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HEWLETT hp PACKARD

EIGHT-BIT DATA PROBE

Model 10248C

OPERATING NOTE/SEPTEMBER 1979

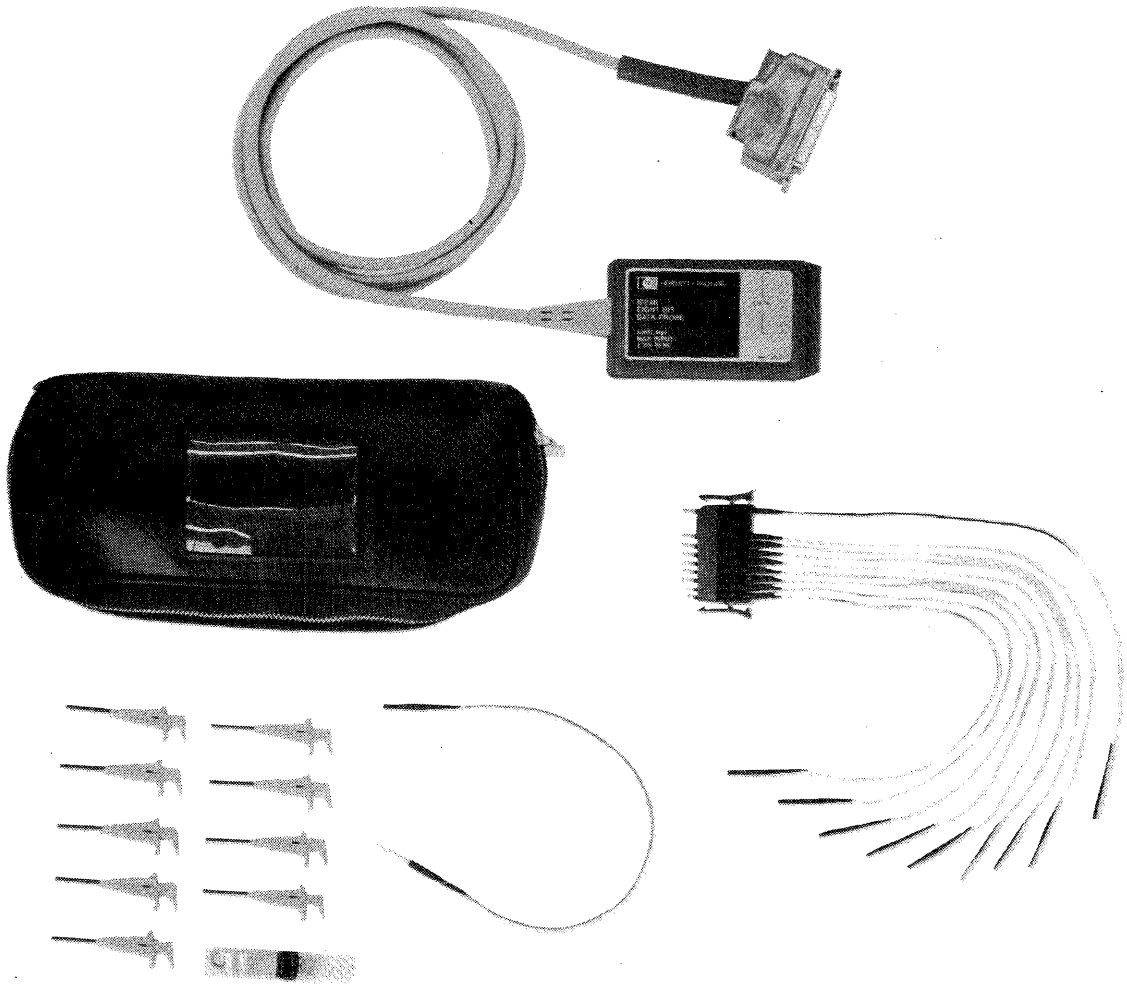


Figure 1. Model 10248C Eight-Bit Data Probe

1. DESCRIPTION.

2. The HP Model 10248C Eight-Bit Data Probe (figure 1) is an active probe that provides eight channels of digital data to an HP Logic Analyzer. Minimal loading of the circuitry under test is accomplished by placing active circuitry in a compact pod located near the point of test. The logic analyzer supplies +5 V and —5.2 V to the probe for operating power. A variable threshold voltage from the logic analyzer sets the threshold for logic recognition. Logic levels from the circuit under test are translated to ECL levels and provided to the logic analyzer. All connections to the logic analyzer are made through a 25-pin connector. Complete specifications and instrument compatibility for the 10248C are listed in table 1.

