

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Ametek / VTI Instruments / VXI Technology SMP6905-2500* at our website: *Click HERE*

SMIP *II*™ Series

SWITCH MODULARITY AND INTERFACE PLATFORM PLUG-IN MODULE SERIES

USER'S MANUAL

P/N: 82-0056-000
Released December 20th, 2010

VXI Technology, Inc.

2031 Main Street
Irvine, CA 92614-6509
(949) 955-1894

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

TABLE OF CONTENTS

INTRODUCTION

TABLE OF CONTENTS 3
Certification 6
Warranty 6
Limitation of Warranty 6
Restricted Rights Legend 6
DECLARATION OF CONFORMITY 7
GENERAL SAFETY INSTRUCTIONS 8
Terms and Symbols 8
Warnings 8
SUPPORT RESOURCES 10

SECTION 1 11

INTRODUCTION 11
Introduction 11
Signal Integrity 12
Improved Throughput and Performance 13
SMIP *II* Base Units 15

SECTION 2 17

PREPARATION FOR USE 17
Introduction 17
Calculating System Power and Cooling Requirements 17
Setting the Chassis Backplane Jumpers 17
Switch Settings 18

SECTION 3 21

PROGRAMMING 21
Introduction 21
Addressing 22
Description of Registers - A16 24
Description of SMIP *II* Module Registers - A24 / A32 - Extended Memory 31
DEVICE MEMORY MAPS 35
Module Relay Control Address 35
Relay Register Offset 35
Writing to the Relays 35
Programming via VISA 35
Programming via GPIB 37

SECTION 4 39

MODULE APPENDICES 39
Introduction 39
Module Installation 40
Logical Module Location Assignments 41
Module Shielding 41
Blanking Panel 42
APPENDIX SMP2001A 43
SMP2001A – 20-channel 16 Amp SPST Power Switch 43
APPENDIX SMP2002A 49
SMP2002A – 12-channel SPDT 16 Amp Power Switch 49
APPENDIX SMP2003 54
SMP2003 – 8-channel 20 Amp SPDT Power Switch 54

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP2004 60
SMP2004 – 12-channel 20 Amp SPST Relay Switch 60
APPENDIX SMP2005 66
SMP2005 – 3 SPDT and 3 SP4T 20 Amp Switch 66
APPENDIX SMP2007 / SMP2007A 72
SMP2007/SMP20070A – 48-channel 500 V / 1000 V High-Voltage Multiplexer 72
APPENDIX SMP2008 78
SMP2008 – 16-channel 500 V 1 Amp DPST Switch 78
APPENDIX SMP2009 84
SMP2009 – 16-channel 500 V 1 Amp SPDT Switch 84
APPENDIX SMP2012 90
SMP2012 – 10-channel 30 Amp SPST Relay Switch 90
APPENDIX SMP2104 96
SMP2104 – 10-channel 20 Amp DC Solid State SPST Power Switch 96
APPENDIX SMP2113 103
SMP2113 – 4-channel (3 SP4T, 1 SPDT), 25 A Power Switch 103
Master Reset Bit 107
Delay Register 107
APPENDIX SMP2122 109
SMP2122 – 4-channel (2 SP4T, 2 Dual Ganged SPDT) 25 A Power Switch 109
Master Reset Bit 113
Delay Register 113
APPENDIX SMP2300 115
SMP2300 – 500 V Coaxial 24-channel SPST High Voltage Switch 115
APPENDIX SMP2300-93 120
SMP2300-93 – 500 V Coaxial 24-channel SPST High Voltage Switch 120
APPENDIX SMP3001 126
SMP3001 – 8 x 8 to 1 Multiplexer 126
APPENDIX SMP3001DS 132
SMP3001DS – 64-channel Multiplexer 132
APPENDIX SMP3002 139
SMP3002 – 1x8 Multiplexer by 16 139
APPENDIX SMP3005 145
SMP3005 – 1x5 Multiplexer by 12 145
APPENDIX SMP4001 152
SMP4001 – 9 (4 x 4) Matrix 152
APPENDIX SMP4002 158
SMP4002 – 4 x 36 Matrix 158
APPENDIX SMP4003 164
SMP4003 – 2 (4 x 16) + 1 (4 x 4) Matrix 164
APPENDIX SMP4004 170
SMP4004 – 1 (8 x 16) + 1 (4 x 4) Matrix 170
APPENDIX SMP4005 176
SMP4005 – 12 x 12 Matrix 176
APPENDIX SMP4006 182
SMP4006 – 3 x (4 x 12) Matrix 182
APPENDIX SMP4007 188
SMP4007 – 2 (8 x 8) + 1 (4 x 4) Matrix 188
APPENDIX SMP4024 194
SMP4024 – Dual 2 x 24 Coaxial Matrix 194
APPENDIX SMP4028 200
SMP4028– 8 (2 x 8) 1-Wire Matrices 200
APPENDIX SMP4044 206
SMP4044 – 8x20 Coaxial Matrix 206
APPENDIX SMP5001 211
SMP5001 – 80-channel SPST 211

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP5002 217
SMP5002 – 50-channel SPDT 217
APPENDIX SMP5003 223
SMP5003 – 26-channel SP4T 223
APPENDIX SMP5004 228
SMP5004 – 30-channel SPDT 228
APPENDIX SMP5005 235
SMP5005 – 48-channel SPST 235
APPENDIX SMP6001 241
SMP6001 – 10 1 x 4 Coaxial Trees > 900 MHz 241
APPENDIX SMP6002 246
SMP6002 – 17-channel RF SPDT 246
APPENDIX SMP6004 252
SMP6004 – 3-channel 1 x 8 and 3-channel 1 x 2 Coaxial Stars 252
APPENDIX SMP6005 258
SMP6005 – 8-channel (1 x 4) Coaxial Stars 258
APPENDIX SMP6006 264
SMP6006 – (2) 250 MHz High-Voltage 1x16 Coaxial Stars 264
APPENDIX SMP6101 269
SMP6101 – 10 (1 x 4) Coaxial Trees > 1.3 GHz 269
APPENDIX SMP6102 275
SMP6102 – 17 (1 x 2) Coaxial Switches > 1.3 GHz 275
APPENDIX SMP6103 280
SMP6103 – (1 x 31) 750 MHz Multiplexer 280
APPENDIX SMP6122 286
SMP6122 – 6 (2 x 2) Coaxial Switch Matrices 286
APPENDIX SMP6144 291
SMP6144 – 1 (4 x 4) Coaxial Switch Matrix 291
APPENDIX SMP6201 297
SMP6201 – 10 1 x 4 Coaxial Trees RF Trees > 500 MHz 297
APPENDIX SMP6202 302
SMP6202 – 17 (1 x 2) RF Switches > 500 MHz 302
APPENDIX SMP6203 307
SMP6203 – 6-channel 75 Ω SP4T Coaxial Switch 307
APPENDIX SMP6204 312
SMP6204 – 12 (1 x 2) 75 Ω RF Switches > 500 MHz 312
APPENDIX SMP6301 / SMP6301T 317
SMP6301 / SMP6301T– 4-channel SP4T RF Mux with SMB Connectors 317
APPENDIX SMP6905/SMP6905-2500 324
SMP6905 – Six 2-Way 10 MHz – 1 GHz Splitter/Combiner 324
0° Splitter/Combiner Background 325
APPENDIX SMP7000 326
SMP7000 – SMIP Breadboard 326
Overview 326
Operation 327
Power-on/Reset States 328
Memory Map 329
Proto Input Connector Pin Outs 331
Motherboard Layout 332
Daughter Board Layout 334
APPENDIX SMP7600 336
SMP7600 – Single Output, Programmable Resistor Ladder 336
Operation 341
Over-voltage & Over-Current Adjustment 342
Programming 343
INDEX 345

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

CERTIFICATION

VXI Technology, Inc. certifies that this product met its published specifications at the time of shipment from the factory. VXI Technology further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology (formerly National Bureau of Standards), to the extent allowed by that organization's calibration facility and to the calibration facilities of other International Standards Organization members.

WARRANTY

The product referred to herein is warranted against defects in material and workmanship for a period of three years from the receipt date of the product at customer's facility. The sole and exclusive remedy for breach of any warranty concerning these goods shall be repair or replacement of defective parts, or a refund of the purchase price, to be determined at the option of VXI Technology.

For warranty service or repair, this product must be returned to a VXI Technology authorized service center. The product shall be shipped prepaid to VXI Technology and VXI Technology shall prepay all returns of the product to the buyer. However, the buyer shall pay all shipping charges, duties, and taxes for products returned to VXI Technology from another country.

