

Figure 4.

SPECIFICATIONS

Frequency response	..... DC to 50 MHz	
Min. detectable pulse width	... 10 nS	
Logic threshold	..... TTL	CMOS
Logic 1	..... 3.0 V ± 0.25 V	60% $V_{CC} \pm 5\%$ (red LED lights)
Logic 0	..... 0.75 V ± 0.25 V	15% $V_{CC} \pm 5\%$ (40% $V_{CC} \pm 5\%$ for 7-18 V_{CC}) (green LED lights)
Operating supply voltage range	..... 4 to 18 V	
Input impedance	..... 120 k Ω	
Input overvoltage protection	... ± 70 VAC/DC (15 sec.)	
Power supply protection ± 20 V	
Operating temperature	..... 0-50°C, <80% R.H.	
Storage temperature	..... -20° to +65°C, <75% R.H.	
Size (H x W x D)	..... 0.7" x 0.7" x 8.2" (18 x 18 x 210 mm)	
Weight	..... 1.2 oz (35 g)	

LIMITED ONE-YEAR WARRANTY

MAXTEC INTERNATIONAL CORPORATION warrants to the original purchaser that its B+K Precision product, and the component parts thereof, will be free from defects in workmanship and materials for a period of one year from the date of purchase.

MAXTEC will, without charge, repair or replace, at its option, defective product or component parts upon delivery to an authorized B+K Precision service contractor or the factory service department, accompanied by proof of the purchase date in the form of a sales receipt.

Exclusions: This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs.

MAXTEC shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific rights and you may also have other rights which vary from state to state.

For your convenience we suggest you contact your B+K Precision distributor, who may be authorized to make repairs or can refer you to the nearest service contractor. If warranty service cannot be obtained locally, send the unit to B+K Precision Service Department, 22820 Savi Ranch Parkway Yorba Linda, CA 92887, properly packaged to avoid damage in shipment.

B+K Precision Test Instruments warrants products sold in the U.S.A. and its overseas territories. In other countries, each distributor warrants the B+K Precision products which it sells.

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BK PRECISION® DP-52

INSTRUCTION SHEET

LOGIC PROBE

DESCRIPTION

The B+K Precision Model DP-52 Logic Probe is a compact, simple to use troubleshooting tool, which responds to pulses as narrow as 10 nS and pulse trains to 50 MHz. It is compatible with TTL and CMOS logic families. Two bright LED indicators visually display high (1) and low (0) logic states. Both indicators light when the digital signal is toggling between both states. The absence of illumination indicates a logic state that is between a high and low (an invalid state). The DP-52 is an indispensable digital troubleshooting tool, and may be used in conjunction with the B+K Precision DP-31A Logic Pulser if desired.

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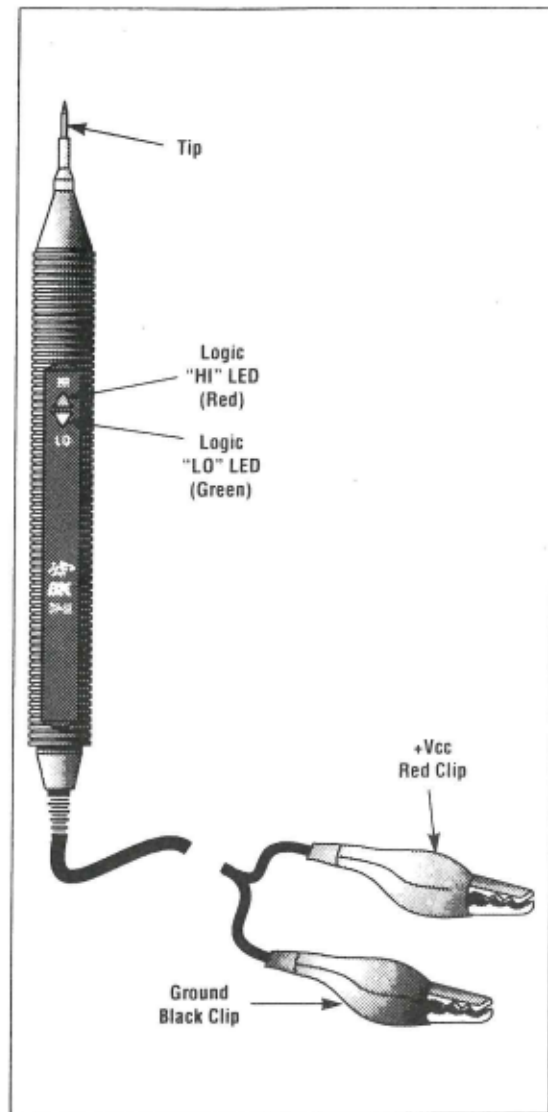


Figure 1.

