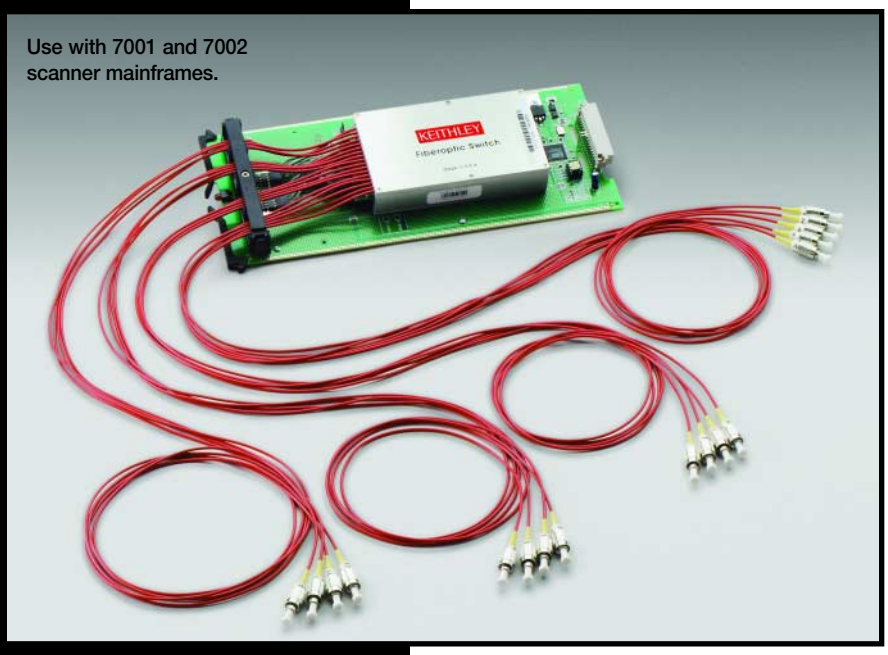
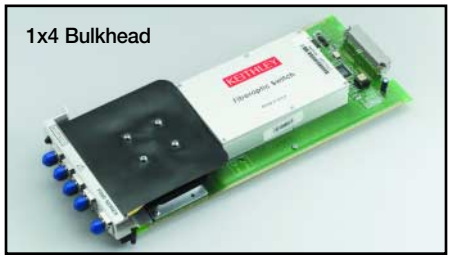
Optical switching card for the Model 7001 switching mainframe

OPTOELECTRONIC TEST SOLUTIONS

7090 Optical Switch Cards



- Perform multiple tests on a single device without changing test setup
- Test multiple devices with a single instrument
- 1x4, 1x8, and 1x16 optical switching cards
- Single-mode or multimode fiber
- Very low insertion loss, 0.6dB typ.
- 0.03dB repeatability
- FC/SPC and FC/APC connectors
- Bulkhead options available



The Model 7090 Optical Switch Cards are members of Keithley's family of switch cards designed for the Model 7001 and 7002 Switch Mainframes. These cards simplify making accurate connections from one input fiber channel to either four, eight, or sixteen output fiber channels. When combined with existing Series 7001/7002 switch cards, these optical switches allow for hybrid switching combinations of optical, RF, and DC switching within a single switch mainframe, extending the automated testing environment.

Combine Optical, DC, and RF Switching in One Instrument

The Model 7090 cards are compatible with all other Series 7001/7002 switch cards, so they can be used in conjunction with DC switch cards to control an LIV test system, as well as for RF switching needs. All of the switches can be used in one mainframe with a single GPIB address.

Meets a Range of Test Requirements

Model 7090 cards offer a number of options to ensure the compatibility of the switch with the test setup. Each switch card has one input fiber aligned to one of four, eight, or sixteen output fibers. Depending on the card chosen, the fiber is either a 9μm single-mode fiber or 62.5μm multimode fiber. The input and output fiber channels are available with several connection options, including FC/SPC, FC/APC, a one-meter fiber pigtail with a connector, and a bulkhead option (for 1×4 switches). For a complete list of available features, see the Physical Properties table on the following page.

Seamless Integration with Keithley's LIV Test Solution

The Model 7090 cards are designed to allow tight integration with Keithley's LIV Test System. The LIV Test System combines all of the DC measurement capabilities required to test laser diode modules, including optical power measurement and tight temperature control of the device under test, in an integrated instrument package. The high speed Trigger Link interface provided on the instruments and switch mainframe in the LIV Test System allows for tight synchronization of system functions.

Faster Test Development

Several built-in features of the Model 7001 and 7002 mainframes simplify system setup, operation, and modifications. All aspects of the instrument can be programmed from either the mainframe's front panel or over the IEEE bus. Both mainframes offer Trigger Link interfaces to ensure tight control over the test system and eliminate IEEE bus command overhead.