VXI Technology warrants that its software and firmware designated by VXI Technology for use with a product will execute its programming when properly installed on that product. VXI Technology does not however warrant that the operation of the product, or software, or firmware will be uninterrupted or error free.

LIMITATION OF WARRANTY

The warranty shall not apply to defects resulting from improper or inadequate maintenance by the buyer, buyer-supplied products or interfacing, unauthorized modification or misuse, operation outside the environmental specifications for the product, or improper site preparation or maintenance.

VXI Technology, Inc. shall not be liable for injury to property other than the goods themselves. Other than the limited warranty stated above, VXI Technology, Inc. makes no other warranties, express, or implied, with respect to the quality of product beyond the description of the goods on the face of the contract. VXI Technology specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

RESTRICTED RIGHTS LEGEND

Use, duplication, or disclosure by the Government is subject to restrictions as set forth in subdivision (b)(3)(*II*) of the Rights in Technical Data and Computer Software clause in DFARS 252.227-7013.

VXI Technology, Inc.
2031 Main Street
Irvine, CA 92614-6509 U.S.A.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

DECLARATION OF CONFORMITY

Declaration of Conformity According to ISO/IEC Guide 22 and EN 45014

MANUFACTURER'S NAME	VXI Technology, Inc.
MANUFACTURER'S ADDRESS	2031 Main Street Irvine, CA 92614-6509
PRODUCT NAME	Switch Modularity and Interface Platform
MODEL NUMBER(S)	SMPXXXX
PRODUCT OPTIONS	All
PRODUCT CONFIGURATIONS	All

VXI Technology, Inc. declares that the aforementioned products conform to the requirements of the Low Voltage Directive 73/23/EEC *and the* EMC Directive 89/366/EEC *(inclusive* 93/68/EEC*) and carries the "CE" mark accordingly. The products have been designed and manufactured according to the following specifications:*

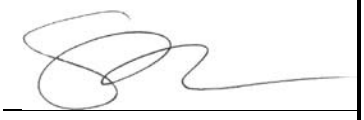
SAFETY	EN61010 (2001)
EMC	EN61326 (1997 w/A1:98) Class A CISPR 22 (1997) Class A VCCI (April 2000) Class A ICES-003 Class A (ANSI C63.4 1992) AS/NZS 3548 (w/A1 & A2:97) Class A FCC Part 15 Subpart B Class A

The products were installed into a C-size VXI mainframe chassis and tested in a typical configuration.

I hereby declare that the aforementioned products have been designed to comply with the relevant sections of the specifications listed above as well as complying with all essential requirements of the Low Voltage Directive.

August 2008

CE



Steve Mauga, QA Manager

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

GENERAL SAFETY INSTRUCTIONS

Review the following safety precautions to avoid bodily injury and/or damage to the product. These precautions must be observed during all phases of operation or service of this product. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the product.

Service should only be performed by qualified personnel.

TERMS AND SYMBOLS

These terms may appear in this manual:

WARNING Indicates that a procedure or condition may cause bodily injury or death.

CAUTION Indicates that a procedure or condition could possibly cause damage to equipment or loss of data.

These symbols may appear on the product:



ATTENTION - Important safety instructions



Frame or chassis ground



Indicates that the product was manufactured after August 13, 2005. This mark is placed in accordance with *EN 50419, Marking of electrical and electronic equipment in accordance with Article 11(2) of Directive 2002/96/EC (WEEE).* End-of-life product can be returned to VTI by obtaining an RMA number. Fees for take-back and recycling will apply if not prohibited by national law.

WARNINGS

Follow these precautions to avoid injury or damage to the product:

Use Proper Power Cord To avoid hazard, only use the power cord specified for this product.

Use Proper Power Source To avoid electrical overload, electric shock or fire hazard, do not use a power source that applies other than the specified voltage.

Use Proper Fuse To avoid fire hazard, only use the type and rating fuse specified for this product.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

WARNINGS (CONT.)

Avoid Electric Shock

To avoid electric shock or fire hazard, do not operate this product with the covers removed. Do not connect or disconnect any cable, probes, test leads, etc. while they are connected to a voltage source. Remove all power and unplug unit before performing any service. ***Service should only be performed by qualified personnel.***

Ground the Product

This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground.

Operating Conditions

To avoid injury, electric shock or fire hazard:

- Do not operate in wet or damp conditions.
- Do not operate in an explosive atmosphere.
- Operate or store only in specified temperature range.
- Provide proper clearance for product ventilation to prevent overheating.
- DO NOT operate if any damage to this product is suspected. ***Product should be inspected or serviced only by qualified personnel.***



Improper Use

The operator of this instrument is advised that if the equipment is used in a manner not specified in this manual, the protection provided by the equipment may be impaired. Conformity is checked by inspection.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SUPPORT RESOURCES

Support resources for this product are available on the Internet and at VTI Instruments customer support centers.

VTI Instruments Corp.
World Headquarters

VTI Instruments Corp.
2031 Main Street
Irvine, CA 92614-6509

Phone: (949) 955-1894
Fax: (949) 955-3041



VTI Instruments
Cleveland Instrument Division

5425 Warner Road
Suite 13
Valley View, OH 44125

Phone: (216) 447-8950
Fax: (216) 447-8951



VTI Instruments
Lake Stevens Instrument Division

3216 Wetmore Avenue, Suite 1
Everett, WA 98201

Phone: (949) 955-1894
Fax: (949) 955-3041



VTI Instruments, Pvt. Ltd.
Bangalore Instrument Division

642, 80 Feet Road
Koramangala IV Block
Bangalore – 560 034
India

Phone: +91 80 4040 7900
Phone: +91 80 4162 0200
Fax: +91 80 4170 0200

Technical Support

Phone: (949) 955-1894
Fax: (949) 955-3041
E-mail: support@vtiinstruments.com

Visit http://www.vtiinstruments.com for worldwide support sites and service plan information.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SECTION 1

INTRODUCTION

INTRODUCTION

The introduction of the SMIP *II*™ (*Switch Modularity and Interface Platform*) revolutionized the automated signal-switching marketplace several years ago by providing a level of modularity, density and performance that was unmatched. The SMIP *II* design is based on VXI Technology's corporate philosophy of modular building block product design. The SMIP *II* product family is now the heart of hundreds of test stations worldwide, ranging from large government testers such as the Navy's RT-CASS to smaller commercial testers self-contained in VXIbus mainframes.

The SMIP *II* is designed with modularity, density, and cost in mind. As opposed to "traditional" VXIbus switching solutions, the SMIP *II* family consists of plug-in switch modules that can be mixed and combined to form flexible, high-density switch configurations.

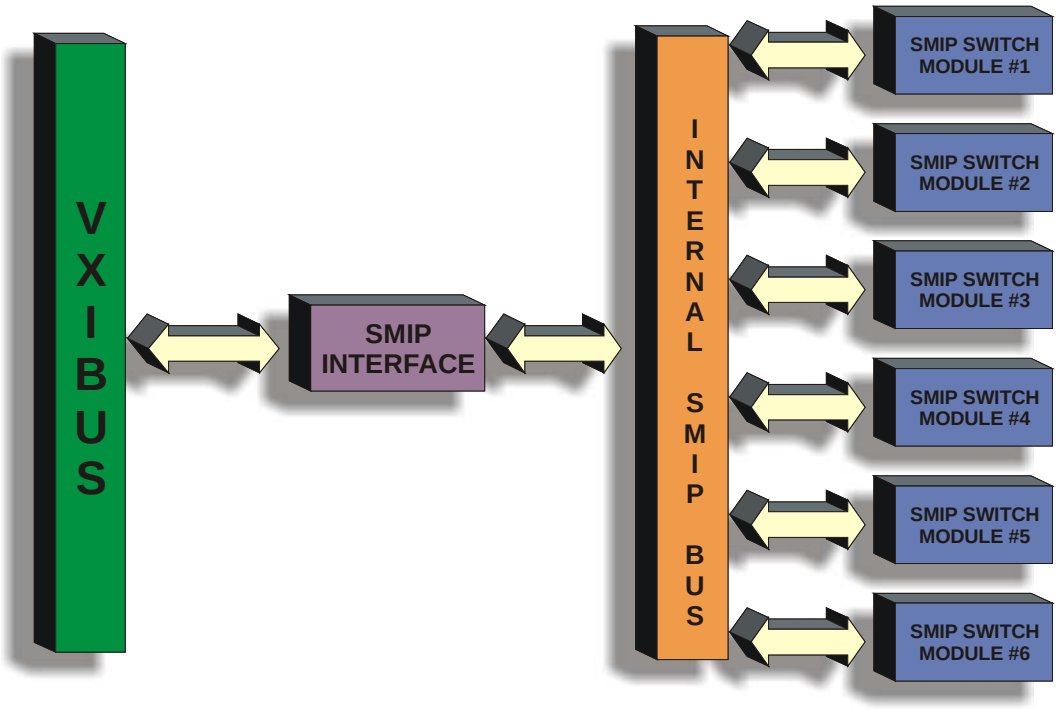


FIGURE 1-1: SMIP *II* — SWITCH MODULARITY AND INTERFACE PLATFORM

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

The SMIP *II* family is divided into three main groups:

- ***DC to RF*** for all switch modules under approximately 1.5 GHz. This includes power switch modules, as well as general purpose relays, multiplexers, and matrices.
- ***Microwave*** for all coaxial switching operating above 1.5 GHz.
- ***Optical*** for fiber optic switches and attenuators.

