Introduction

This operating note contains information on connecting the HP 10346A TTL Tri-State Buffer Pod (HP part number 16520-63202) to your test system. It also includes a schematic of the pod and a complete description of the pinouts.

The HP 10346A 8-Channel TTL Tri-State Buffer Pod buffers the TTL outputs of the HP 16520A and HP 16521A Pattern Generator and provides an external TTL tri-state control input.

Operating Note Part Number 10346-90901
Microfiche Part Number 10346-90801
Connecting the HP 10346A to the Pattern Generator

To connect the HP 10346A pod to the pattern generator:

1. Select the pattern generator cable for the output you want buffered and remove any probe adapters already connected to that cable.

2. Connect the HP 10346A pod to the pattern generator by aligning the key on the connector from the pattern generator cable with the slot on the pod connector and pushing them together (see figure 2).

3. If a probe adapter is required, connect the HP 10346A pod to the probe adapter of the pattern generator by aligning the key on the connector of HP 10346A pod with the slot on the probe adapter connector and pushing them together (see figure 2).

Figure 2. Connecting the HP 10346A Pod to the Cable Connector
Connecting to the Target System

Use the probes supplied with the pattern generator to connect the HP 10346A pod to the target system. The output pins for the pod are marked on the pod body (see figure 3). To connect to the target system:

1. Connect the ground probe of the HP 10346A pod to a ground pin on the target system or external supply.

2. Connect the +5 V input of the HP 10346A pod to a +5 V supply on the target system or other external source.

3. Connect the output pins 0 through 7 of the pod to the target system.

4. In order to control the pod, you must connect an input to the TRI-STATE pin of the HP 10346A pod (see figure 3). A 2.0 V high level input tri-states the HP 10346A outputs, while a 0.8 V low level input enables the pod to buffer out the input signals.

Figure 3. Labeling of Output Pins
Operating Characteristics

Low-Level Output ($V_{OL \, \text{max}}$): +0.5 V

High Level Output ($V_{OH \, \text{min}}$): +2.0 V

Typical Enable/Disable Time: 18 ns

Typical Propagation Delay: 12 ns

Maximum Low Output Sink Current ($I_{OL}$): +24 mA

Maximum High Output Source Current ($I_{OH}$): -15 mA

Typical Power Dissipation: 135 mW

Supply Voltage: +5.0 V ±5%

Figure 4. Pinouts for the HP 10346A Pod
**Table 1. HP 10346A Signal Distribution**

<table>
<thead>
<tr>
<th>Input Pin</th>
<th>Description</th>
<th>Output Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DIN0</td>
<td>1</td>
<td>DOUT0</td>
</tr>
<tr>
<td>2</td>
<td>GROUND</td>
<td>2</td>
<td>GROUND</td>
</tr>
<tr>
<td>3</td>
<td>DIN1</td>
<td>3</td>
<td>DOUT1</td>
</tr>
<tr>
<td>4</td>
<td>GROUND</td>
<td>4</td>
<td>GROUND</td>
</tr>
<tr>
<td>5</td>
<td>DIN2</td>
<td>5</td>
<td>DOUT2</td>
</tr>
<tr>
<td>6</td>
<td>GROUND</td>
<td>6</td>
<td>GROUND</td>
</tr>
<tr>
<td>7</td>
<td>DIN3</td>
<td>7</td>
<td>DOUT3</td>
</tr>
<tr>
<td>8</td>
<td>GROUND</td>
<td>8</td>
<td>GROUND</td>
</tr>
<tr>
<td>9</td>
<td>DIN4</td>
<td>9</td>
<td>DOUT4</td>
</tr>
<tr>
<td>10</td>
<td>GROUND</td>
<td>10</td>
<td>GROUND</td>
</tr>
<tr>
<td>11</td>
<td>DIN5</td>
<td>11</td>
<td>DOUT5</td>
</tr>
<tr>
<td>12</td>
<td>GROUND</td>
<td>12</td>
<td>GROUND</td>
</tr>
<tr>
<td>13</td>
<td>DIN6</td>
<td>13</td>
<td>DOUT6</td>
</tr>
<tr>
<td>14</td>
<td>GROUND</td>
<td>14</td>
<td>GROUND</td>
</tr>
<tr>
<td>15</td>
<td>DIN7</td>
<td>15</td>
<td>DOUT7</td>
</tr>
<tr>
<td>16</td>
<td>GROUND</td>
<td>16</td>
<td>GROUND</td>
</tr>
<tr>
<td>17</td>
<td>N/C</td>
<td>17</td>
<td>+5.0 V (Input)</td>
</tr>
<tr>
<td>18</td>
<td>GROUND</td>
<td>18</td>
<td>GROUND (Input)</td>
</tr>
<tr>
<td>19</td>
<td>N/C</td>
<td>19</td>
<td>TRI-STATE (Input)</td>
</tr>
<tr>
<td>20</td>
<td>GROUND</td>
<td>20</td>
<td>GROUND</td>
</tr>
</tbody>
</table>

N/C = No Connection

Note: See figure 4 for the pinouts of the HP 10346A pod.

**Troubleshooting and Servicing**

If a failure is suspected in the HP 10346A TTL Tri-State Buffer Pod, contact your nearest Hewlett-Packard Sales/Service Office for information on servicing the pod.
HP Model 10346A

NOTES:
1. GATES ARE SYMBOLIZED ACCORDING TO CIRCUIT FUNCTION.
2. UNLESS OTHERWISE NOTED:
   RESISTANCE IN OHMS
   CAPACITANCE IN MICROFARADS
   INDUCTANCE IN MICROHENRIES
3. UNLESS OTHERWISE NOTED:
   LOGIC LEVELS ARE TTL:
   +2.0V TO +5.0V = LOGIC"1" = H
   0V TO +0.8V = LOGIC"0" = L

IC DEVICE
POWER CONNECTIONS

<table>
<thead>
<tr>
<th>SUPPLY</th>
<th>PIN NO.</th>
<th>IC GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>+5V</td>
<td>20</td>
<td>U1</td>
</tr>
<tr>
<td>GND</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

PARTS ON THIS SCHEMATIC

C1
J1, 2
U1

Figure 5. Schematic for the HP 10346A Pod
Product Warranty

This Hewlett-Packard product has a warranty against defects in material and workmanship for a period of 1 year from date of shipment. During warranty period, Hewlett-Packard Company will, at its option, either repair or replace products that prove to be defective.

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

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

Hewlett-Packard warrants that its software and firmware designated by Hewlett-Packard for use with an instrument will execute its programming instructions when properly installed on that instrument. Hewlett-Packard does not warrant that the operation of the instrument, software, or firmware will be uninterrupted or error-free.

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The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by the 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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Product maintenance agreements and other customer assistance agreements are available for Hewlett-Packard products.

For assistance, contact your nearest Hewlett-Packard Sales and Service Office. Addresses are provided at the back of this operating note.

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.

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 operating note must be heeded.
For more information, call your local HP sales office listed in the telephone directory white pages. Ask for the Electronic Instruments Department. Or write to Hewlett-Packard U.S.A. - P.O. Box 10301, Palo Alto, CA 94303-0890. Europe - P.O. Box 999, 1180 AZ Amstelveen, The Netherlands. Canada - 6877 Goreway Drive, Mississauga, L4V1M8, Ontario. Japan - Yokogawa-Hewlett-Packard Ltd., 3-29-21, Takaido-Higashi, Suginami-Ku, Tokyo 168. Elsewhere in the world, write to Hewlett-Packard Intercontinental, 3495 Deer Creek Road, Palo Alto, CA 94304.