Established 1981
Advanced Test Equipment Rentals
www.atecorp.com 800-404-ATEC (2832)

7001 High Density Switch System

- 80 2-pole channels or crosspoints per mainframe
- 2 independent card slots
- Full channel status display
- Companion product to Model 2000/2001/2002/2010 DMMs
- Conforms to IEEE-488.2 and SCPI
- 100 memory locations
- Supports more than 30 different switch cards

The 7001 is a half-rack, high-density, two-slot mainframe with the highest density switching of any half-rack mainframe in the test and measurement market.

ACCESSORIES AVAILABLE

CABLES, ADAPTERS

7007-1	Shielded IEEE-488 Cable, 1m (3.3 ft)
7007-2	Shielded IEEE-488 Cable, 2m (6.6 ft)
8501-1	Trigger Link Cable, 1m (3.3 ft)
8501-2	Trigger Link Cable, 2m (6.6 ft)
8502	Trigger Link Adapter Box

RACK MOUNT KITS

4288-1	Single Fixed Rack Mount Kit
4288-2	Dual Fixed Rack Mount Kit

OTHER

7001-EW	1 Year Warranty Extension
KPCI-488	IEEE-488 Interface/Controller for the PCI Bus
KPC-488.2AT	IEEE-488 Interface Card for IBM PC/AT (full slot)
KPC-TM	Trigger Master Interface
TestPoint	Test Development Software

See pages 170–173 for Switching Cards and Accessories Selector Guides, and page 235 for descriptions of all accessories.

ORDERING INFORMATION

7001 High Density Switch System Mainframe

This product is available with an **Extended Warranty.** See page 635 for complete ordering information.

Built-in scan control eliminates the need for the computer to control every step of the test procedure. Simply program the 7001 to control channel spacing, scan spacing, and the number of scans. A built-in non-volatile memory stores up to 100 complete switch patterns. You can include these memory locations as part of the scan list.

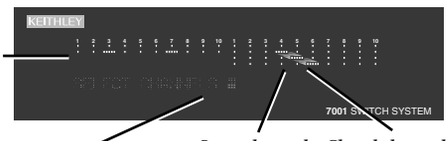
Up to 80 channels of 2-pole switching. Each slot of the 7001 can accommodate up to 40 channels. This means fewer switch cards are required, reducing switching hardware needed. Higher density also provides extra capacity and flexibility.

The 7001's analog backplane is used by the high density switch cards. The backplane eliminates inter-card wiring and increases configuration flexibility. Two cards may be connected through the backplane to create a 1×80 multiplexer, a 4×20 matrix, or a multiplexer/matrix combination that provides matrix row expansion.

See the status of every channel simultaneously. The vacuum fluorescent display of the 7001 shows the open/close status of each channel in the mainframe simultaneously. The graphical display pattern makes it much easier to configure a test system, make modifications, or debug an existing program. The status of the cards in both slots is displayed side by side on the same screen.

Easy to Set Up and Use. The 7001 has a number of built-in features that make it easy to set up, run, change, or modify. It conforms to IEEE-488.2 and SCPI (Standard Commands for Programmable Instruments). All aspects of the instrument can be programmed from the front panel and over the IEEE bus.

Matrix cards are displayed in row-column format. Only the available rows and columns of the card are displayed. Rows are horizontal and columns are vertical.



Open channel *Closed channel*

Matrix crosspoints are entered in row-column format. The first number selects the card, the second is the row, and the third number is the column.

Multiplexer card display. The first row across represents channels 1 to 10. The second row is channels 11 to 20. Only the available channels are displayed.

Scan in any order. A scan does not have to be a contiguous set of channels. Scan forward, backward, or skip channels.

Display indicates scanning. As a scan sequence is executed, the display updates to show the scanning action.

Simply select the channels to be scanned and enter them into the scan list. Channels can be entered in any order, and complete switch patterns contained in memory can also be included. Once you've programmed a test configuration into the mainframe, you can store it in one of 10 nonvolatile memory locations. To repeat the test, simply recall the setup. Or use a setup as your power-up default.

All of the programmable capability of the 7001 is saved as part of the configuration. Saving the scan list along with the other parameters also saves all of the programmable functions necessary for a complete application.

Trigger-Link

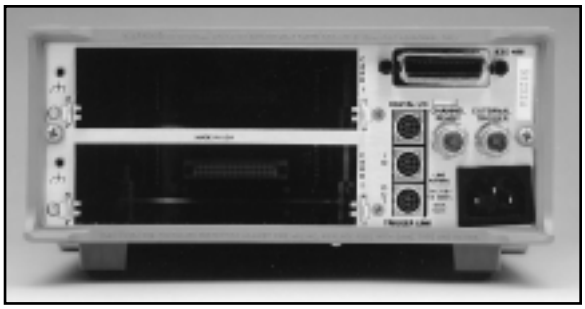
- Flexible: 6 lines for use with multiple instruments. Software reconfigurable.
- Fast: Eliminates IEEE-bus command overheads.
- Provides tighter control. Minimizes latency and jitter.
- Easy to use.

