

# 3732

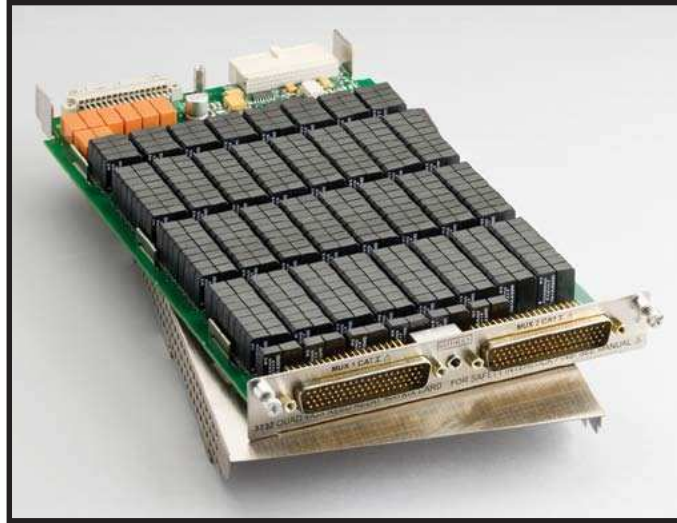
- Four independent banks of 4×28 single pole matrices
- 200V, 1.2A carry or 0.75A switched signal capacity; 15W, 15VA
- Bank configuration relays enable alternative matrix sizes, including:
  - Dual 4×56 (1 wire)
  - Single 4×112 (1 wire)
  - Single 4×56 (2 wire)
- Optional accessory, Model 3732-ST-R, enables screw terminal access and additional matrix sizes including:
  - Dual 8×28 (1 wire)
  - Single 16×28 (1 wire)
  - Single 8×28 (2 wire)
- Analog backplane connection relays provide easy card-to-card column expansion
- Long life dry reed relays (>10<sup>9</sup> operations)
- Ideal for high channel count I-V testing with Series 2600A System SourceMeter® Instruments

## Ordering Information

**3732 Quad 4×28, Ultra-High Density, Reed Relay Matrix Card**

# Quad 4×28, Ultra-High Density, Reed Relay Matrix Card

448 one-pole crosspoints with bank configuration and backplane connection relays



The ultra-high density Model 3732 matrix card is comprised of four banks, each with 4 rows by 28 columns of reed relays. This provides 448 single-pole crosspoints for maximum connection versatility in high channel count applications. For even greater flexibility, bank configuration relays are mounted on the card. They offer an automated method of connecting banks to enable two additional matrix configurations: single 4×112 and dual 4×56. This feature allows the matrix size to be easily adapted to existing or future applications. For differential (2-wire) measurements, a two-pole mode can be selected that enables automatic pairing of crosspoints to create a dual 4×28 or single 4×56 configuration. For larger matrix sizes, analog backplane relays are provided that enable rows to connect to the Series 3700 mainframe backplane. This allows, for example, a matrix of up to 4 rows by 672 columns within a single 3706 mainframe using six Model 3732 cards.

The card uses optimized reed relays that offer both low contact potential and low current offset to minimize the switching errors that often accompany this relay technology. Additionally, these relays provide greater signal voltage (200V) and current (1.2A carry) dynamic range while supporting the long life and fast actuation times necessary in many automated test applications.

The Model 3732 uses two 78-pin male D-sub connectors for signal and configuration connections. For screw terminal connections, two accessories are offered. Use the 3732-ST-R for the 16×28 or dual 8×28 matrix configurations. Use the 3732-ST-C for the 4×112, dual 4×56, or base quad 4×28 matrix configurations.

