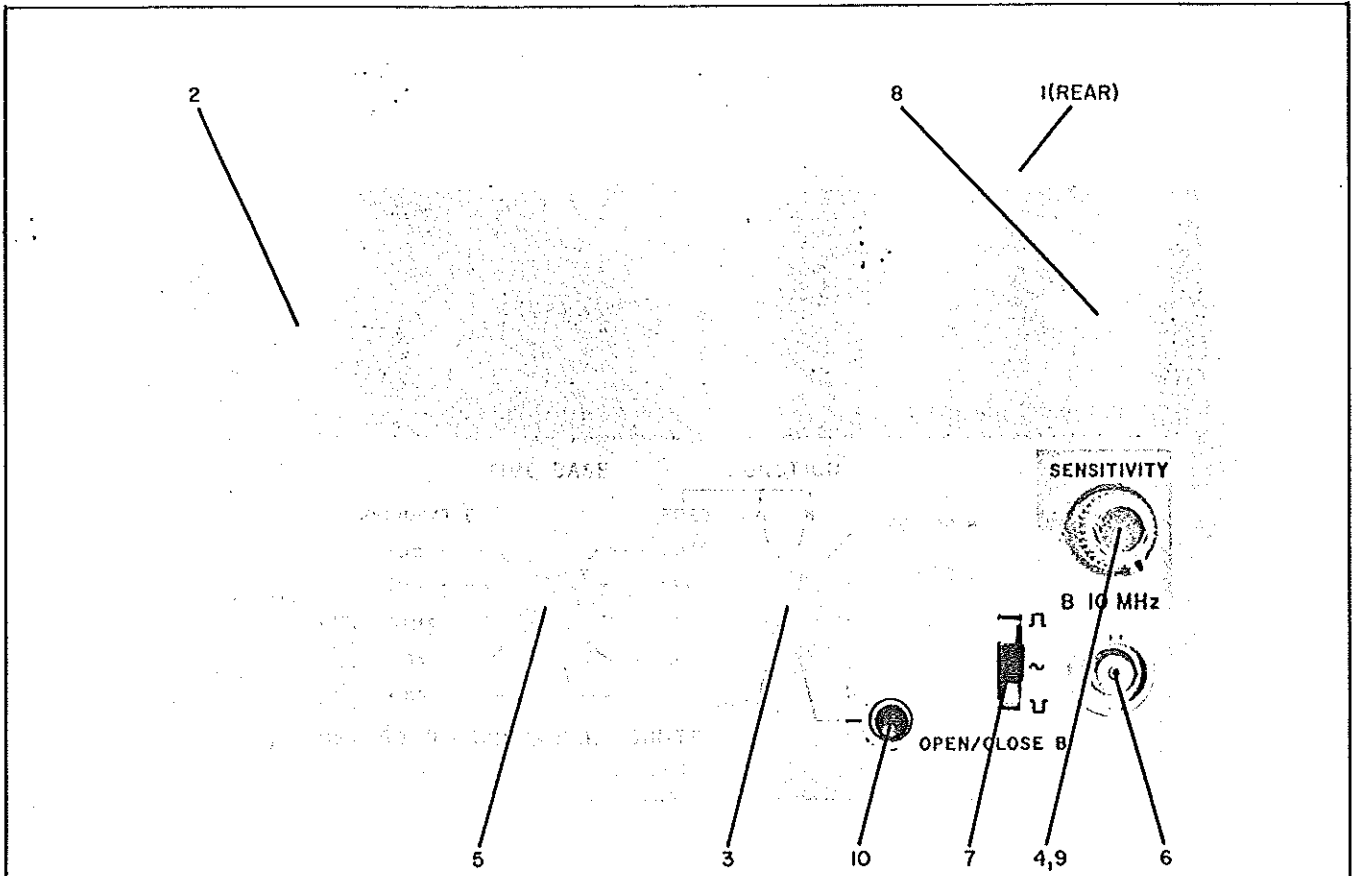
The 5302A rear-panel GATE OUT connector provides a TTL low level signal during the time the instrument gate is open. This signal can be used, when making Period, Time Interval and Period Average measurements, to control an oscilloscope so that only the measured portion of the signal is displayed by the oscilloscope.

1. To use this feature in Period (Figure 9B-3-6) or Period Average (Figure 9B-3-8) modes proceed as follows:
 - a. Connect the signal to be measured to oscilloscope Channel A or B. Connect the 5302A GATE OUT connector, using a BNC Tee, to the oscilloscope rear-panel Z AXIS input and the oscilloscope front-panel EXT INPUT.
 - b. Set HP 180A oscilloscope controls as follows:
 - TRIGGER to EXT.
 - SLOPE to +.
 - Display to A + B.
 - Coupling to ACF.
 - SWEEP MODE to NORM.
 - TIME/CM for one complete cycle of signal.
 - c. Set remaining oscilloscope controls for a useable display.
 - d. To more easily view the measured portion of the input signal, reduce the oscilloscope INTENSITY.

e. In PER AVG Mode, the periods averaged are automatically selected. The change-over point may be monitored by varying the input frequency and observing the number of cycles displayed on the oscilloscope.

2. To use this feature in Time Interval Mode (Figure 9B-3-7) proceed as follows:
 - a. Connect equipment as shown in Table 9B-5-1, No. 6, Figure C, Time Interval Measurements.
 - b. In addition to connections made in step a, connect 5302A GATE OUT connector, using a BNC Tee, to oscilloscope rear-panel Z AXIS input and to oscilloscope front-panel EXT INPUT.
 - c. Set HP 180A oscilloscope controls as follows:
 - TRIGGER to EXT.
 - SLOPE to -.
 - Coupling to ACF.
 - SWEEP MODE to NORM.
 - TIME/CM for one complete Time Interval of signal.
 - d. Set remaining oscilloscope controls for a useable display.
 - e. To more easily view the measured time interval portion of the input signals, reduce the oscilloscope INTENSITY.

Figure 9B-3-10. Making Totalizing Measurements



1. Connect ac power to 5300A ac LINE receptacle.
2. Turn ac power "on" with 5300A SAMPLE RATE control. Adjust SAMPLE RATE for desired display time.
3. Set 5302A FUNCTION to OPEN/CLOSE B.
4. Adjust "B" SENSITIVITY to full ccw (see paragraph 9B-3-5 for SENSITIVITY CONTROLS operating information).
5. TIME BASE adjustment is not required; instrument gate is controlled by operator when OPEN/CLOSE B pushbutton is pressed.
6. Connect input signal (10 MHz maximum) to "B 10 MHz" connector.
7. Set "B" Waveform switch to correspond to type of signal being totalized (see paragraph 9B-3-8 for Waveform Controls operating information).
8. Press RESET; press OPEN/CLOSE B switch; C lamp should come on.
9. Slowly adjust "B" SENSITIVITY cw until counting occurs on display. Display will accumulate at a rate dependent on input signal frequency.
10. When display has accumulated the desired number of counts, press OPEN/CLOSE B to stop totalizing.
11. If the operator wants to totalize from the number accumulated in the display, press the OPEN/CLOSE B switch. If a new totalizing measurement is made, press RESET before pressing OPEN/CLOSE B switch.