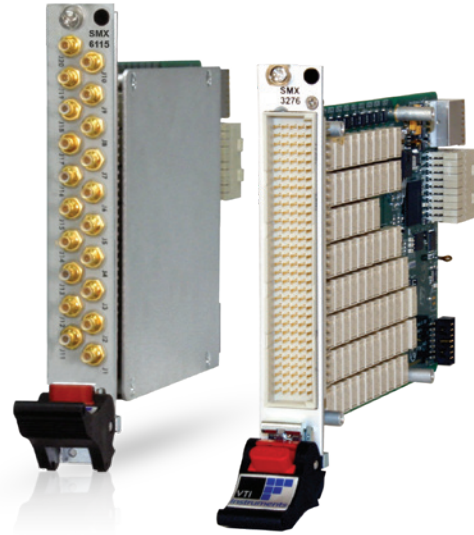


SentinelEX SWITCHING SERIES

PXI EXPRESS | TEST AND MEASUREMENT SUITE



FEATURES

- Software-configurable
- Embedded health monitoring
- Improved test reliability
- Exceptional noise immunity
- Efficient high-density packaging
- Interactive schematic control
- 3 Year warranty

ATE MARKETS & APPLICATIONS

- Avionics
- Electronics
- Oil and Gas
- Automotive
- Defense and Aerospace
- Energy / Power Generation

SentinelEX

Overview

AMETEK VTI Instruments modular instrumentation solutions are used in the world's most demanding electronic and functional test applications, helping customers meet the highest level of quality standards in the products they manufacture. Our ability to design precision instrumentation, in a modular form factor, has enabled engineers to develop test stations in a reduced footprint without compromising the integrity of test data.

SentinelEX continues to lead the way in modular PXI Express test solutions by delivering uncompromised measurement integrity to the core of every test station: the signal switching subsystem. The expanded PXIe Switching Series, built on 20 years of proven deployment in the most demanding aerospace, defense and automotive applications, delivers exceptional performance and reliability by implementing extensive signal path shielding providing reduced cross-talk and improved channel-to-channel isolation.

Test system performance is therefore improved and costs lowered by reducing false pass/fail errors and intermittent faults often associated with marginal signal levels. System level development and support costs are further reduced by combining software-configurable switch personalization with comprehensive, on-board health monitoring.



DESIGNING MODULES WITH THE SYSTEM IN MIND

A test system is more than just a collection of hardware modules, and the integrity of the signals passed between test instrumentation and the unit under test (UUT) is highly dependent on switching and the interconnection interfaces that are part of the signal transmission path.

AMETEK VTI Instruments PXIe switching modules are designed to maximize the integrity of the test signals by incorporating advanced circuit board layout techniques that minimize the effects of unwanted transmission stubs, shield against radiated signals in adjacent card slots and ultimately extend the usable bandwidth of the test system as a whole.

An innovative software driver approach, based on IVI industry standards, enables a single driver session to control multiple modules as a subsystem, providing an application



development environment that significantly reduces development time. Advanced triggering and module-to-module synchronization reduces test execution time, while chassis smart health-monitoring and relay odometers embody a predictive approach to maintenance.

AMETEK VTI Instruments core philosophy is to maintain focus on innovation and technology enabling our customers to optimize their test system capital investment through product longevity, unmatched measurement integrity and data reliability.

MULTIPLEXERS

Overview

The AMETEK VTI Instruments SMX-3000 Series of multiplexers deliver exceptional performance and reliability by implementing extensive signal path shielding and isolation. Available models with software configurable switch subsystems increase flexibility and help control costs by allowing a single module to be used for different testing requirements. Embedded virtual schematic control further simplifies setup and debugging, allowing all relays to be engaged independent of application software.

Ideally suited for medium-to-high density automated test systems (ATE), the SMX-3000 Series provides uncompromised measurement integrity ideal for the most demanding aerospace, defense and automotive applications.