## ACCESSORIES AVAILABLE

3732-ST-C	Screw Terminal Block for matrix configurations: Quad 4×28 (1 wire) Dual 4×28 (2 wire) Single 4×56 (2 wire) Dual 4×56 (1 wire) Single 4×112 (1 wire)
3732-ST-R	Screw Terminal Block for matrix configurations: Dual 8×28 (1 wire) Single 8×28 (2 wire) Single 16×28 (1 wire)
3720-MTC-1.5	78-pin, D-sub Female-to-Male Cable, 1.5m (5 ft.)
3720-MTC-3	78-pin, D-sub Female-to-Male Cable, 3m (10 ft.)
3791-CIT	Contact Insertion and Extraction Tool
3791-KIT78-R	78-pin, Female D-sub Connector Kit (contains 2 female D-sub connectors and 156 solder-cup contacts)

## SERVICES AVAILABLE

3732-3Y-EW-STD	1-year factory warranty extended to 3 years from date of shipment
3732-5Y-EW-STD	1-year factory warranty extended to 5 years from date of shipment
C/3732-3Y-STD	3 (Z540-1 compliant) calibrations within 3 years of purchase*

\*Not available in all countries

Quad 4×28, ultra-high density, reed relay matrix card

SWITCHING AND CONTROL

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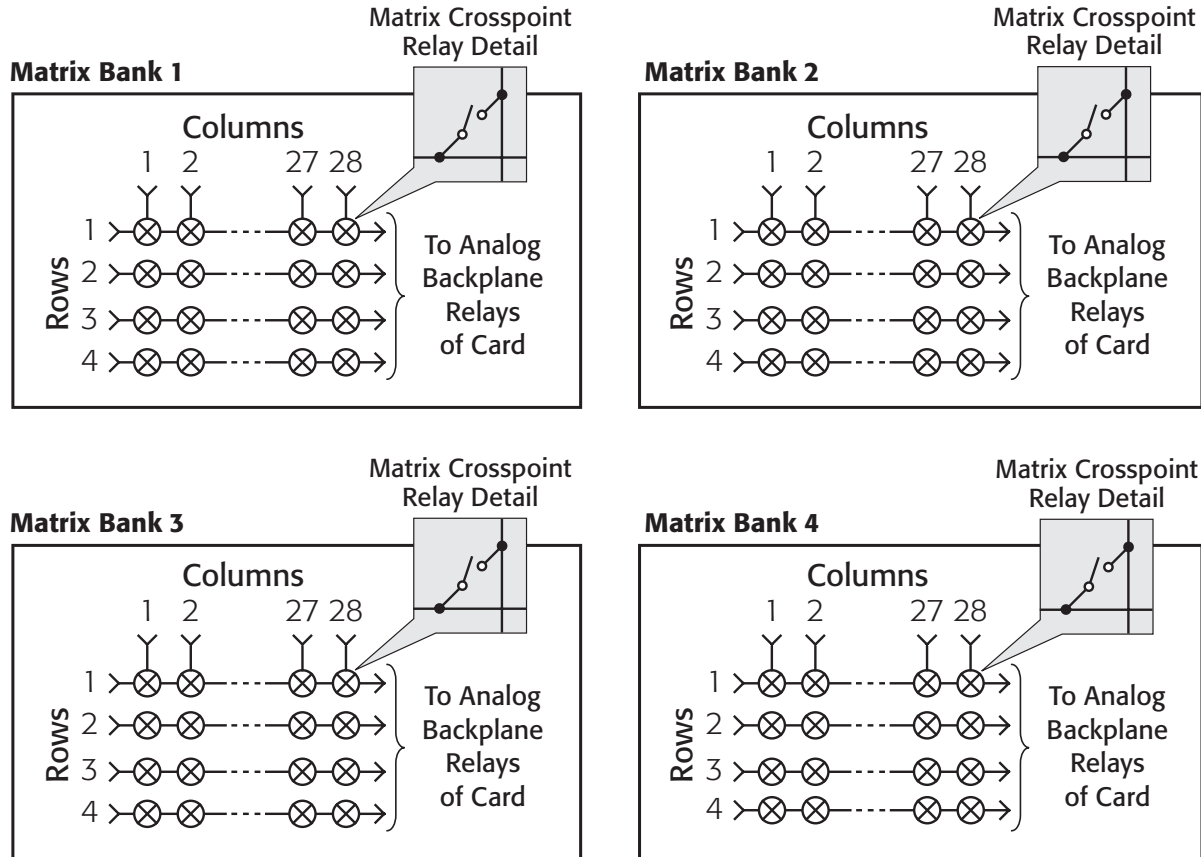
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# Quad 4x28, Ultra-High Density, Reed Relay Matrix Card

