Dual 1×20 Multiplexer Card
40 differential channels, automatic CJC w/3721-ST accessory

The Model 3721 offers two independent banks of 1×20 two-pole multiplexers that are ideal for general purpose switching, including temperature measurements. The two banks can automatically be connected to the Series 3700A mainframe backplane and optional DMM through the analog backplane connection relays. This connection allows the mainframe to reconfigure the Model 3721 as a single 1×40 two-pole multiplexer or to enable card-to-card expansion for even larger configurations.

The Model 3721 provides a number of other features. In addition to the 40 channels, two fused channels are supplied for current measurements. Also, the Model 3721 includes dedicated inputs that enable 40 channels of four-wire common side ohms measurements. For thermocouple type measurements, automatic cold junction compensation (CJC) is supported when used with the Model 3721-ST (screw terminal) accessory.

The Model 3721 uses two 50-pin male D-sub connectors for signal connections. For screw terminal or automatic CJC, use the detachable Model 3721-ST accessory.

<table>
<thead>
<tr>
<th>ACCESSORIES AVAILABLE</th>
<th>SERVICES AVAILABLE</th>
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<tr>
<td>5721-MTC-1S 5-pin D-sub Female to Male Cable, 1.5m (5 ft.)</td>
<td>3721-3Y/EW-STD 1-year factory warranty extended to 3 years from date of shipment</td>
</tr>
<tr>
<td>5721-MTC-3 5-pin D-sub Female to Male Cable, 3m (10 ft.)</td>
<td>3721-5Y/EW-STD 1-year factory warranty extended to 5 years from date of shipment</td>
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<tr>
<td>5721-ST Screw Terminal Block (required for auto CJC thermocouple measurements)</td>
<td>C/3721-3Y/STD 3 (Z540-1 compliant) calibrations within 3 years of purchase*</td>
</tr>
<tr>
<td>5790-KIT50-R 50-pin Female D-sub Connector Kit (contains 2 female D-sub connectors and 100 solder-cup contacts)</td>
<td>*Not available in all countries</td>
</tr>
<tr>
<td>7601 Type K Thermocouple Wire (100 ft.)</td>
<td></td>
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</table>

Ordering Information

3721 Dual 1×20 Multiplexer Card

www.keithley.com

A Greater Measure of Confidence
### 3721

**Dual 1×20 Multiplexer Card**

40 differential channels, automatic CJC w/3721-ST accessory

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**MULTIPLEXER CONFIGURATION:** Two independent 1×20 2-pole multiplexers. Banks can be connected together via relay creating a single 1×40 multiplexer. Banks can be isolated from the backplane by relays. Card can be configured for common side Ohms measurement via backplane relays.

- **Channel 41–42:** Multiplex one of the 2-pole current signals between any terminal and chassis.

**CONTACT CONFIGURATION:** 2 pole form A.

**CONNECTOR TYPE:** Two 50 pin male D-shells. Removable screw terminal option.

**MAXIMUM SIGNAL LEVEL:** Channels 1–40: 300V DC or RMS, 2A switched (3A carry), 60W, 125VA maximum. Channels 41–42: 60V DC or 30V RMS, 3A switched, 60W, 125VA maximum. Fused 3A, 250V RMS.

**COMMON MODE VOLTAGE:** Channels 1–40: 300V DC or RMS between any terminal and chassis.

**VOLT-HERTZ LIMIT:** 8×10^7.

**CONTACT LIFE:** >10^8 operations at maximum signal level. >10^9 operations no load.

**TYPICAL SCANNING SPEEDS:**

- **Switch Only:** 1 channel, immediate trigger advance: >120 ch/s.
- **With Measurements Into Memory:**
  - DCV (10V range) or 2W Ohms (1k range): >110 ch/s.
  - Thermocouple: >110 ch/s.
  - 4-Wire Ohms (1k range): >100 ch/s.
  - 4-Wire RTD (1k2 range): >100 ch/s.
  - ACV (10V, 400Hz range) or ACI (1A, 400Hz range): >110 ch/s.

**NOTES:**

1. Open detector enabled during thermocouple measurements. Minimum signal level 10mV, 10µA.
2. 3706A mainframe with all DMM backplane relays disconnected. Maximum two card backplane relays closed.
3. Connections made using 3721-ST accessory.
4. Scanning script local to mainframe, sequential scan trigger advance: >120 ch/s.
5. 3706A mainframe with autorange off, limits off, dmm.autoscal=0, dmm.autoscal=1, 4½ digits (NSPC=0·0006), for ACV dmm.detectorscompensation=off, dmm.opendetector=off, scanning script local to mainframe, sequential scan within same bank (2 pole) or card (4 pole), and break before make switching.

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**Model 3721 specifications**

**Channel Resistance (end of contact life):**

- Single 1×20: <1.0 Ω
- Single 1×40: <1.5 Ω

**Contact Potential (differential):**

- Single 1×20: <±1 µV
- Single 1×40: <±3 µV

**Offset Current:**

- Single 1×20: <±250 pA
- Single 1×40: <±250 pA

**Isolation:**

- Differential: 10^7 Ω, 280 pF
- Bank-Bank: 10^7 Ω, 60 pF
- Channel-channel: 10^6 Ω, 50 pF
- Common Mode: 10^4 Ω, 180 pF
- 10^5 Ω, 180 pF

**Crosstalk Channel-channel:**

- 300kHz: <=–60 dB
- 1MHz: <=–50 dB
- 20MHz: <=–15 dB

**Bandwidth:**

- 8×10^7

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**GENERAL**

**ACTUATION TIME:** 10ms.

**TEMPERATURE ACCURACY** using Automatic CJC with 3721-ST accessory: ±1°C for J, K, T, and E types (see mainframe specification for details).

**RELAY TYPE:** Latching electromechanical.

**RELAY DRIVE SCHEME:** Direct.

**INTERLOCK:** Backplane relays disabled when interlock connection is removed.

**OPERATING ENVIRONMENT:** Specified for 0°C to 50°C. Specified to 70% R.H. at 35°C.

**STORAGE ENVIRONMENT:** –25°C to 65°C.

**WEIGHT:** 2.25 lbs.

**SAFETY:** Conforms to European Union Directive 73/23/EEC, EN61010-1.


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1. Model 3706A ambient temperature <28°C.
2. One shot repetition rate > 10 seconds.
3. Contact life specification unaffected if pulse width and carry current are not exceeded.