7001 High Density Switch System

The 7001 accommodates a broad range of signals, maintains very high accuracy, and will not degrade signal quality. By minimizing signal errors, the 7001 will prevent degradation due to offset voltage, isolation resistance, and leakage current.

More than 30 cards available. With its broad range of available cards, the 7001 provides multi-pole switching. Cards such as the 7011 can be used in either 2- or 4-pole configuration.

If a card does not have the pole capacity required, the 7001 can still accommodate the application—just select the CARD PAIR function. It allows the channel closures in both slots to be synchronized for up to 8-pole switching.



SYSTEM

CAPACITY: 2 plug-in cards per mainframe.

MEMORY: Battery backed-up storage for 100 switch patterns.

SWITCH SETTLING TIME: Automatically selected by the mainframe for each card. Additional time from 0 to 99999.999 seconds can be added in 1ms increments.

TRIGGER SOURCES:

External Trigger (TTL-compatible, programmable edge, 600ns minimum pulse, rear panel BNC).

IEEE-488 bus (GET, *TRG)

Trigger Link

Manual (front panel)

Internal Timer, programmable from 1ms to 99999.999 seconds in 1ms increments.

STATUS OUTPUT: Channel Ready (TTL-compatible signal, rear panel BNC). Low going pulse (10µs typical) issued after relay settling time. For two different switch cards, 7001 will be set to the slowest relay settling time.

SWITCHING SEQUENCE: Automatic break-before-make.

MAINFRAME DIGITAL I/O: 4 open-collector outputs (30V maximum pull up voltage, 100mA maximum sink current, 10Ω output impedance), 1 TTL compatible input, 1 common.

RELAY DRIVE: 700mA maximum for both card slots.

CARD SIZE: 32mm high × 114mm wide × 272mm long (1¼ in × 4½ in × 10¾ in).

CARD COMPATIBILITY: Fully compatible with all 7XXX cards.

THROUGHPUT

EXECUTION SPEED OF SCAN LIST: 165 channels or memory locations per second.

TRIGGER EXECUTION TIME (maximum time from activation of Trigger Source to start of switch open or close[2]):

SOURCE	LATENCY	JITTER
GET[1]	100 µs	<50 µs
*TRG[1]	5.0 ms	
Trigger Link	100 µs	<13 µs
External	100 µs	<13 µs
Timer	100 µs	<13 µs

[1] Assuming no IEEE-488 commands are pending execution.

[2] Excluding switch settling time.

IEEE-488 COMMAND EXECUTION TIME

COMMAND	EXECUTION TIME[1]
:ROUT:OPEN (@1!1)	<8 ms + Relay Open Time
:ROUT:CLOS (@1!1)	<8 ms + Relay Close Time
:ROUT:REC M1	<9 ms + Relay Settle Time

[1] Measured from the time at which the command terminator is taken from the bus to relay energize.

ANALOG BACKPLANE

SIGNALS: Four 3-pole rows (Hi, Lo, Guard). These signals provide matrix and multiplexer expansion between cards within one mainframe.

MAXIMUM VOLTAGE: 250V DC, 250V rms, 350V AC peak, signal path to signal path or signal path to chassis.

MAXIMUM CURRENT: 1A peak.

PATH ISOLATION:

$>10^{10}\Omega$, <50pF path to path (any Hi, Lo, Guard to another Hi, Lo, Guard).

$>10^{10}\Omega$, <50pF differential (Hi to Lo or Hi, Lo to Guard).

$>10^{9}\Omega$, <75pF path to chassis.

CHANNEL CROSSTALK: <–65dB @ 1MHz (50Ω load).

BANDWIDTH: <3dB loss at 100MHz (50Ω load).

IEEE-488 BUS IMPLEMENTATION

STANDARDS CONFORMANCE: Conforms to SCPI-1990, IEEE-488.2 and IEEE-488.1.

MULTILINE COMMANDS: DCL, LLO, SDC, GET, GTL, UNT, UNL, SPE, SPD.

UNILINE COMMANDS: IFC, REN, EOI, SRQ, ATN.

INTERFACE FUNCTIONS: SH1, AH1,T5, TE0, L4, LE0, SR1, RL1, PP0, DC1, DT1, C0, E1.

GENERAL

DISPLAY: Dual-line vacuum fluorescent.
1st line: 20-character alphanumeric.
2nd line: 32-character alphanumeric.

REAR PANEL CONNECTORS:

IEEE-488

8-pin micro-DIN connector for digital I/O

8-pin micro-DIN for Trigger Link

8-pin micro-DIN for Trigger Link expansion

BNC for External Trigger

BNC for Channel Ready

POWER: 90–260V AC universal input, 47–440Hz, 40VA maximum.

EMC: Conforms to European Union Directive 89/336/EEC.

SAFETY: Conforms to European Union Directive 73/23/EEC (meets EN61010-1/IEC 1010).

EMI/RFI: Meets VDE 0871B and FCC Class B.

ENVIRONMENT:

Operating: 0°–50°C, <80% relative humidity (0°–35°C).

Storage: –25° to +65°C.

DIMENSIONS, WEIGHT: 89mm high × 216mm wide × 375mm deep (3½ in × 8½ in × 14¾ in). Net weight 3.4kg (7½ lbs).