Specifications

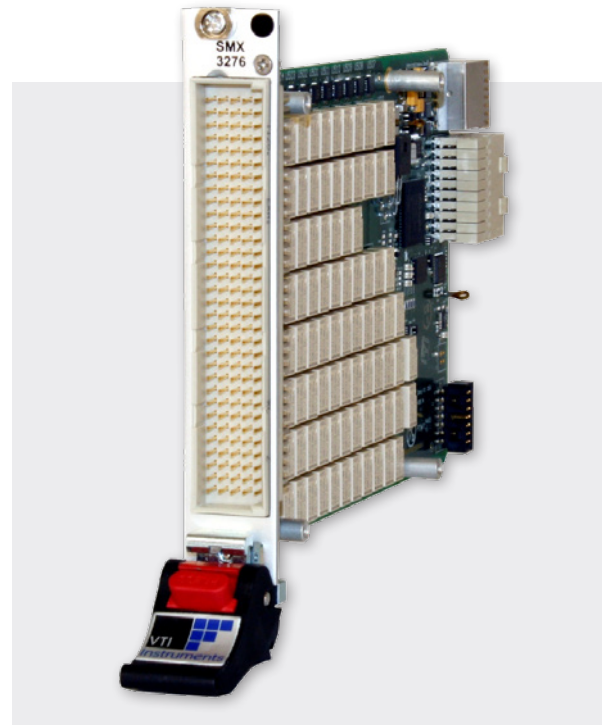
Maximum Switching Voltage	300 VDC / 300 VAC
Maximum Switching Current	2 A
Maximum Switching Power	60 W DC, 62.5 VA
Bandwidth	> 100 MHz (typical)
Operate Time	< 3 ms
Path Resistance	< 500 mΩ
Insulation Resistance	> 1 X 10 ⁹ Ω
Rated Switch Operations	
Mechanical	1 X 10 ⁸
Electrical	1 X 10 ⁵
Capacitive Discharge Relays	Internal
Configurable Bussing Relays	Internal
End-to-End Signal Path Shielding	Yes

Specifications subject to change without notice.

Ordering Information

Model	Part No.	Configuration
SMX-3001	70-0409-220R	(8) 1x8, 2-wire multiplexer, fully configurable
SMX-3002	70-0409-221R	(8) 1x8, 2-wire multiplexer, fixed
SMX-3003	70-0409-222R	(4) 1x16, 2-wire multiplexer, fixed
SMX-3004	70-0409-223R	(2) 1x32, 2-wire multiplexer, fixed
SMX-3005	70-0409-224R	(1) 1x64, 2-wire multiplexer, fixed
SMX-3006	70-0409-128R	(1) 1x128, 1-wire multiplexer, fixed
SMX-3007	70-0409-129R	(2) 1x64, 1-wire multiplexer, fixed
SMX-3276	70-0409-009R	(2) 1x38, 2-wire multiplexer, fully configurable
SMX-3277	70-0409-103R	(2) 1x76, 1-wire multiplexer, fixed
SMX-3278	70-0409-104R	(2) 1x38, 2-wire multiplexer, fixed
SMX-3279	70-0409-105R	(1) 1x76, 2-wire multiplexer, fixed
SMX-3280	70-0409-225R	(1) 1x152, 1-wire multiplexer, fixed

Option with Discharge Relays will have suffix "DS" in above model names.



FEATURES

- SMX-30xx: 1x128 1-wire, 1x64 2-wire, or 1x32 4-wire Configurations
- SMX-32xx: 1x152 1-wire, 1x76 2-wire, 1x38 4-wire
- 300 VAC / 300 VDC
- 2 A Switching / Carrying
- Embedded Virtual Schematic
- Capacitive Discharge Relays
- Configurable Internal Bussing Relays
- Relay Cycle Count Odometer
- Extensive End-to-End Signal Path Shielding

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MATRICES With Built In SELF-TEST (BIST)

Overview

The VTI SMX-4xxx Series of matrix cards deliver exceptional performance and reliability by implementing extensive signal path shielding, isolation and built-in health monitoring. Built In Self-Test (BIST) capability can be used to determine relay health and provide confidence. Available models with software configurable switch subsystems increase flexibility and help control costs by allowing a single module to be used for different testing requirements. Embedded virtual schematic control further simplifies setup and debugging, allowing all relays to be engaged independent of application software.