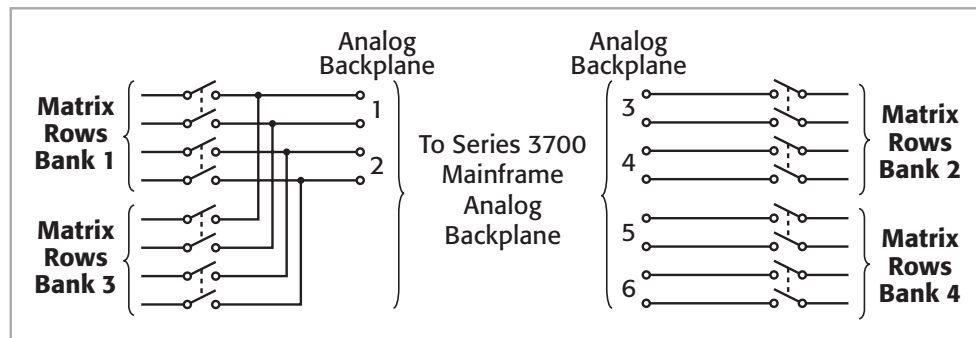
448 one-pole crosspoints with bank configuration and backplane connection relays

## Quad 4x28 (1-wire) or Dual 4x28 (2-wire) Matrix Configuration

Model 3732 specifications



### Analog Backplane Connection Relays



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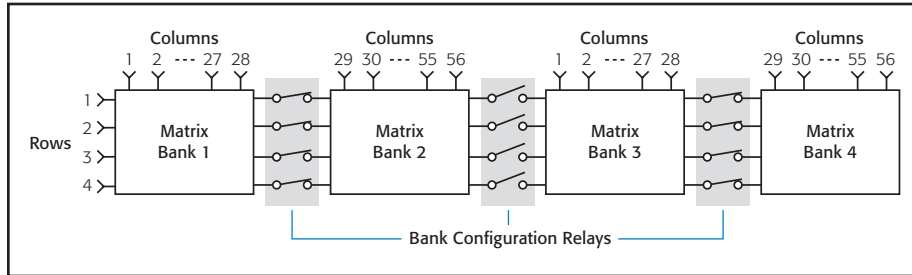
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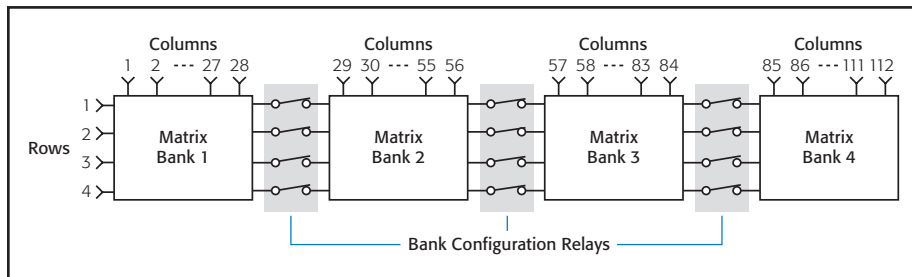
# Quad 4x28, Ultra-High Density, Reed Relay Matrix Card