The signal switch is an extension of the transmission medium carrying signals to/from the device being switched. Using the wrong switch module for a particular application can result in signal degradation and incorrect measurements. VXI Technology offers a vast array of switch modules designed for routing various types of signals. These modules range from shielded cross-point matrices and scanners for low-level signals to microwave and optical switches allowing us to provide a switch solution for virtually any application.

Each SMIP *II* base unit includes a switch control interface board that has one of the most advanced switch control designs on the market. The interface has been designed to provide all the features of an intelligent message-based switching system with the speed and flexibility of a register-based device. These features are achieved in hardware on the control interface board rather than in a driver or via on-board microprocessor based firmware. This approach to interface design guarantees the user that all communications to the switch occur in microseconds, as opposed to several milliseconds, considerably improving system throughput.

The advanced register based interface design allows new switching modules to be introduced into the product family without the need to reprogram EEPROMs or exchange control modules, as is common with other switching systems.

The SMIP *II* interface supports direct register control of all relays, the ability to download scan lists with backplane trigger advance and hardware implemented *break-before-make* and *make-before-break* switching. By using direct register access, switching speeds are maximized while keeping VXIbus backplane traffic to a minimum. By using the trigger feature, large switching systems across multiple mainframes can be controlled with a single command.

The supplied VXI*plug&play* drivers provide support for higher-level commands and a unified switch interface.

SIGNAL INTEGRITY

All SMIP *II* switch modules have been designed with over a decade of experience in signal switch design and are optimized to preserve signal integrity. All switch modules employ multi-layer PCB designs with extensive ground planes and shielding where appropriate with relays selected to maximize signal integrity. Signal ground planes are isolated from the control circuit grounds and signal paths are designed to minimize crosstalk between channels. To further minimize digital noise, the control circuitry goes into a quiescent state when not processing commands, making it possible to switch low-level signals. Mating connector shrouds are also available to permit cable harnesses to be crimped, soldered, or connected via terminal blocks so the user can select the best method of cabling for the application.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

IMPROVED THROUGHPUT AND PERFORMANCE

The VXIbus offers tremendous advantages in reducing test cycle times because instruments and switches share a common backplane. The VXI specification reserves eight lines dedicated to triggering back and forth between instruments. VXI switch cards that utilize scan lists (a sequence of relay states) can then be triggered to advance through this list by an instrument on the BUS.

Test specifications of a device often require the verification of continuity or isolation between connector pins. A DMM is most often the instrument used to verify the results. The continuity/isolation test can involve a large number of pins. Thus, the DMM needs to be switched to a connector pair and take its measurement before moving to the next pair. This sequence of events can take a significant amount of time due to the overhead in handshaking between the DMM and the switch card, particularly if pre-programmed scan lists are not utilized. By utilizing a VXI-based card with a scan list, all handshaking can be done across the backplane, and, since the scan list is stored in memory, no software overhead is incurred. Large channel counts can be scanned in a fraction of the time through the use of on-board scan lists.

GPIB and first generation VXI-based switch cards implement scan list capabilities in a couple of different ways. A GPIB switch or message-based switch card requires an 'intelligent interpreter' that usually takes the form of a plug-in card. Scan lists are stored on this card and message-based commands are parsed by the interpreter. Traditional register-based switch cards must have a driver downloaded to the slot 0 controller and this driver acts as the interpreter. In both cases, ASC*II* strings (messages) are sent via the host controller to set up the switch card and scan list. There is also a relatively substantial amount of latency between the time a trigger is received by the switch card and the time the card issues a trigger to the backplane indicating that the relays have settled (10 ms to 40 ms).

The SMIP *II* series builds the intelligence (scan lists) into the hardware registers. The time delta between TTL trigger in (command to close the relays) and TTL trigger out (indicating relays have settled) is effectively reduced to the settling time of the relay itself (about 3 ms - 5 ms). An excellent example highlighting the effectiveness of this technique was demonstrated by a defense contractor exercising a missile simulator (see Figure 1-2). Stimulus is applied to the launch sequencer via a Form C switch. The launch sequencer replies with an 'initiate fire ready' command and the stimulus must be removed to ground within 10 ms. The only viable solution was to use a switch card with its scan list and control built into the hardware, as the latency times were well within the window of acceptance. The switch card selected in this case was VXI Technology's SMP5002.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

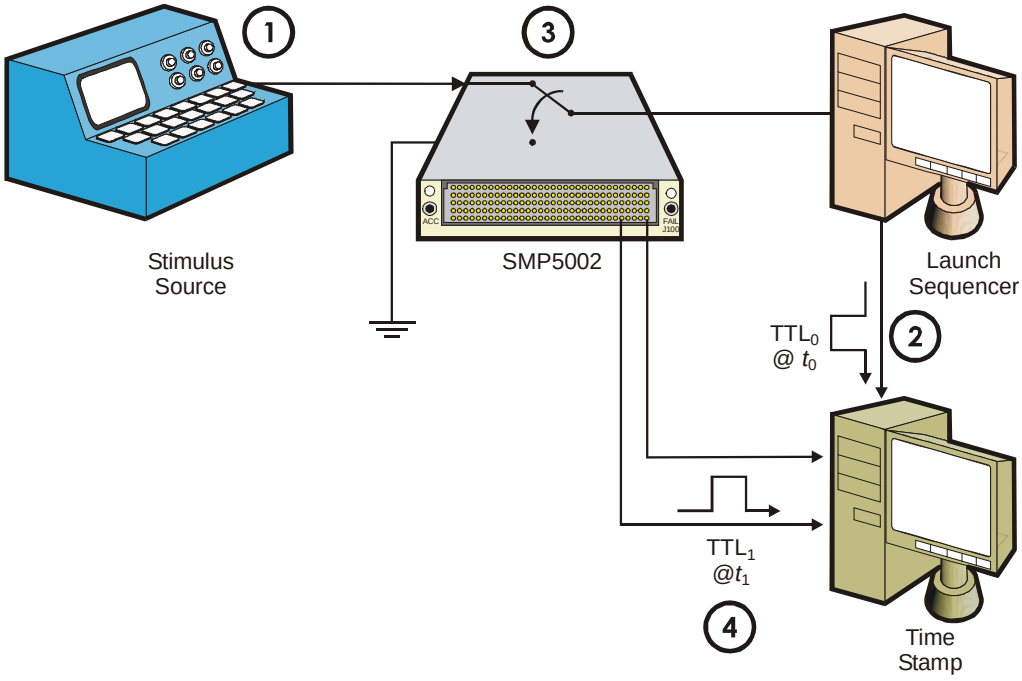


FIGURE 1-2: EXAMPLE OF TIME DELTA BETWEEN TTL TRIGGER IN AND TTL TRIGGER OUT

(1.) Stimulus is applied to the sequencer via the normally closed contact of a Form C relay on a SMP5002 card.

(2.) The sequencer processes the data and issues an 'initiate fire' command, sending out a pulse on TTL_0 of the VXI backplane. The Time Stamp module records TTL_0 pulse as t_0.

(3.) The SMP5002 also detects the pulse on TTL_0 and the relay changes state.

(4.) The SMP5002 issues a 'relay settled' pulse on TTL_1, which the Time Stamp records at t_1. The time difference ($\Delta t = t_1 - t_0$) needed to be less than 10 ms to meet specification for this application (verified to be under 3 ms).