Ideally suited for medium-to-high density automated test equipment (ATE) requiring multiple connection point flexibility, the SMX-4000 Series provides uncompromised measurement integrity ideal for the most demanding aerospace, defense and automotive applications.

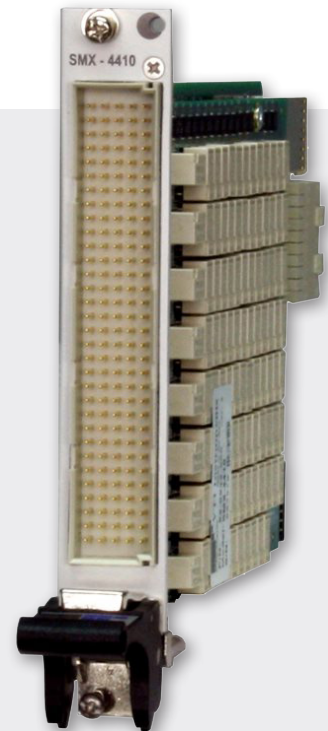
Specifications

Maximum Switching Voltage	300 VDC / 300 VAC
Maximum Switching Current	2 A
Maximum Switching Power	60 W DC, 62.5 VA
Bandwidth	> 82 MHz (typical)
Operate Time	< 3 ms
Path Resistance	< 500 m
Insulation Resistance	> 1 X 10 ⁹
Rated Switch Operations	
Mechanical	1 X 10 ⁸
Electrical	1 X 10 ⁵
Capacitive Discharge Relays	Internal
Configurable Bussing Relays	Internal
End-to-End Signal Path Shielding	Yes

Specifications subject to change without notice.

Ordering Information

Model	Part No.	Configuration
SMX-4410	70-0409-108R	(4) 4x10, 2-wire, fully configurable
SMX-4411	70-0409-200R	(4) 4x10 2-wire Matrix, fixed
SMX-4412	70-0409-201R	(2) 4x20 2-wire Matrix, fixed
SMX-4413	70-0409-202R	(1) 4x40 2-wire Matrix, fixed
SMX-4414	70-0409-203R	(2) 8x10 2-wire Matrix, fixed
SMX-4415	70-0409-204R	(1) 8x20 2-wire Matrix



FEATURES

- (4) 4x10 2-wire Fully Configurable
- (4) 4x10 2-wire, (2) 4x20 2-wire, (1) 4x40 2-wire, (2) 8x10 2-wire Configurations
- 300 VAC / 300 VDC
- 2 A Switching / Carrying
- Embedded Virtual Schematic
- Configurable Internal Bussing Relays
- Relay Cycle Count Odometer
- Extensive End-to-End Signal Path Shielding
- Self-Test to Determine Relay Health

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GENERAL PURPOSE SWITCHING

Overview

The AMETEK VTI Instruments SMX-5000 Series of general purpose switches deliver exceptional performance and reliability by implementing extensive signal path shielding, isolation and built-in health monitoring. Embedded virtual schematic control simplifies setup and debugging, allowing all relays to be engaged independent of application software and device drivers.

Ideally suited for a wide range of discrete signal switching, the SMX-5000 Series provides uncompromised measurement integrity ideal for the most demanding aerospace, defense and automotive automated test equipment (ATE) applications.