OPERATION

Applying Power To the Probe

1. Connect the black clip to the power supply ground.
2. Connect the red clip to V_{cc} (+5 volts for TTL, +4 to +18 volts for CMOS).

Logic Threshold

For supply voltages of +4 to +7 volts, the probe's logic thresholds are set at $60\% \pm 5\%$ of V_{cc} for a high and $15\% \pm 5\%$ of V_{cc} for a low. For TTL applications, this equates to +3.0 V ± 0.25 V (high) and +0.75 V ± 0.25 V (low). Above +7 volts, the low threshold is $40\% \pm 5\%$ of V_{cc} .

Use of the Probe

The HI indicator will remain lit whenever a logic "high" (or "1") is present at the probe tip. Similarly, the LO indicator will remain lit whenever a logic "low" (or "0") is present. When a low-frequency pulse train (below 50 Hz) is present, the HI and LO indications will alternate. For higher frequency pulse trains, the alternations are so fast that the two indicators are seen as being lit together.

Figure 2 shows typical combinations of probe indications.

CONDITION	WAVEFORM	LED INDICATIONS LEVEL	
		(Red)	(Green)
Logic "1" no pulse activity	1 0	●	○
Logic "0" no pulse activity	1 0	○	●
Signal level between "1" & "0"	1 0	○	○
Pulse train with freq. <50 Hz	1 0	☆	☆
Pulse train with freq. >50 Hz	1 0	●	●

● LED On ○ LED Off ☆ LED blinks --- ref. level — signal

Figure 2.

APPLICATIONS

Use of a Logic Probe

When the unit under test has its typical digital inputs applied, a logic probe may be used to probe logic activity in a circuit under test, in a manner similar to analog "signal tracing". Follow the sequence from earlier circuits to later, looking for "dead" outputs along the way. However, bear in mind the note mentioned in the next section; lack of a pulse indication does not necessarily imply a bad device. Check the input activity; schematic diagrams and a knowledge of the circuits under test are invaluable.

Use With a Logic Pulser

When the unit under test is separated from its typical digital inputs (such as a circuit board removed from its system), or to check circuits which may not have a digital input while testing, a logic probe such as the DP-52 can be used with a logic pulser such as the B+K Precision Model DP-31A. A typical use of this pair of instruments is described below.

1. Connect the DP-52 and the logic pulser to the supply of the circuit to be tested.
2. Hold the tip of the DP-52 on the output of a suspected bad gate, as in Figure 3, or the output of a flip-flop or counter, as in Figure 4.
3. With the logic pulser in the 400 PPS mode, touch the tip to a logic input of the suspected gate or the clock input of the flip-flop or counter.
4. The output(s) of a good device will generally show a pulse indication (both HI and LO indicators lit) on the DP-52. However:

NOTE

Devices in-circuit are usually affected by other circuits. For example, in Figure 3, if input A of the NAND gate is brought low by some other circuit, the output cannot toggle. Similarly, in Figure 4, inputs J and K must be high for the flip-flop to toggle, and an active Reset input on the counter will prevent it from counting. Other circuits may also be affecting the inputs dynamically while you are testing the device. The inputs should be checked with the logic probe to see if such conditions exist.

5. The 0.5 PPS mode of the logic pulser may be used to investigate logic activity at a slower rate; for example, each successive stage of a counter should toggle at half the rate of the previous stage. Again, these conditions may vary due to the dynamic influence of other circuits.

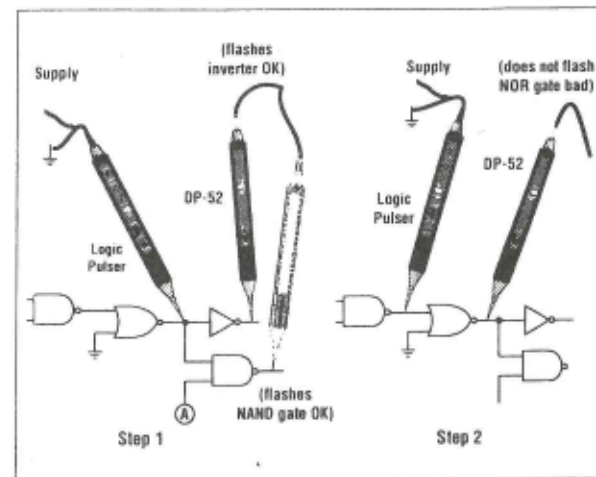


Figure 3.