This was compared to a Δt of over 40 ms from a switch module that used an intelligent interpreter plug-on card.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMIP *II* BASE UNITS

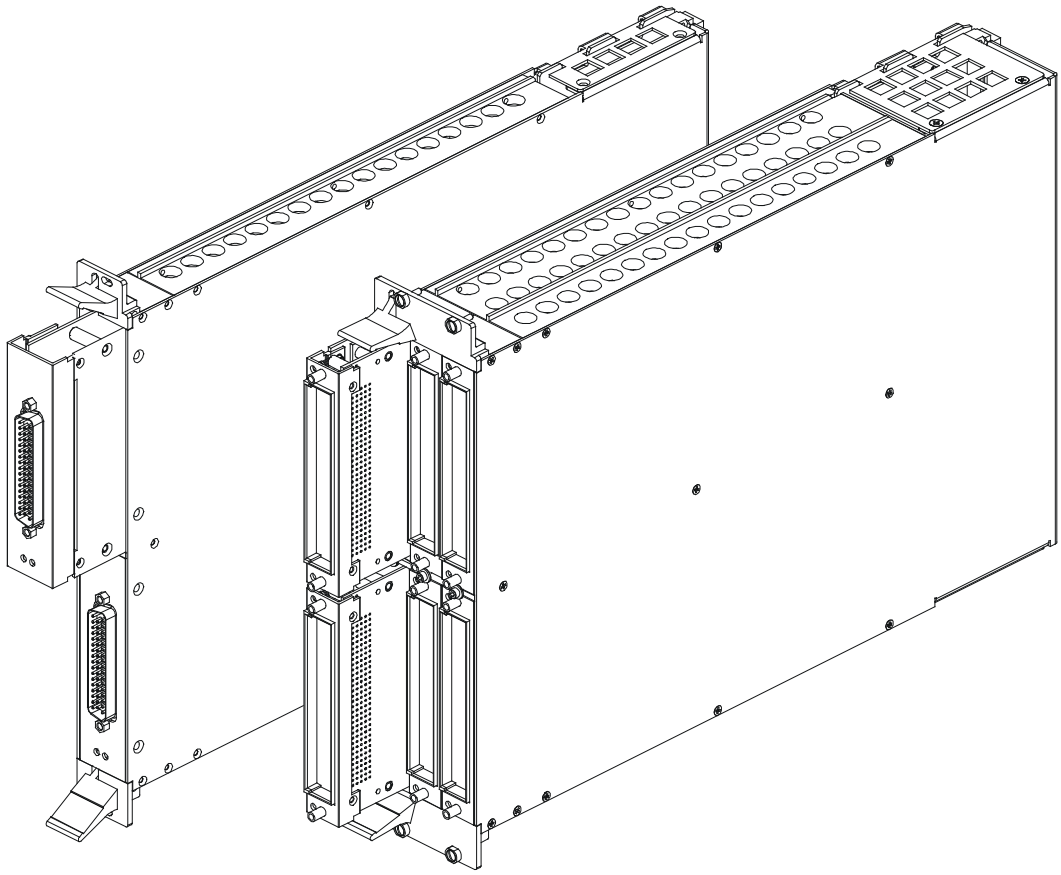


FIGURE 1-3: SMP1100 (LEFT) AND SMP1200 (RIGHT) BASE UNITS

The base units for signal switching in dc to RF frequency ranges consist of either the SMP1100 single-slot base unit or the SMP1200 double-slot base unit with any combination of switch modules from the SMIP *II* family. The SMP1100 can house up to two high-density switch modules in a single VXI mainframe slot or up to six high-density switch modules can be housed in the SMP1200 in two mainframe slots.

Switch modules can be mixed and matched for flexibility and density. For example, scanners, multiplexers, power, general purpose switches, and RF cards can all be housed in a double-slot VXIbus card. Also a 1 x 768 one-wire multiplexer can be accommodated in a double-slot VXIbus card (SMP1200). For maintainability and upgrades in the field, all switch modules are removable from the front panel.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

When installing modules into the SMP1100 and SMP1200, a difference will be noted: the modules will be rotated 180° in reference to each other, as illustrated in Figure 1-4 below.

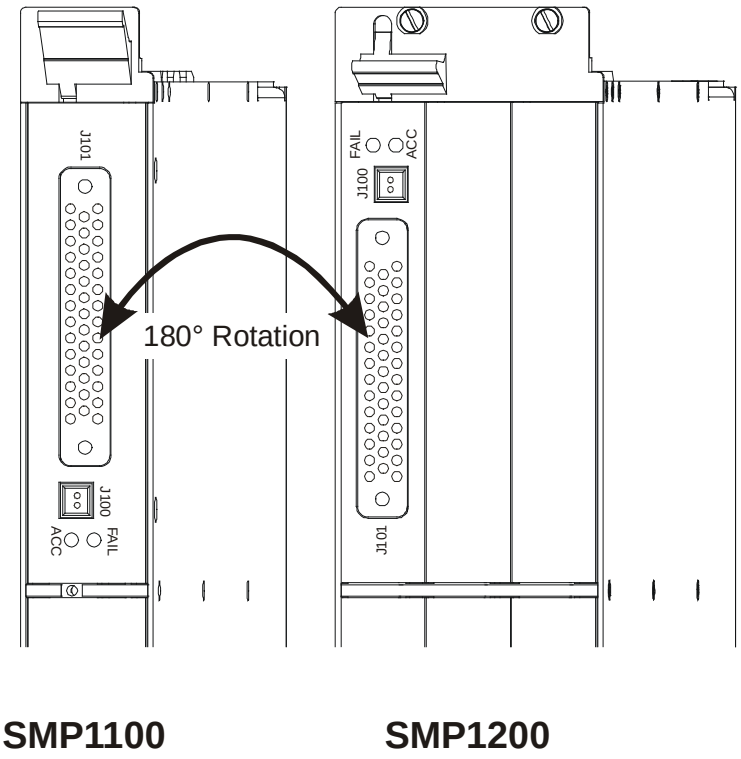


FIGURE 1-4: MODULE ORIENTATION

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SECTION 2

PREPARATION FOR USE

INTRODUCTION

When the SMIP *II* is unpacked from its shipping carton, the contents should include the following items:

(1) SMIP *II* VXIbus module
(1) SMIP *II* User's Manual (this manual)

All components should be immediately inspected for damage upon receipt of the unit. The system may come with modules already installed or the modules may have been purchased separately. Installation instructions for the modules are discussed in Section 4.

The chassis should be checked to ensure that it is capable of providing adequate power and cooling for the SMIP *II*. Once the chassis is found adequate, the SMIP *II*'s logical address and the backplane jumpers of the chassis should be configured prior to the SMIP *II*'s installation. After the SMIP *II* is assessed to be in good condition, it may be installed into an appropriate C-size or D-size VXIbus chassis in any slot other than slot zero.

CALCULATING SYSTEM POWER AND COOLING REQUIREMENTS

It is imperative that the chassis provide adequate power and cooling for this module. Referring to the chassis operation manual, confirm that the power budget for the system (the chassis and all modules installed therein) is not exceeded and that the cooling system can provide adequate airflow at the specified backpressure.



It should be noted that if the chassis cannot provide adequate power to the module, the instrument might not perform to specification or possibly not operate at all. In addition, if adequate cooling is not provided, the reliability of the instrument will be jeopardized and permanent damage may occur. Damage found to have occurred due to inadequate cooling could also void the warranty of the module.

NOTE	Due to backplane power limitations, the maximum numbers of relays that should be closed at any given time is 80 relays per plug-in module. For instance, a fully loaded ***SMP1200*** should be limited to 80 x 6 or 480 relay closures at a time.

SETTING THE CHASSIS BACKPLANE JUMPERS

Please refer to the chassis operation manual for further details on setting the backplane jumpers.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SWITCH SETTINGS

The SMIP *II* base units have three configurable switches. The two rotary dials (S1 and S2) located at the top edge of the interface card set the logical address (LA) for the module, while the two-position DIP switch (S3) located at the bottom edge of the interface card sets the extended memory space for the module to either A24 or A32. Figure 2-1 below shows the location of these switches and the following paragraphs explain how they are configured.