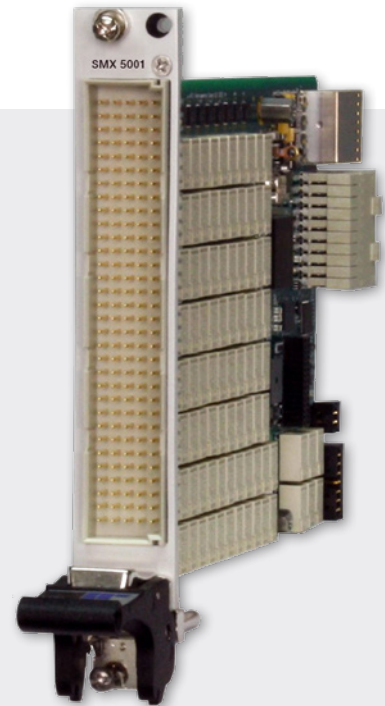
Specifications

Maximum Switching Voltage	300 VDC / 300 VAC
Maximum Switching Current	2A / 5A
Maximum Switching Power	60 / 150 W DC, 62.5 VA Breaking Capacity
Bandwidth	> 64 MHz (typical)
Operate Time	< 3 ms
Path Resistance	< 400 mΩ
Insulation Resistance	> 1 X 10 ⁹ Ω
Rated Switch Operations	
Mechanical	1 X 10 ⁸
Electrical	1 X 10 ⁶
End-to-End Signal Path Shielding	Yes

Specifications subject to change without notice.

Ordering Information

Model	Part No.	Configuration
SMX-5001	70-0409-110R	(80) SPST/Form A
SMX-5002	70-0409-118R	(50)SPDT/Form C
SMX-5004	70-0409-580R	(30)SPDT/Form C



FEATURES

- Form A and Form C Configurations
- 300 VAC / 300 VDC
- 2A / 5A Switching / Carrying
- Embedded Virtual Schematic
- Relay Cycle Count Odometer
- Extensive End-to-End Signal Path Shielding

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POWER SWITCHING

Overview

The AMETEK VTI Instruments SMX-2000 Series of power switches deliver exceptional performance and reliability in a compact, high-density form factor. Embedded virtual schematic control simplifies setup and debugging, allowing all relays to be engaged independent of application software and device drivers.

Ideally suited for medium-to-high density automated test equipment (ATE), the SMX-200x-xx Series provides uncompromised measurement integrity ideal for the most demanding aerospace, defense and automotive automated test system (ATE) applications.

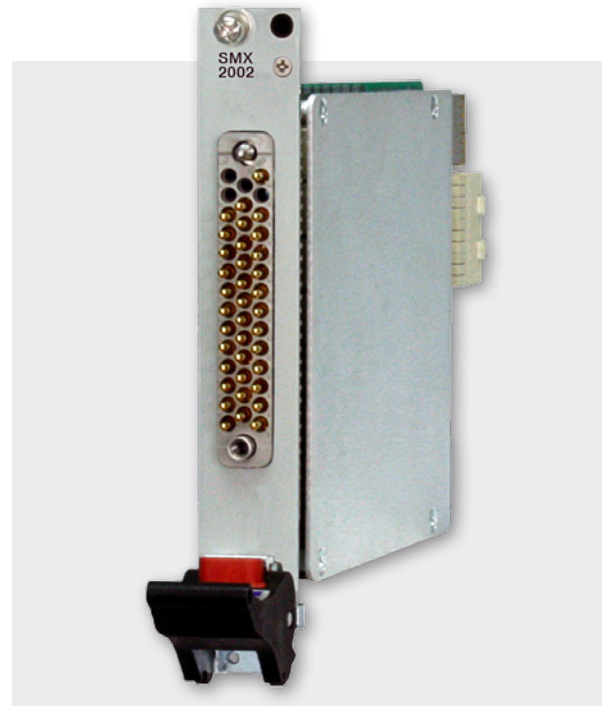
Specifications

Relay Type	Electro Mechanical, Power Relay
Contact Type	AgNi 90/10
Maximum Switching Voltage	300 VDC / 250 VAC
Maximum Switching Current	16 A
Maximum Switching Power	448 W*, 4000 VA Breaking Capacity
Bandwidth	45 MHz (typical)
Operate Time	< 8 ms
Path Resistance	< 100 mΩ
Insulation Resistance	> 1 X 10 ⁹ Ω
Rated Switch Operations	
Mechanical	> 30 x 10 ⁶
Electrical	> 10 x 10 ³

Specifications subject to change without notice.