448 one-pole crosspoints with bank configuration and backplane connection relays

## Additional Matrix Configurations Using Bank Configuration Relays

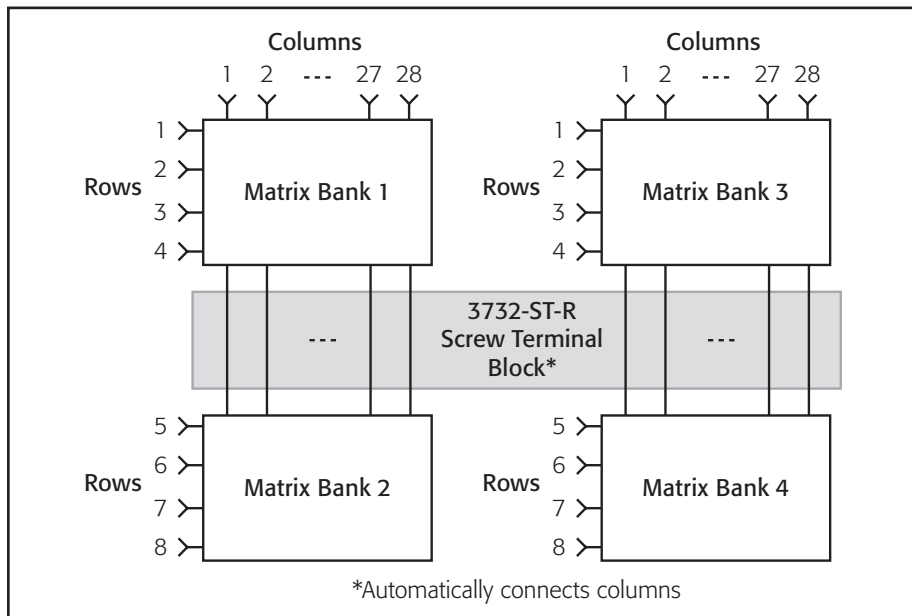


Dual 4x56 (1-wire) or single 4x56 (2-wire) matrix configuration using bank configuration relays

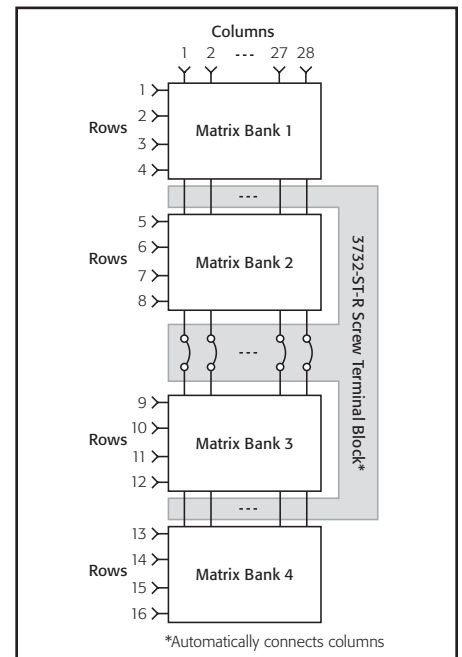


Single 4x112 (1-wire) matrix configuration using bank configuration relays

## Additional Matrix Configurations Using the Model 3732-ST-R Screw Terminal Block



Dual 8x28 (1-wire) or single 8x28 (2-wire) matrix configuration using one Model 3732-ST-R screw terminal block



Single 16x28 (1-wire) matrix configuration using one Model 3732-ST-R screw terminal block

Model 3732 specifications

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# Quad 4×28, Ultra-High Density, Reed Relay Matrix Card

448 one-pole crosspoints with bank configuration and backplane connection relays

**MATRIX CONFIGURATION:** Four banks, each with 4 rows by 28 columns of reed relays. Bank configuration and analog backplane relays are included for additional matrix configurations. Banks can be connected together via relays creating dual 4×56 matrices or a single 4×112 matrix. Row expansion is available using optional screw terminal accessories.

**CONTACT CONFIGURATION:** Single-pole form A.

**CONNECTOR TYPE:** Two 78-pin male D-shells.

**MODEL 3732-ST-R SCREW TERMINAL OPTION:** Provides terminal block access and column jumper blocks for extended row configurations including Dual 8×28 (1W), Single 8×28 (2W), and Single 16×28 (1W).

**Typical Wire Size:** #22 AWG with 0.062 inch O.D.; 88 conductors per card maximum.

**Maximum Wire Size:** #16 AWG with 0.092 inch O.D.; 44 conductors per card maximum.

**MODEL 3732-ST-C SCREW TERMINAL OPTION:** Provides terminal block access for Quad 4×28 (1W), Dual 4×28 (2W), Dual 4×56 (1W), Single 4×56 (2W), and Single 4×112 (1W) matrix configurations.