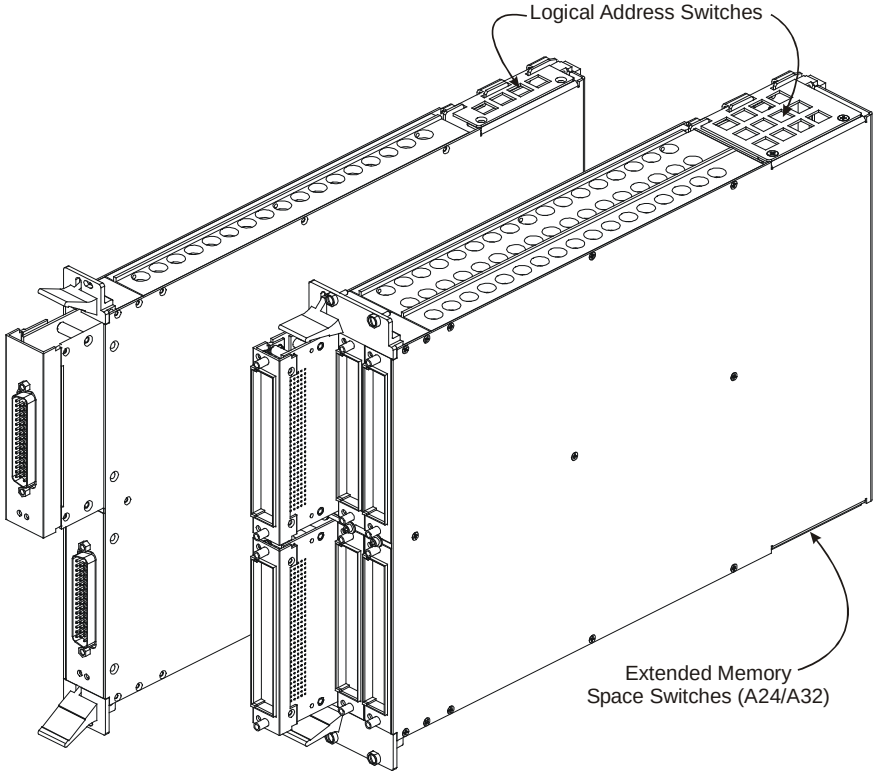


FIGURE 2-1: SWITCH LOCATIONS

Setting the Logical Address

The LA of the SMIP *II* is set by two rotary switches with each switch labeled with positions 0 through F. *S1*, the switch closer to the front panel of the module, is the least significant bit (**LS** or "**Front**"), and *S2*, the switch located towards the back of the module, is the most significant bit (**MS** or "**Back**"). To set the LA, simply rotate the pointer to the desired value. For example, to set the LA to **25**, first convert the decimal number to the hexadecimal value of **19**. Next, set the back switch to **1** and the front switch to **9**. See Figure 2-2. Here are a couple of conversion examples:

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Example 1

LA (decimal)	Divide by 16		MS	LS	
25	25 / 16	=	1	w/ 9 remaining	*Divide the decimal value by 16 to get the MS and the LS.*
		=	0001	1001	*The 1 is the MS, and the remainder of 9 is the LS.*
		=	1	9	*Convert to hexadecimal. Set the back switch to 1 and the front switch to 9.*

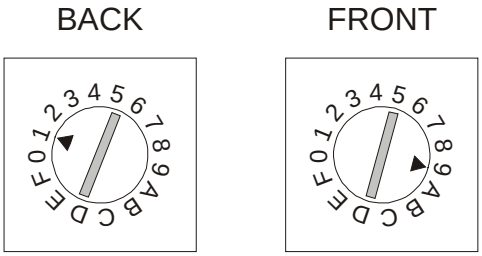


FIGURE 2-2: LOGICAL ADDRESS EXAMPLE 1

Here is another way of looking at the conversion:

LA = (back switch x 16) + front switch
LA = (1 x 16) + 9
LA = 16 + 9
LA = 25

Example 2

LA (decimal)	Divide by 16		MS	LS	
200	200 / 16	=	12	w/ 8 remaining	*Divide by 16.*
		=	1100	1000	*Convert to MS and LS.*
		=	C	8	*Convert to hexadecimal. Set the back switch to C and the front switch to 8.*

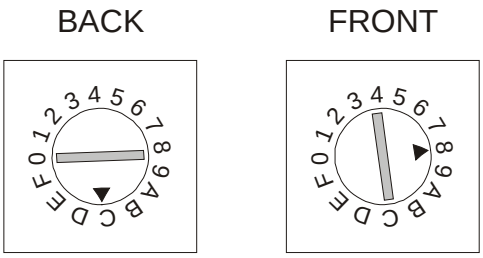


FIGURE 2-3: LOGICAL ADDRESS EXAMPLE 2

Set the address switches to **FF** (factory default) for dynamic configuration. Upon power-up, the resource manager will assign a logical address. See "Section F - Dynamic Configuration" in the *VXIbus Specification* for further information.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

There is only one logical address per SMIP *II* base unit. Address assignments for individual modules are handled through the A24/A32 address space allocation (see Figure 3-1 and *Description of SMIP II Module Registers - A24 / A32 - Extended Memory* in Section 3 for more information).

Selecting the Extended Memory Space

The *extended memory space* of SMIP *II* base units is set by a DIP switch that is located on the bottom edge of the interface card. Position 1, located to the left on the DIP switch, selects between A24 and A32 memory address space. In the UP position, the SMIP *II* will request A24 space. In the DOWN position (factory default), the SMIP *II* will request A32 space. (Position 2 is not currently used.) The selection of the address space should be based upon the memory allocation requirements of the system that the SMIP *II* module will be installed. The amount of memory allocated to an SMIP *II* module is independent of the address space selected.

NOTE	GPIB slot 0 controllers will not support the SMIP *II* as configured from the factory as they do not support dynamically configured logical addresses or A32 address space. The SMIP *II* can be reconfigured to support GPIB slot 0s by setting the logical address switches to a static address and having the address space configured for A24. If using a slot 0 controller that supports A32 extended memory space, it is recommended that the switches be left in their factory-configured state to take advantage of the greater available address space capacity.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SECTION 3

PROGRAMMING

INTRODUCTION

The SMIP *II* family of switch modules is programmed using direct register access for fast data throughput and boasts the following features for easy programming and integration.

Automatic Scanning

A predefined sequence of channels can be programmed into one megabyte of RAM and can be incremented by software or hardware trigger sources. This approach relieves the host controller from having to tie up the VXIbus backplane when scanning.

Programmable Timing Delays

A delay can be programmed between relay closures to allow for settling times of other system resources. When used with triggers, a controlled synchronous switching system can easily be configured.

Confidence Checking

Internal feedback provides confidence of relay closures.

Extensive Triggering

Triggers can be generated when a relay closes and settles and programmed relays can be actuated upon receipt of a trigger to allow for synchronization between other devices. Since trigger management is performed in hardware, triggers command a relay to open or close within microseconds, as opposed to several milliseconds from other competing systems that support triggers.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Make-Before-Break and Break-Before-Make

This feature allows automatic Break-Before-Make (BBM) and Make-Before-Break (MBB) operations. It is programmed simply by setting user configurable options. In BBM operation, all opening relays are guaranteed to open prior to any closing relays being set. The relay open or close time is user configurable as well. In MBB operation, the closing relays are guaranteed to be set prior to the opening relays being opened. These options ease software burden and considerably improves the system.

Safety Interrupt

This is a programmable fail-safe feature that allows all relays to open based upon external or TTL backplane triggers. This allows signals to be removed from the unit under test if a system fail-safe occurs, such as inadvertent removal of a test adapter.

Non-Volatile Memory

Non-volatile memory allows users to store up to 16 bytes of pertinent information such as maintenance records or last user's ID.

Register Access

The SMIP *II* modules are VXIbus register-based devices for high-speed data retrieval. Register-based programming is a series of **reads** and **writes** directly to the switch module registers. This eliminates the time for command parsing thus increasing speed.

ADDRESSING

The VXI Technology switching modules utilize either the A24 or A32 space (set via the DIP switches on the bottom of the SMIP *II* module, see page 20) of the shared-memory architecture. To read or write to a module register, a register address needs to be specified. This is done by using the offset value (assigned by the resource manager) and multiplying it by 256 or 64 k to get the base address in A24 or A32 address space, respectively.