Ordering Information

Model	Part No.	Configuration
SMX-2001-10	70-0409-581R	10 SPST
SMX-2001-12	70-0409-583R	12 SPST
SMX-2001-16	70-0409-584R	16 SPST
SMX-2002-10	70-0409-570R	10 SPDT
SMX-2002-12	70-0409-582R	12 SPDT



FEATURES

- (10) SPST / SPDT
- 250 AC / 300 VDC
- 16 A Switching / Carrying
- Embedded Virtual Schematic
- Relay Cycle Count Odometer
- Fail-safe Interrupt Input on Front Panels for Emergency Safety Conditions

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RF MULTIPLEXER – 50 OHM

Overview

The AMETEK VTI Instruments SMX-6000 Series of high density non-blocking RF multiplexers deliver exceptional performance and reliability in a compact configuration. Front panel connectivity is available in both SMB (single / double slot) and PkZ (single slot) formats to integrate seamlessly into new or existing test systems. Embedded virtual schematic control further simplifies setup and debugging allowing all relays to be engaged independent of application software and device drivers.

The SMX-6000 Series delivers unmatched bandwidth and isolation performance resulting in exceptional measurement integrity that is ideal for the most demanding aerospace, defense and automotive automated test equipment (ATE) applications.

Specifications

Maximum Switching Voltage	250 VAC / 220 VDC
Maximum Switching Current	1.5 A
Maximum Switching Power	50 W DC, 62.5 VA
Rated Switch Operations	
Mechanical	1 X 10 ⁷
Electrical	1 X 10 ⁵
Operate Time	< 5 ms
RF Impedance	50Ω
Connector	SMB or PkZ

Specifications subject to change without notice.

RF Specifications

	SMX-6101/6111 (1x4)	SMX-6105/6115 (1x8)	SMX-6106/6116 (1x16)	SMX-6103 (1x32)
Characteristic Impedance	50 Ω	50 Ω	50 Ω	50 Ω
Bandwidth (-3dB)	3.4 GHz	2.5 GHz	2 GHz	1.5 GHz
Insertion Loss @ 3.5 GHz	3.3 dB	4.4 dB	4.7 dB	5.5 dB
Isolation & Cross-talk @ 1.5 GHz	-60 dB	-60 dB	-60 dB	-60 dB
VSWR DC-3.5 GHz	2:1	2:1	2:1	2:1
Propagation Delay (Typical)	2.35 ns	3.50 ns	3.50 ns	4.50 ns



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FEATURES

- Non-Blocking Configuration
- Bandwidth Ranges from 1.5 GHz to 3.5 GHz (configuration specific)
- 250 VAC / 220 VDC
- 1.5A Switching Current
- Embedded Virtual Schematic
- Relay Cycle Count Odometer
- High Density Single-Slot Implementations

Ordering Information

Model	Part No.	Configuration
SMX-6101	70-0409-140R	(10) 1X4 COAX MUXES
SMX-6101-SMB	70-0409-150R	(10) 1X4 COAX MUXES
SMX-6111	70-0409-144R	(5) 1X4 COAX MUXES
SMX-6111-SMB	70-0409-154R	(5) 1X4 COAX MUXES
SMX-6106	70-0409-143R	(2) 1X16 COAX MUXES
SMX-6106-SMB	70-0409-153R	(2) 1X16 COAX MUXES
SMX-6116	70-0409-146R	(1) 1X16 COAX MUXES
SMX-6116-SMB	70-0409-156R	(1) 1X16 COAX MUXES
SMX-6105	70-0409-142R	(4) 1X8 COAX MUXES
SMX-6105-SMB	70-0409-152R	(4) 1X8 COAX MUXES
SMX-6115	70-0409-145R	(2) 1X8 COAX MUXES
SMX-6115-SMB	70-0409-155R	(2) 1X8 COAX MUXES
SMX-6103	70-0409-141R	(1) 1X32 COAX MUX
SMX-6103-SMB	70-0409-151R	(1) 1X32 COAX MUX

RF MATRIX – 50 OHM

Overview

The AMETEK VTI Instruments SMX-6000 Series of high density non-blocking RF matrix cards deliver exceptional performance and reliability in a compact configuration. Front panel connectivity is available in both SMB and PkZ formats to integrate seamlessly into new or existing test systems. Embedded virtual schematic control further simplifies setup and debugging allowing all relays to be engaged independent of application software and device drivers.