**Typical Wire Size:** #22 AWG with 0.062 inch O.D.; 88 conductors per card maximum.

**Maximum Wire Size:** #16 AWG with 0.092 inch O.D.; 44 conductors per card maximum.

**MAXIMUM SIGNAL LEVEL:** 200VDC or peak AC, 0.75A switched (1.2A carry), 15W/15VA max. switch power.

**COMMON MODE VOLTAGE:** 200VDC or peak AC between any signal path to a signal path or ground.

**VOLT-HERTZ LIMIT:** 8×10<sup>7</sup>.

**CONTACT LIFE: Reed:** >10<sup>9</sup> operations no load, >8×10<sup>6</sup> operations @ 100V, 10mA.

**EMR (Backplane):** >10<sup>8</sup> operations @ 5V, 10mA and 10<sup>5</sup> operations at maximum signal level.

## MODEL 3732 PARAMETERS

Parameter	Quad 4×28 <sup>1,2</sup>	Dual 4×56 <sup>1,2</sup>	Single 4×112 <sup>1,2</sup>	Dual 8×28 <sup>2,3</sup>	Single 16×28 <sup>2,3</sup>
Channel Resistance (end of life)	<1.5 Ω	<2.0 Ω	<2.5 Ω	<1.6 Ω	<2.0 Ω
Contact Potential (differential)	<±10 μV	<±20 μV	N/A	<±15 μV	N/A
Contact Potential (single ended)	<±20 μV	<±40 μV	<±65 μV	<±20 μV	<±20 μV
Offset Current	<±0.5 nA	<±1.0 nA	<±2.0 nA	<±1.0 nA	<±2.0 nA
<b>Isolation</b>					
CH-CH	3×10 <sup>9</sup> Ω/150 pF	1.5×10 <sup>9</sup> Ω/300 pF	7.5×10 <sup>8</sup> Ω/600 pF	2×10 <sup>9</sup> Ω/200 pF	1.5×10 <sup>9</sup> Ω/300 pF
Common mode	1.5×10 <sup>9</sup> Ω/300 pF	1.5×10 <sup>9</sup> Ω/300 pF	7.5×10 <sup>8</sup> Ω/600 pF	2×10 <sup>9</sup> Ω/200 pF	1.5×10 <sup>9</sup> Ω/300 pF
<b>Crosstalk Ch-Ch</b>					
300 kHz	<-37 dB	<-37 dB	<-37 dB	<-37 dB	<-37 dB
1 MHz	<-26 dB	<-26 dB	<-26 dB	<-26 dB	<-26 dB
15 MHz	<-7 dB	<-7 dB	<-7 dB	<-7 dB	<-7 dB
Bandwidth	15 MHz	15 MHz	10 MHz	15 MHz	15 MHz

1. Connections made using Model 3732-ST-C.
2. Model 3700 mainframe with all DMM backplane relays disconnected.
3. Connections made using Model 3732-ST-R.

## GENERAL SPECIFICATIONS

### POWER BUDGET INFORMATION:

#### Quiescent Power Usage:

Mode	Quiescent Power
Quad 4×28	780 mW
Dual 4×56	916 mW
Single 4×112	984 mW
Dual 8×28	780 mW
Single 16×28	780 mW

**Channel Relay Power Consumption (each):** 17mW.

**Backplane Relay Power Consumption (each):** 100mW.

For additional power-budgeting information, refer to the Series 3700 Module Schematics and Connections section in the Series 3700 User's Manual (part no. 3700S-900-01).

**ACTUATION TIME:** 0.6ms.

**RELAY TYPE:** Reed (signal relays); EMR (backplane relays)

**RELAY DRIVE SCHEME:** Direct drive.

**RELAY DRIVE CURRENT:** 3.2mA.

**INTERLOCK:** Backplane relays disabled when terminal assembly interlock signal removed. When asserted allows system to read and save ID configuration bits.

**EMC:** Compliant with European Union EMC Directive.

**SAFETY:** Compliant with European Union Low Voltage Directive.

**FIRMWARE:** Requires Series 3700 firmware revision 1.40 or later (applies to all Series 3700 mainframes).

**SYSTEM SPECIFICATIONS:** Refer to the Keithley Instruments Model 3700 System Switch/Multimeter Specifications Rev. D or later.

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

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

**WEIGHT:** 3.40 lbs (1.54kg).

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