Table 1. Specifications

PROBE INPUTS
INPUT RC: approx 100 kΩ shunted by ⩽5 pF.
INPUT THRESHOLD: variable to ±10 Vdc.
MINIMUM INPUT SWING: 0.6 V p-p.
MAXIMUM INPUT: ±40 Vdc.
DYNAMIC RANGE: ±15 Vdc.

INSTRUMENT COMPATIBILITY
HP Model Logic Analyzers:
1610A/B (DATA).
1610B (CLOCK).
1615A.

Operating Note Part No. 10248-90905
Microfiche Part No. 10248-90805

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For more information, Call Your Local HP Sales Office or, in U.S., East (201) 265-5000. Midwest (312) 677-0400. South (404) 436-6181 West (213) 877-1282. Or, write: Hewlett-Packard, 1501 Page Mill Road, Palo Alto, California 94304. In Europe, Post Office Box 85, CH-1217 Meyrin 2, Geneva, Switzerland. In Japan, YHP, 1-59-1, Yoyogi, Shibuya-ku, Tokyo, 151.

3. MODEL 10248C PROBE CABLES.

4. The 10248C is used both as a data probe and a clock probe. Both probes are identical except for the arrangement of cables between clip connector MP7 and the hook-type probe assemblies (CP1 through CP9). The arrangement of cables on the probe begins with W1 (on the first channel) and continues consecutively through W9 (the ground cable when 10248C is used as a data probe. When used as a clock probe, the arrangement of cables is as follows: W10 (the first channel), W1, W2, W3, W4, W5, W6, W7, and W9 (the ground cable).

5. INPUT SIGNAL GROUNDING.

6. The 10248C is equipped with two input connections for signal source ground: one connected through an inductor to ground (terminal E9), and the other connected directly to ground (terminal E10). In most applications, either ground terminal may be used for grounding the signal source.

7. The use of a particular ground arrangement is only important when trying to capture glitch information through the cables and hook-type probe assemblies. When the 10248C is obtaining its input data through the cables supplied, the inner ground (terminal E9) must be used. The inductive load on this ground generates a partial compensation for inductive pickup in the cables. This minimizes generation of glitches in the cables. When the probe is connected directly to the signal source and no cabling is involved, use both grounds (terminals E9 and E10), if possible.

8. ACCESSORIES SUPPLIED.

9. The 10248C is supplied with: ten 12-inch color-coded connection leads; nine detachable hook-type circuit probes; a vinyl carrying case; a connector clip; and pod clip.

10. Each connection lead has a 0.025-inch female tip on one end for backplane pin connections. These female tips can be attached to recessed male pins on the hook-type probes. The other ends of the leads are attached to the connector clip. This clip snaps onto the probe pod for quick connection. The pod clip can be attached to the pod cable for securing or supporting the pod.

11. ACCESSORIES AVAILABLE.

12. Replacement cable kit (HP Part No. 10248-69501) is available for the 10248C. The kit consists of a connector clip, eleven 12-inch color-coded connection leads, and a ground lead.

13. PRINCIPLES OF OPERATION.

14. The circuitry of Model 10248C consists of eight buffer/translator networks, and a threshold-compensation circuit. The 10248C accepts input data levels of up to ±15 volts peak amplitude. A threshold voltage (Vth) is supplied by the logic analyzer to make the probe compatible with the logic levels of the input data. The threshold voltage may be varied within a range of ±10 Vdc on the logic analyzer (±2 V within the 10248C).

15. BUFFER/TRANSLATOR. Each buffer/translator is made up of a 10:1 attentuator, a comparator referenced to Vth, and series termination for the ECL output lines. The threshold voltage is scaled by a factor of 5 in the logic analyzer before it is supplied to the 10248C. Then it is additionally scaled by a factor of 2:1 in the 10248C for compatibility with the data levels.

16. THRESHOLD COMPENSATION. Probe signal ground is connected to terminal E9 when the input signals are derived through external cabling. E9 is inductively loaded to ground. This inductance generates a partial compensation for the inductive pickup of the external wires. This compensation is added to Vth and applied to the comparators in each buffer/translator.