A24 Base Address = Offset value * 0x0100 *(or 256)*

A32 Base Address = Offset value * 0x10000 *(or 65,536)*

The A24 or A32 offset value, assigned by the resource manager, can also be accessed by reading the A16 Offset Register. To address the A16 Offset Register use the following formula:

A16 Base Address = (Logical Address * 64) + 0xC000 *(or 49,152)*

then

A16 Offset Register Address = A16 Base Address + 6

See Table 3-1for the A16 Memory Map and the A24/A32 address space allocation.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

TABLE 3-1: SMIP *II* REGISTER MAP - A16

OFFSET	WRITE FUNCTION	READ FUNCTION
0x3E	Trace Advance	Board Busy
0x 3C	Busy Trigger Control	Busy Trigger Control
0x 3A	Trace RAM Control	Trace RAM Control
0x 38	TTL Trigger Polarity	Reserved
0x 36	Open Trigger Select	Reserved
0x 34	Trace ADV Trigger Select	Reserved
0x 32	Trace RAM Address LOW	Trace RAM Address LOW
0x 30	Trace RAM Address HIGH	Trace RAM Address HIGH
0x 2E	Trace RAM End LOW	Trace RAM End LOW
0x 2C	Trace RAM End HIGH	Trace RAM End HIGH
0x 2A	Trace RAM Start LOW	Trace RAM Start LOW
0x 28	Trace RAM Start HIGH	Trace RAM Start HIGH
0x 26	Module 5, 4 Used Address	Reserved
0x 24	Module 3, 2 Used Address	Reserved
0x 22	Module 1, 0 Used Address	Reserved
0x 20	NVM Access Register	NVM Access Register
0x 1E	Reserved	Subclass Register
0x 1C	Interrupt Control	Interrupt Control
0x 1A	Reserved	Interrupt Status
0x 18	Reserved	Reserved
0x 16	Reserved	Reserved
0x 14	Reserved	Reserved
0x 12	Reserved	Reserved
0x 10	Reserved	Reserved
0x0E	Reserved	Version Number
0x0C	Reserved	Reserved
0x0A	Reserved	Reserved
0x08	Reserved	Reserved
0x06	Offset Register	Offset Register
0x04	Control Register	Status Register
0x00	Reserved	Device Type Register
0x00	LA Register	ID Register

NOTE If the VXI*plug&play* drivers are being used, these registers normally do not need to be accessed.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

DESCRIPTION OF REGISTERS - A16

The following describes the registers shown in the SMIP *II* Register Map for A16 address space.

ID Register (0x00) — Read Only		
D11 - D0	Manufacturer's ID	VXI Technology, Inc., set to $F4B_{16}$
D13 - D12	Address Space	A16/A24 = 00_2 A16/A32 = 01_2
D15 - D14	Device Class	Extended register based device, set to 01_2

Logical Address Register (0x00) — Write Only		
D7 - D0	Logical Address	Sets the new logical address in a dynamically configured module. When set for dynamic configuration (set to FF_{16}) a soft reset will not alter the configured logical address, while a hard reset will set the register back to FF_{16}.
D15 - D8	Reserved	Writing to this range has no effect.

Device Type Register (0x02) — Read Only		
D11 - D0	Model Code	Model 277, set to 115_{16}
D15 - D12	Required Memory	2 megabytes, set to 2_{16}, for A24 2 megabytes, set to A_{16}, for A32

Status Register (0x04) — Read Only		
D15	A24/A32 Active	1 = Indicates that A24/A32 memory space access is enabled 0 = Indicates that A24/A32 memory space access is locked out
D14	MODID*	1 = Indicates that the module is not selected by the MODID line 0 = Indicates that the module is selected by the MODID line.
D13 - D4	Reserved	These bits always read as $11,1111,1111_2$
D3	Ready	This bit always reads as 1_2
D2	Passed	This bit always reads as 1_2
D1 - D0	Reserved	These bits always read as 11_2

Control Register (0x04) — Write Only		
D15	A24/A32 Enable	1 = Write a 1 to this bit to enable A24/A32 memory access 0 = To disable access
D14 - D2	Reserved	Writes to these bits have no effect.
D1	Sysfail Inhibit	Write a 1 to this bit to prevent the module from asserting the SYSFAIL* line.
D0	Reset	1 = Write a 1 to this bit to force the registers on the SMIP *II* interface board into a reset state 0 = Write a 0 to release this soft reset state **Note: This does not reset relays on the SMIP *II* plug-in modules.**

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Offset Register (0x06) — Read & Write		
D15 - D0	A24/A32 Memory Offset	The value written to this 16-bit register multiplied by 256 sets the base address of the A24 memory space used by the module. The value written to this 16-bit register multiplied by 65,536 sets the base address of the A32 memory space used by the module. A read from this register reflects the previously written value. Because of the required memory size, bits D4-D0 are disregarded on writes and always read back as 0. Upon receiving a hard reset, all bits in this register are set to 0. A soft reset does not affect the value in this register.

Reserved Register (0x0A) — Read Only		
D15 - D0	Unused	Always read back as $FFFF_{16}$

Reserved Register (0x0C) — Read Only		
D15 - D0	Unused	Always read back as $FFFF_{16}$

Version Number Register (0x0E) — Read Only		
D15 - D8	Firmware Version Number	Not applicable, reads back as 00_{16}
D7 - D4	Major Hardware Version Number	Depends on the specific hardware revision of the SMIP *II* interface board.
D3 - D0	Minor Hardware Version Number	Depends on the specific hardware revision of the SMIP *II* interface board.

Interrupt Status Register (0x1A) — Read Only		
D15	Scan Function done	The latest scan list update is complete.
D14	Openbus Active Event true	The Openbus was activated by one or more programmed inputs. See description of the Openbus in the module register section.
D13 - D8	Modules 0 – 5 Busy complete	D13 = Module 5, … and D8 = Module 0. The programmed Busy signal from one of the modules has timed out. This indicates that the relays actuated for that Busy cycle have settled and a measurement may take place.
D7 - D0	Reserved	Always reads back as $FFFF_{16}$
Note: This status register may be used in a polled fashion rather than allowing the events above to generate an Interrupt. A read of this register will clear any active bits. Bits that are not set or are about to be set are not affected by a read of this register.		

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Interrupt Control Register (0x1C) — Read & Write		
D15	Scan Function done mask bit	0 = Enabled 1 = Disabled
D14	Openbus Active Event true mask bit	0 = Enabled 1 = Disabled
D13 - D8	Module 0 - 5 Busy complete	0 = Enabled 1 = Disabled D13 = Module 5, … and D8 = Module 0.
D7	IR ENA*	0 = Writing a 0 to this bit enables interrupter capabilities 1 = Writing a 1 to this bit disables interrupter capabilities
D6	IH ENA*	The module has no interrupt handler capability; therefore writing a 1 or 0 has no effect. A 1 is always read back for this bit.
D5 - D3	Interrupter IRQ Line	The complement of the value programmed into these three bits reflects the selected IRQ line used by the module. A value of 011_2 would select IRQ4, a value of 000_2 would select IRQ7, and a value of 111_2 would disconnect the IRQ lines.
D2 - D0	Handler IRQ Line	The module has no interrupt handler capability; therefore writing to these bits has no effect. A 111_2 is always read back for these bits.
Note that all bits in this register are set to 1 upon receipt of a hard or soft reset.		

Subclass Register (0x1E) — Read Only		
D15	VXIbus Extended Device	Always reads as 1.
D14 - D0	Extended Memory Device	Always reads as $7FFD_{16}$

NVM Access Register (0x20) — Read Only		
D15 - D1	Unused	All Bits are always 1.
D0		Reads back the serial data stream from the selected SMIP *II* board. Note that only one SMIP *II* board may be read back at a time.

NVM Access Register (0x20) — Write Only		
D15 - D7	Unused	Data written to these bits have no effect.
D6		Serial clock for module 5; should be a logic 1 when not used.
D5		Serial clock for module 4; should be a logic 1 when not used.
D4		Serial clock for module 3; should be a logic 1 when not used.
D3		Serial clock for module 2; should be a logic 1 when not used.
D2		Serial clock for module 1; should be a logic 1 when not used.
D1		Serial clock for module 0; should be a logic 1 when not used.
D0		Serial data input for all modules; must be a logic 1 when not used.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Board X, Y Used Address Register (0x22, 0x24, 0x26) — Read & Write		
D15 - D8		Sets the actual number of words of address space used by the relays on board's X.
D7 - D0		Sets the actual number of words of address space used by the relays on board's Y.

Trace RAM Start High Register (0x28) — Read & Write		
D15 - D4	Unused	Data written to these bits have no effect and always read back as 1.
D3 - D0		Sets the four most significant bits of the starting address of the Trace RAM, allowing the available RAM to be divided into multiple traces.

Trace RAM Start Low Register (0x2A) — Read & Write		
D15 - D0		Sets the 16 least significant bits of the starting address of the Trace RAM, allowing the available RAM to be divided into multiple traces.

Trace RAM End High Register (0x2C) — Read & Write		
D15 - D4	Unused	Data written to these bits have no effect and always read back as 1.
D3 - D0		Sets the four most significant bits of the ending address of the Trace RAM, allowing the available RAM to be divided into multiple traces.

Trace RAM End Low Register (0x2E) — Read & Write		
D15 - D0		Sets the 16 least significant bits of the ending address of the Trace RAM, allowing the available RAM to be divided into multiple traces.

Trace RAM Address HIGH Register (0x30) — Read & Write		
D15 - D4	Unused	Data written to these bits have no effect and always read back as 1.
D3 - D0		Sets and reads back the four most significant bits of the current address of the Trace RAM, allowing the current trace RAM address to be queried and changed.