The SMX-6000 Series delivers unmatched bandwidth and isolation performance for multi-point connectivity, resulting in exceptional measurement integrity that is ideal for the most demanding aerospace, defense and automotive automated test equipment (ATE) applications.

Specifications

Maximum Switching Voltage	250 VAC / 220 VDC
Maximum Switching Current	1.5 A
Maximum Switching Power	50 W DC, 62.5 VA
Rated Switch Operations	
Mechanical	1 X 10 ⁷
Electrical	1 X 10 ⁵
Operate Time	< 5 ms
RF Impedance	50Ω
Connector	SMB or PkZ

Specifications subject to change without notice.

RF Specifications

	SMX-6144 (4x4)
Characteristic Impedance	50 Ω
Bandwidth (-3dB)	2 GHz
Insertion Loss @ 3.5 GHz	4.3 dB
Isolation & Crosstalk @ 1.5 GHz	-60 dB
VSWR DC-3.5 GHz	2:1
Propagation Delay (Typical)	3.50 ns

Ordering Information

Model	Part No.	Configuration
SMX-6144	70-0409-147R	(1) 4X4 COAX MATRIX
SMX-6144-SMB	70-0409-157R	(1) 4X4 COAX MATRIX



FEATURES

- Non-blocking Configuration
- Bandwidth > 2 GHz (configuration specific)
- 250 VAC / 220 VDC
- 1.5A Switching Current
- Embedded Virtual Schematic
- Relay Cycle Count Odometer

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MICROWAVE SWITCHING

Overview

The AMETEK VTI Instruments SMX-7000 Series of microwave switch cards extends functionality typically reserved for dedicated stand-alone systems into the PXIe form-factor. Single and dual slot configurations provide the ability to mix and match multiple switch configurations including SPDT, SP4T, SP6T and Transfer. Embedded virtual schematic control further simplifies setup and debugging allowing all relays to be engaged independent of application software and device drivers.

Ideally suited for medium-to-high density automated test equipment (ATE), the SMX-7000 Series deliver uncompromised measurement integrity ideal for the most demanding aerospace, defense and communication applications.



FEATURES

- 6 - 67 GHz
- Single and Dual Slot Carriers
- Embedded Virtual Schematic Control

Specifications

Frequency Range	6 - 67 GHz
Average Power Per Channel	170 W
RF Impedance	50 Ω
Switching Time	< 10 ms
Connector Type	SMA, SMA 2.9,2.4mm female, 1.85mm female

Specifications subject to change without notice.

Ordering Information

Model	Part No.	Configuration
SPDT		
SMX-7121-18	70-0409-509R	SINGLE SLOT WITH (1) SPDT 18 GHz MW SWITCH
SMX-7122-18	70-0409-517R	SINGLE SLOT WITH (2) SPDT 18 GHz MW SWITCH
SMX-7223-18	70-0409-525R	DUAL SLOT WITH (3) SPDT 18 GHz MW SWITCH
SMX-7224-18	70-0409-539R	DUAL SLOT WITH (4) SPDT 18 GHz MW SWITCH
SMX-7121-26	70-0409-543R	SINGLE SLOT WITH (1) SPDT 26.5 GHz MW SWITCH
SMX-7122-26	70-0409-510R	SINGLE SLOT WITH (2) SPDT 26.5 GHz MW SWITCH
SMX-7223-26	70-0409-518R	DUAL SLOT WITH (3) SPDT 26.5 GHz MW SWITCH
SMX-7224-26	70-0409-526R	DUAL SLOT WITH (4) SPDT 26.5 GHz MW SWITCH
SMX-7121-40	70-0409-540R	SINGLE SLOT WITH (1) SPDT 40 GHz MW SWITCH
SMX-7122-40	70-0409-544R	SINGLE SLOT WITH (2) SPDT 40 GHz MW SWITCH
SMX-7223-40	70-0409-533R	DUAL SLOT WITH (3) SPDT 40 GHz MW SWITCH
SMX-7224-40	70-0409-535R	DUAL SLOT WITH (4) SPDT 40 GHz MW SWITCH

continued next page

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Ordering Information (continued)