17. MAINTENANCE.

18. PERFORMANCE TEST. The 10248C must be tested with an HP Logic Analyzer in accordance with performance tests provided in the Logic Analyzer Operating and Service Manual.

19. REPLACEABLE PARTS. Table 2 lists replaceable parts and the HP part number of each item. Table 3 lists the names and addresses of the manufacturers of the parts. Figure 2 shows the location of each part.

20. To order a part from Hewlett-Packard, address the order to the nearest HP Sales/Service Office. Include the probe model number, reference designation of the part, and the HP part number. If a part is not listed, provide a complete description of the part, including function and location.

Table 2. Replaceable Parts

Reference Designation	HP Part No. and Check Digit	Qty	Description	Mfr Code	Mfr Part No.
A1	1NB5-8014 5	1	DATA PROBE	28480	1NB5-8014
CP1-9	10230-62101 7	9	PROBE ASSY, HOOK-TYPE	28480	10230-62101
E1	1251-4819 1	2	CONNECTOR-ELASTOMERIC	28480	1251-4819
H1	0624-0390 5	4	SCREW TS2-28 0.625 LG	28480	0624-0390
MP1	5041-1529 3	1	COVER, POD	28480	5041-1529
MP2	5041-1528 2	1	HOUSING,POD 10HL	28480	5041-1528
MP3	5041-1530 6	1	CONNECTOR, HOLDER	28480	5041-1530
MP4	3050-0967 8	12	WASHER	28480	3050-0967
MP5	7120-8161 3	1	LABEL SET	28480	7120-8161
MP6	1540-0320 4	1	CASE, CARRYING	28480	1540-0320
MP7	5040-0563 1	1	CONNECTOR, CLIP	28480	5040-0563
MP8	5040-0538 0	1	CLIP, POD	28480	5040-0538
W1	5061-1217 8	1	CABLE: PIN ADAPTER: WHITE/BLACK	28480	5061-1217
W2	5061-1218 9	1	CABLE: PIN ADAPTER: WHITE/BROWN	28480	5061-1218
W3	5061-1219 0	1	CABLE: PIN ADAPTER: WHITE/RED	28480	5061-1219
W4	5061-1220 3	1	CABLE: PIN ADAPTER: WHITE/ORANGE	28480	5061-1220
W5	5061-1221 4	1	CABLE: PIN ADAPTER: WHITE/YELLOW	28480	5061-1221
W6	5061-1222 5	1	CABLE: PIN ADAPTER: WHITE/GREEN	28480	5061-1222
W7	5061-1223 6	1	CABLE: PIN ADAPTER: WHITE/BLUE	28480	5061-1223
W8	5061-1224 7	1	CABLE: PIN ADAPTER: WHITE/VIOLET	28480	5061-1224
W9	5061-1215 6	1	CABLE: PIN ADAPTER: BLACK	28480	5061-1215
W10	5061-1216 7	1	CABLE: PIN ADAPTER: YELLOW	28480	5061-1216
W11	10248-61604 3	1	CABLE ASSEMBLY, 25 CONDUCTOR	28480	10248-61604
W11MP1	1251-0352 9	1	BUSHING	04486	CA18220-6
W11MP2	1251-5045 7	1	HOOD, PLASTIC	28480	1251-5045
W11MP3	1251-1042 6	1	SLIDELOCK (2 SCREWS INCLUDED)	04486	DB51221-1
W11P1	1251-5410 0	1	CONNECTOR-MALE	28480	1251-5410

Table 3. List of Manufacturer's Codes

Mfr Code	Manufacturer Name	Address	Zip Code
04486	Delmark Co.	5320 W. 23rd St. Minneapolis, MN	55416
28480	Hewlett-Packard Co. Corporate Hq.	Palo Alto CA	94304