Trace RAM Address LOW Register (0x32) — Read & Write		
D15 - D0		Sets and reads back the sixteen least significant bits of the current address of the Trace RAM, allowing the current trace RAM address to be queried and changed.

Trace Advance Trigger Select Register (0x34) — Write Only		
D15 - D8		Sets the TTLTRIG line or lines, which are configured as outputs, and will toggle when Trace Advance condition occurs in the module. D15 corresponds to TTLTRIG7, D14 to TTLTRIG6, … and D8 to TTLTRIG0. Setting a bit to a 1 enables the trigger line, setting a bit to 0 disables the corresponding line. All bits are set to 0 when either a soft or a hard reset is received by the module.
D7 - D0		Sets the TTLTRIG line or lines, which are configured as inputs, and will cause a Trace Advance event to occur in the module. D7 corresponds to TTLTRIG7, D6 to TTLTRIG6, … and D0 to TTLTRIG0. Setting a bit to a 1 enables the trigger line, setting a bit to 0 disables the corresponding line. All enabled TTLTRIG lines are OR'd together to allow more than one TTLTRIG line to cause a Trace Advance event to occur. All bits are set to 0 when the module receives either a soft or a hard reset.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Open Trigger Select Register (0x36) — Write Only		
D15 - D8		Sets the TTLTRIG line or lines, which are configures as outputs, and will toggle when Relay Open condition occurs in the module. D15 corresponds to TTLTRIG7, D14 to TTLTRIG6, … and D8 to TTLTRIG0. Setting a bit to a 1 enables the trigger line, setting a bit to 0 disables the corresponding line. All bits are set to 0 when either a soft or a hard reset is received by the module.
D7 - D0		Sets the TTLTRIG line or lines, which are configured as inputs, and will cause a Relay Open event to occur in the module. D7 corresponds to TTLTRIG7, D6 to TTLTRIG6, … and D0 to TTLTRIG0. Setting a bit to a 1 enables the trigger line; setting a bit to 0 disables the corresponding line. All enabled TTLTRIG lines are OR'd together to allow more than one TTLTRIG line to cause a Relay Open event to occur. All bits are set to 0 when the module receives either a soft or a hard reset.

TTL Trigger Polarity Register (0x38) — Write Only		
D15 - D14	Unused	Data written to these bits have no effect.
D13 - D8	FAIL LED Control	D13 is for module 5, …, D8 is for module 0. 0 = Off, 1 = On.
D4	Board Busy Trigger Slope	0 acts on the falling edge, 1 acts on the rising edge.
D3	Relay Open Input Slope	0 acts on the falling edge, 1 acts on the rising edge.
D2	Relay Open Output Slope	0 sets the falling edge active, 1 sets the rising edge active.
D1	Trace Advance Input Slope	0 advances on the falling edge, 1 advances on the rising edge.
D0	Trace Advance Output Slope	0 sets the falling edge active, 1 sets the rising edge active.
Note: A hard or a soft reset sets D3 - D0 to 0 s.		

Trace RAM Control Register (0x3A) — Read & Write		
D15 - D10	Modules Installed	D15 is for module 5, D10 is for module 0. Set to 0 if the module is installed or set to a 1 if not installed. These bits are set to 0 at power on. By setting a 1, the SMIP *II* Interface PCB will generate DTACK for any read or write cycles to the memory space of the uninstalled plug-in modules.
D9 - D4	Modules used in trace mode	D9 is for module 5, D4 is for module 0. Set to 1 if the module is used in trace mode, set to 0 if not in trace mode.
D3 - D2	Unused	Data written to these bits have no effect. The value written is read back.
D1	LOOP ENABLE	1 = enabled, 0 = disabled. If enabled, the trace resumes at the start of active RAM and continues from there. If disabled, the trace stops at the end of active RAM and clears the TRACE ENABLE bit.
D0	TRACE ENABLE	1 = enabled, 0 = disabled. If the LOOP ENABLE bit is set and the end of active trace RAM is reached, this bit will not be reset.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Busy Trigger Control Register (0x3C) — Read & Write		
D15 - D8	TTLTRIG Select	Sets the TTLTRIG Line or Lines, which are configured as outputs, and will toggle at the de-assertion of a Board Busy condition sent by the plug-in modules. D15 corresponds to TTLTRIG7, D14 to TTLTRIG6, … and D8 to TTLTRIG0. Setting a bit to a 1 enables the trigger line, setting a bit to a 0 disables the corresponding line. All bits are set to 0's when either a soft or a hard reset is received by the module.
D7 - D6	Unused	Data written to these bits have no effect. The value written is read back.
D5 - D0	Busy Trigger Enable	Enables the Board Busy signals received from the plug-in modules to generate a trigger condition on the TTL Trigger Bus. D5 corresponds to Board Busy Module 5, D4 to Board Busy Module 4, … and D0 to Board Busy Module 0. Setting a bit to 1 enables the generation of a Trigger condition, while setting a bit to a 0 disables the corresponding line. All bits are set to 0 when either a soft or a hard reset is received by the module. Software can be written to enable the last board updated to generate the TTL Trigger condition, alerting any other instruments that the plug-in modules' relays have settled. Alternatively, all of the plug-in modules may be enabled to generate the TTL Trigger condition.

Trigger Advance Register (0x3E) — Write Only		
D15 - D0	Unused	The act of writing to this location causes a Trace Advance event to occur in the module. The specific data written to these bits has no effect.

Board Busy Register (0x3E) — Read Only		
D15 - D7	Unused	These bits always read back as 1s.
D6		Indicates whether the SMIP *II* platform is a single- or double-wide. 0 = Single-wide 1 = Double-wide
D5		A 0 read from this bit indicates the relays on module 5 have settled, a 1 indicates that the relays on module 5 are still changing state.
D4		A 0 read from this bit indicates the relays on module 4 have settled, a 1 indicates that the relays on module 4 are still changing state.
D3		A 0 read from this bit indicates the relays on module 3 have settled, a 1 indicates that the relays on module 3 are still changing state.
D2		A 0 read from this bit indicates the relays on module 2 have settled, a 1 indicates that the relays on module 2 are still changing state.
D1		A 0 read from this bit indicates the relays on module 1 have settled, a 1 indicates that the relays on module 1 are still changing state.
D0		A 0 read from this bit indicates the relays on module 0 have settled, a 1 indicates that the relays on module 0 are still changing state.

Reserved Registers — Read & Write		
D15 – D0	Unused	Writing to these registers has no effect and will always read back as $FFFF_{16}$.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