APPLICATIONS

Production testing of:

- Laser diode modules
- Chip on submount laser diodes
- Laser diode bars
- LEDs and OLEDs
- Passive optical components
- VCSEL arrays
- Optical add/drop multiplexer (OADM)

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7090

Optical Switch Cards

Ordering Information

7090-4-1 1x4 Single-Mode with FC/APC Fiber Pigtail

7090-4-2BH 1x4 Single-Mode with FC/SPC Bulkhead

7090-8-3 1x8 Single-Mode with FC/APC Fiber Pigtail

7090-8-4 1x8 Multimode with FC/SPC Fiber Pigtail

7090-8-5 1x8 Single-Mode with FC/SPC Fiber Pigtail

7090-16-6 1x16 Single-Mode with FC/SPC Fiber Pigtail

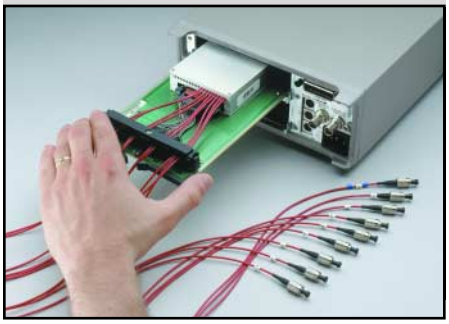
7090-16-7 1x16 Single-Mode with FC/APC Fiber Pigtail

Accessories Supplied

User's Manual

Related DC/RF Switch Options

7011-C Quad 1×10 Multiplexer Card
7012-C 4×10 Matrix Card
7053 High Current Switch Card
7016A 2GHz, Dual 1×4, 50Ω Card
7017 800MHz Card
7038 2GHz, 75Ω Card



PHYSICAL PROPERTIES

CONFIGURATION: Single channel, 1×N non-blocking switch.

MODEL NUMBER	NO. OF CHANNELS	FIBER TYPE	WAVELENGTH (nm)	CONNECTOR	FIBER LENGTH
7090-4-1	1×4	Single-mode fiber (SMF-28) 9/125 each ch.	1290-1650	FC/APC	1m
7090-4-2BH[1]	1×4	Single-mode fiber (SMF-28) 9/125 each ch.	1290-1650	FC/SPC	Bulkhead Connector
7090-8-3	1×8	Single-mode fiber (SMF-28) 9/125 each ch.	1290-1650	FC/APC	1m
7090-8-4	1×8	Multimode fiber 62.5/125 each ch.	780-1350	FC/SPC	1m
7090-8-5	1×8	Single-mode fiber (SMF-28) 9/125 each ch.	1290-1650	FC/SPC	1m
7090-16-6	1×16	Single-mode fiber (SMF-28) 9/125 each ch.	1290-1650	FC/SPC	1m
7090-16-7	1×16	Single-mode fiber (SMF-28) 9/125 each ch.	1290-1650	FC/APC	1m

REFERENCED SWITCH MANUFACTURER'S OPTICAL SPECIFICATIONS[2]

	TYPICAL	MAXIMUM	UNITS
Wavelength Range	780 to 1650		nm
Switch Life	> 10 million cycles (min.)		
Insertion Loss[3]	0.6	1.2	dB
Repeatability[4]	—	±0.03	dB
Back Reflection (SM/MM)[5]	–60 / –20	–55 / —	dB
Polarization Dependent Loss (PDL)[6]	—	0.05	dB
Crosstalk	—	–80	dB

GENERAL SPECIFICATIONS

SWITCHING TIME[7]:

	1×4	1×8	1×16
Reset/Open	250ms	315ms	450ms
Settle/Close	450ms	500ms	630ms

DIMENSIONS, WEIGHT: 144mm wide × 272mm high × 32mm deep (4.5 in × 10.75 in × 1.25 in). Net weight 0.66kg (1.5 lb).

ENVIRONMENT: Operating Temperature: 0° to 40°C[8]. **Storage Temperature:** –20° to 65°C. **Relative Humidity:** Up to 35°C <80% RH non-condensing.

EMC: European Union Directive 89/336/EEC EN61326.

SAFETY: European Union Directive 73/23/EEC EN61010-1.

NOTES:

1. This model contains a back plate with 5 FC/PC mating sleeve adapters. The fiber length is not applicable compared with the other models that are fiber pigtailed. Additional insertion loss due to the mating sleeve adapter not accounted for in the referenced switch specification.
2. All optical specifications are referenced without connectors and are guaranteed by switch manufacturer only. Connectorization data will be provided for Insertion Loss and Back Reflection for each channel per switch card.
3. Measured at 23° ± 5°C.
4. Sequential repeatability for 100 cycles at constant temperature after warm up. (Difference in Insertion Loss).
5. Based on standard 1m pigtail length.
6. Measured at 1550nm.
7. Actuation time measured from system trigger. Reset/Open refers to Channel N to Reset time. Settle/Close refers to Reset to Channel N or Channel N to Channel M time. Reset position is optically blocked.
8. At higher operating temperatures, a typical additive insertion loss of 0.1dB should be expected for the strain relief model (0.3dB for the bulkhead model).