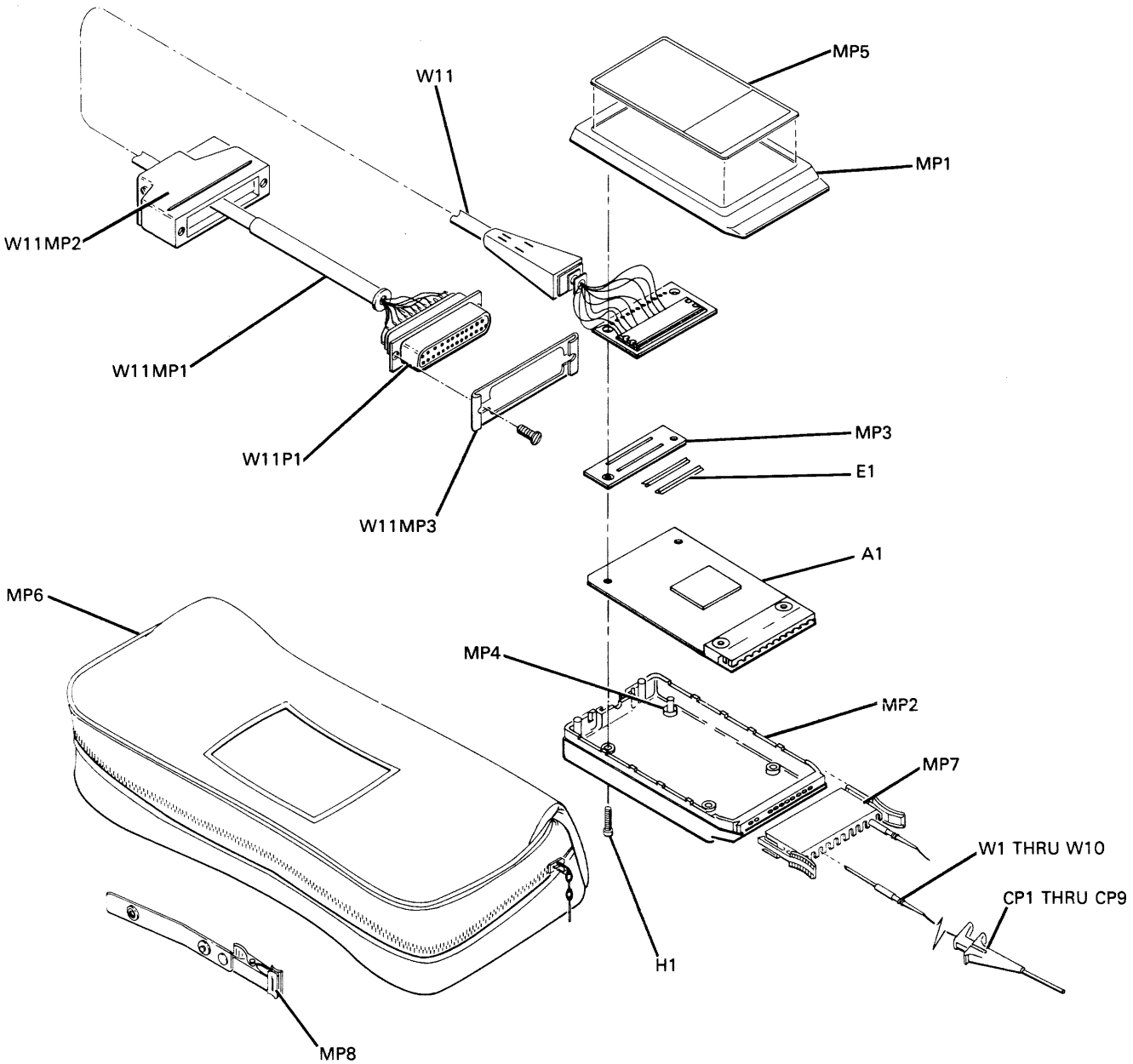


Figure 2. Model 10248C Parts Identification

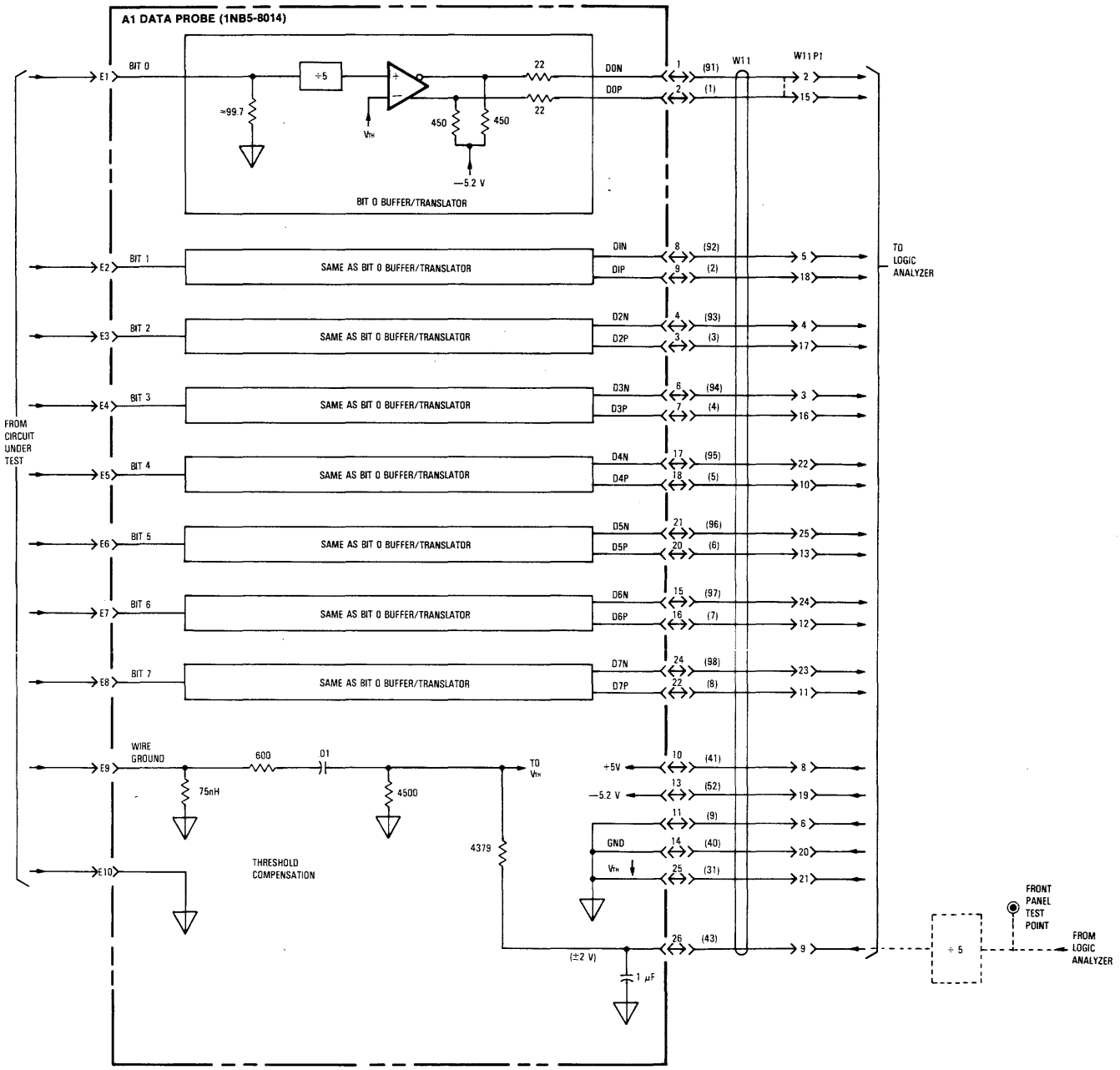


Figure 3. Model 10248C Schematic

SAFETY

This product has been designed and tested according to International Safety Requirements. To ensure safe operation and to keep the product safe, the information, cautions, and warnings in this manual must be heeded. Refer to Section I and the Safety Summary for general safety considerations applicable to this product.

CERTIFICATION

Hewlett-Packard Company certifies that this product met its published specifications at the time of shipment from the factory. Hewlett-Packard further certifies that its calibration measurements are traceable to the United States National Bureau of Standards, to the extent allowed by the Bureau's calibration facility, and to the calibration facilities of other International Standards Organization members.

WARRANTY

This Hewlett-Packard product is warranted against defects in material and workmanship for a period of one year from date of shipment. During the warranty period, Hewlett-Packard Company will, at its option, either repair or replace products which prove to be defective.

For warranty service or repair, this product must be returned to a service facility designated by HP. However, warranty service for products installed by HP and certain other products designated by HP will be performed at Buyer's facility at no charge within the HP service travel area. Outside HP service travel areas, warranty service will be performed at Buyer's facility only upon HP's prior agreement and Buyer shall pay HP's round trip travel expenses.

For products returned to HP for warranty service, Buyer shall prepay shipping charges to HP and HP shall pay shipping charges to return the product to Buyer. However, Buyer shall pay all shipping charges, duties, and taxes for products returned to HP from another country.

LIMITATION OF WARRANTY

The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance.

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