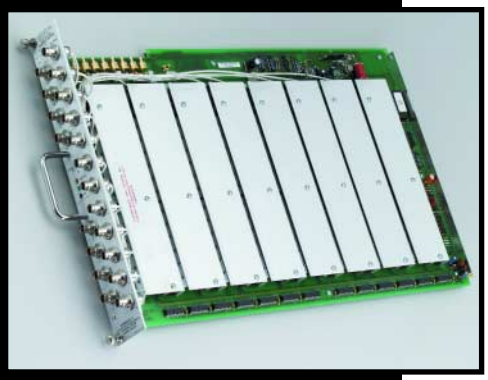
7172

Low-Current Matrix Card

8×12



- **<500fA offset on all signal paths**
- **2-pole switching signal and guard**
- **Expandable to multicard applications**
- **200V, 1A signal levels**

Ordering Information

7172 **8x12 Low-Current Matrix Card**

This product is available with an Extended Warranty.

Accessory Supplied

Instruction manual and eight SMB expansion cables (C99-1A)

The Model 7172 Low Current Matrix Card is designed specifically for semiconductor research, development, characterization, and reliability applications involving multipoint I-V and C-V measurements. The 7172 is ideal for use with Keithley SMUs, Model 4200, and Models 590 and 595. The configuration for the 7172 is 8 rows by 12 columns with signals and guard switched at each crosspoint. Offset current is specified at <500fA (150fA typical) on all signal pathways.

The 7172 switching matrix card contains a built-in offset current self-test circuit that measures the actual performance of the card. A rear panel switch activates the self-test function and pass/fail LEDs on the rear panel indicate if the offset is above or below 500fA. This feature ensures that the 7172 is operating within specified accuracy.

Connections are 3-lug triax with the outer shell connected to the chassis for safety and noise shielding. The center conductor is fully surrounded by the inner conducting shield so fully guarded measurements can be made with higher isolation and improved speed and accuracy.

Expansion

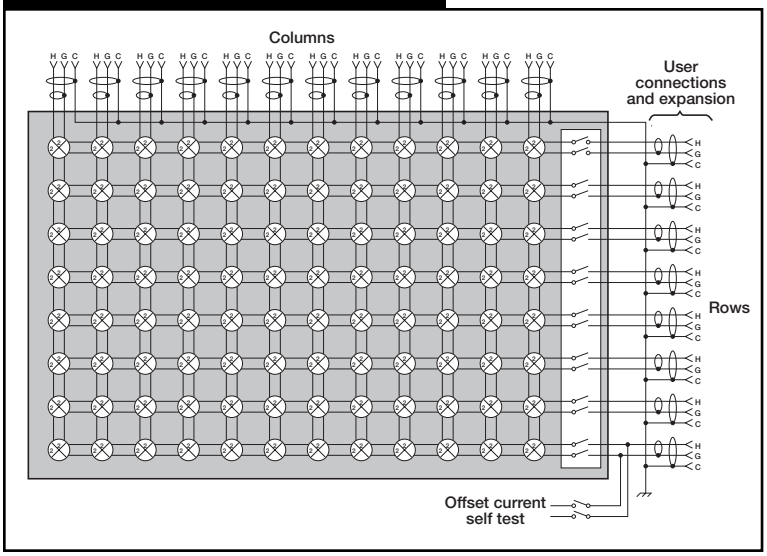
For applications requiring connections to a large number of devices or test points, the 7172 matrix can be expanded with additional cards. On-card SMB connectors are provided to connect the rows (column expansion) between 7172 cards in adjacent slots of the Model 707A switching mainframe.

Eight female SMB to female SMB cables are provided with each 7172 for expansion. Multiple cards can be connected together using these row connections. Up to six 7172 cards can be connected in a single 707A for an 8×72 configuration.

To maintain peak performance, the 7172 automatically disconnects unused row connections (SMB expansion and panel mounted triax). The row connections are isolated from the row pathways with low leakage relays that automatically close when a crosspoint on that row is closed. This greatly reduces the offset associated with larger multicard applications.

ACCESSORIES AVAILABLE

237-TRX-T	3-Lug Triax Tee Adapter
7078-TRX-TBC	3-Lug Triax to BNC Adapter
7078-TRX-3	3-Lug Triax Cable, 0.9m (3 ft.)
7078-TRX-10	3-Lug Triax Cable, 3m (10 ft.)
7078-TBC	3-Lug Female Triax Bulkhead Connector with Cap



MATRIX CONFIGURATION: Single 8 rows × 12 columns. Expanding the columns can be done internally by connecting the rows of multiple 7172 cards with coax jumpers.

OFFSET CURRENT SELF TEST: An onboard electrometer circuit measures offset current when the rear panel switch is pushed. Pass/fail LEDs indicate if offset is above or below 500fA. The onboard SMB connector outputs voltage proportional to current (1mV/10fA).

CROSSPOINT CONFIGURATION: 2-pole Form A (Signal, Guard).

CONNECTOR TYPE: 3-lug triax (Signal, Guard, Chassis).

MAX. SIGNAL LEVEL: Pin-to-pin or pin-to-chassis: 200V 1A carry/0.5A switched, 10VA.

CONTACT LIFE: Cold Switching: 10^8 closures. **At Max. Signal Level:** 10^5 closures.

PATH RESISTANCE (Per Conductor): <1.0Ω initial, <1.5Ω at end of contact life.

CONTACT POTENTIAL: Differential (Signal to Guard): <30μV
Single ended (Guard to Guard or Signal to Signal): <60μV

OFFSET CURRENT: <500fA, 150fA typical.

ISOLATION: Path (Signal to Signal): $>10^{13}$Ω, 0.4pF typical. **Differential (Signal to Guard):** $>10^9$Ω, 170pF typical. **Common (Signal and Guard to Chassis):** $>10^9$Ω, 430pF typical.

CROSSTALK (1MHz, 50Ω Load): <–70dB.

INSERTION LOSS (1MHz, 50Ω Load): 0.22dB typical.

3dB BANDWIDTH (50Ω Load, 50Ω Source): 30MHz typical.

RELAY DRIVE CURRENT (Per Crosspoint): 30mA.

RELAY SETTLING TIME: <2ms.

Use with Model 707A and 708A switching matrix mainframes

SWITCHING & CONTROL

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