Model	Part No.	Configuration
SMX-7121-50	70-0409-537R	SINGLE SLOT WITH (1) SPDT 50 GHz MW SWITCH
SMX-7122-50	70-0409-541R	SINGLE SLOT WITH (2) SPDT 50 GHz MW SWITCH
SMX-7223-50	70-0409-545R	DUAL SLOT WITH (3) SPDT 50 GHz MW SWITCH
SMX-7224-50	70-0409-534R	DUAL SLOT WITH (4) SPDT 50 GHz MW SWITCH
SMX-7121-67	70-0409-536R	SINGLE SLOT WITH (1) SPDT 67 GHz MW SWITCH
SMX-7122-67	70-0409-538R	SINGLE SLOT WITH (2) SPDT 67 GHz MW SWITCH
SMX-7223-67	70-0409-542R	DUAL SLOT WITH (3) SPDT 67 GHz MW SWITCH
SMX-7224-67	70-0409-546R	DUAL SLOT WITH (4) SPDT 67 GHz MW SWITCH
SP4T		
SMX-7241-06	70-0409-503R	DUAL SLOT WITH (1) SP4T 6 GHz MW SWITCH
SMX-7242-06	70-0409-519R	DUAL SLOT WITH (2) SP4T 6 GHz MW SWITCH
SMX-7243-06	70-0409-527R	DUAL SLOT WITH (3) SP4T 6 GHz MW SWITCH
SMX-7241-26	70-0409-504R	DUAL SLOT WITH (1) SP4T 26.5 GHz MW SWITCH
SMX-7242-26	70-0409-520R	DUAL SLOT WITH (2) SP4T 26.5 GHz MW SWITCH
SMX-7243-26	70-0409-528R	DUAL SLOT WITH (3) SP4T 26.5 GHz MW SWITCH
SMX-7241-40	70-0409-505R	DUAL SLOT WITH (1) SP4T 40 GHz MW SWITCH
SMX-7242-40	70-0409-521R	DUAL SLOT WITH (2) SP4T 40 GHz MW SWITCH
SMX-7243-40	70-0409-529R	DUAL SLOT WITH (3) SP4T 40 GHz MW SWITCH
SP6T		
SMX-7261-06	70-0409-506R	DUAL SLOT WITH (1) SP6T 6 GHz MW SWITCH
SMX-7262-06	70-0409-522R	DUAL SLOT WITH (2) SP6T 6 GHz MW SWITCH
SMX-7263-06	70-0409-530R	DUAL SLOT WITH (3) SP6T 6 GHz MW SWITCH
SMX-7261-26	70-0409-507R	DUAL SLOT WITH (1) SP6T 26.5 GHz MW SWITCH
SMX-7262-26	70-0409-523R	DUAL SLOT WITH (2) SP6T 26.5 GHz MW SWITCH
SMX-7263-26	70-0409-531R	DUAL SLOT WITH (3) SP6T 26.5 GHz MW SWITCH
SMX-7261-40	70-0409-508R	DUAL SLOT WITH (1) SP6T 40 GHz MW SWITCH
SMX-7262-40	70-0409-524R	DUAL SLOT WITH (2) SP6T 40 GHz MW SWITCH
SMX-7263-40	70-0409-532R	DUAL SLOT WITH (3) SP6T 40 GHz MW SWITCH
TRANSFER SW		
SMX-72T1-26	70-0409-551R	DUAL SLOT WITH (1) 26.5 GHz TRANSFER SWITCH
SMX-72T2-26	70-0409-554R	DUAL SLOT WITH (2) 26.5 GHz TRANSFER SWITCH
SMX-72T1-40	70-0409-557R	DUAL SLOT WITH (1) 40 GHz TRANSFER SWITCH
SMX-72T2-40	70-0409-552R	DUAL SLOT WITH (2) 40 GHz TRANSFER SWITCH
SMX-72T1-50	70-0409-555R	DUAL SLOT WITH (1) 50 GHz TRANSFER SWITCH
SMX-72T2-50	70-0409-558R	DUAL SLOT WITH (2) 50 GHz TRANSFER SWITCH



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