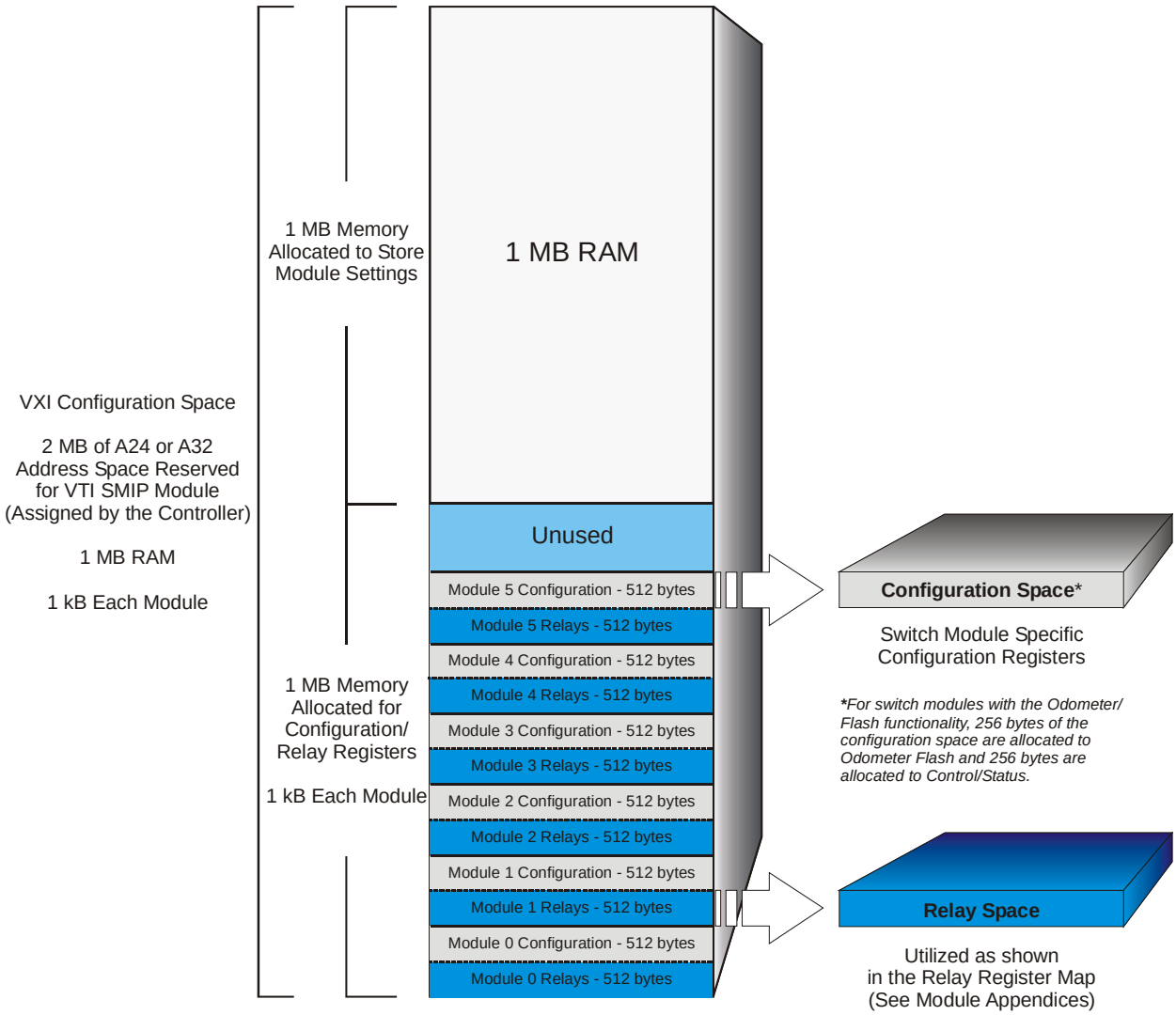


FIGURE 3-1: A24/A32 ADDRESS SPACE

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

DESCRIPTION OF SMIP *II* MODULE REGISTERS - A24 / A32 - EXTENDED MEMORY

Each module is assigned 1 kB (1024 bytes) of memory as shown in the SMIP *II* Configuration/ Relay Register Map for A24/A32 address space. The upper 512 bytes of memory space are used for module configuration registers. The following describes these registers. Bits that are shaded grey are not available on all SMIP *II* modules. Modules that can utilize these bits indicate this in the module appendix. For those modules that cannot use this functionality, the bits remain unused.

Control Register — Read & Write*		
ADDR	A24/A32 Offset + 0x200	
D15	TCK / JTAG / TCK	These bits are used for VXI backplane download of non-user configurable FPGAs. This allows VXI Technology, Inc. the ability to field upgrade SMIP *II* plug-in cards. This feature is only supported on certain SMIP *II* cards. Cards capable of utilizing this feature indicate this in their Status Register, bit D12. * Access to this bit is ***Read Only***. All other bits in the Control Register are *Read & Write* enabled.
D14	TMS / JTAG / TMS	
D13	TDI / JTAG / TDI	
D12	TDO / JTAG / TDO	
D11	JTAGENA / JTAG / ENABLE	
D10	Unused	
D9	Relay Data Read Back Polarity Bit	0 = Normal polarity relay data is read back from this module 1 = Inverted polarity relay data is read back from this module P_{on} state = 0 This bit may be used to invert the relay data read back from the plug-in module. Control, Delay, and Status Register read backs are not affected by this bit.
D8	ACFAILN Enable Bit	0 = ACFAILN is enabled to reset this module's relays 1 = ACFAILN is disabled from resetting this module's relays P_{on} state = 0

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Control Register — Read & Write*		
D7	BBM/MBB Enable Bit	0 = BBM (Break-Before-Make) / MBB (Make-Before-Break) operation on this plug-in module is disabled 1 = BBM/MBB operation on this plug-in module is enabled P_{on} state = 0 If this bit is set, the relays on this module will be sequenced to effect proper BBM or MBB operation. If this bit is not set, the plug-in module will process the newly written relay data as immediate data, writing it directly to the relay driver ports. No BBM or MBB sequencing will take place. While this feature is enabled, the initial write to the module will start the delay timer running and begin the BBM or MBB operation. Since the relays are controlled by the 16-bit registers, only the effected 16 relays will perform the BBM/MBB operation. To overcome this fact, any subsequent reads or writes to the module, during the initial delay timer time-out period, will be accepted and processed. In addition, the delay time will be reset and begin counting down again. Once the delay timer has timed-out (this indicates that the relays have settled into their BBM/MBB state), writes to the module will not be accepted and may result in a Bus Error depending on the value programmed into the delay timer. This is because the delay timer is reset at the end of the initial time-out and is used to time the final relay closure into their post BBM/MBB state. The module Busy signal will only complete once the final relay closure state is reached. If this bit is set and no value has been loaded into the Delay Register, the plug-in module will act as if this enable bit is not set and load all of the relay drivers with immediate data.
D6	BBM/MBB Select Bit	0 = BBM operation on this plug-in module is selected 1 = MBB operation on this plug-in module is selected P_{on} state = 0
D5	Access LED Fail Bit	0 = Non-active 1 = Active P_{on} state = 0 Lights the Access LED red when activated.
D4	Relay Reset Enable Bit	0 = The Openbus and Front Panel Open signals are not enabled to reset this module's relays 1 = The Openbus or Front Panel Open signal may be selected to reset this module's relays P_{on} state = 0
D3	Relay Reset Select Bit	0 = Front Panel Open signal is selected to reset this module's relays 1 = The Openbus signal is selected to reset this module's relays P_{on} state = 0 Many plug-in modules may be programmed to be listeners on the Openbus.
D2	Openbus Out Enable Bit	0 = Disables this module's Front Panel Open signal from driving the Openbus signal 1 = Enables this module's Front Panel Open signal to drive the Openbus P_{on} state = 0 Many plug-in modules may be programmed to be talkers on the Openbus.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Control Register — Continued		
D1	Front Panel Open Signal Polarity Bit	0 = Non-inverted Front Panel Open signal polarity 1 = Inverted Front Panel Open signal polarity P_{on} state = 0 Non-inverted: If set in pulse mode, the Front Panel Open signal will generate a reset pulse on a falling edge. If set in level mode, the Front Panel Open signal will generate a reset signal on a low input signal. Inverted: If set in pulse mode, the Front Panel Open signal will generate a reset pulse on a rising edge. If set in level mode, the Front Panel Open signal will generate a reset signal on a high input signal.
D0	Front Panel Open Signal Operation Select Bit	0 = Pulse mode 1 = Level mode P_{on} state = 0 Pulse mode: An edge seen at the Front Panel Open signal pin will generate a reset pulse that may be used to reset system relays. The pulse is approximately 300 ns duration. Level mode: A level present on the Front Panel Open signal pin will generate a reset signal that may be used to reset system relays. This signal will remain active as long as the input is active. On the front panel of most SMIP *II* plug-in modules there are two pins for access to the Front Panel Open signal of the module. These are the Front Panel Open signal pin (FP-OPEN) and a ground reference pin (FP-GND). The purpose of the Front Panel Open signal is to allow user access to a configurable interlock feature that will reset all of the SMIP *II* system relays. The Front Panel Open signal may be used to reset the relays only on the module, which initiated the Front Panel Open signal fault condition. It also may be used to broadcast to all the other SMIP *II* plug-in modules installed in a SMIP *II* Interface Module via what is called the Openbus. Any plug-in module may be programmed to drive and/or listen to the Openbus. The Openbus signal may also be used to generate a wider chassis level fault signal via the TTL Trigger Bus (see the register definitions for A16 address space). The Front Panel Open signal is intended to be driven by either a switch closure or TTL/CMOS logic gate. It is pulled high on the module.

Delay Register — Read & Write		
ADDR	A24/A32 Offset +0x202	
D15 - D0	Data Bus (16-bit)	This register is used to set the time that the plug-in module will hold the Board Busy signal active. The Board Busy signal is set every time the plug-in receives a Write to a relevant Relay Register memory space. The Board Busy signal will be removed at the end of the time out that is set by the value contained in this register. For each count loaded into this register, the Board Busy signal will be held active for 1 μs. The delay may be set from 0 to approximately 65 ms, thus accommodating a wide variation in test station requirements. Note that when a Board Busy signal is asserted, read and write accesses to the board are still allowed. The Board Busy signal may be monitored by the user, in either a polled or an interrupt fashion, and is to be used as an indication that the relays in the newly actuated path have settled. Alternatively, the Board Busy signal may also be used to drive the TTL Trigger Bus. See the Board Busy, Interrupt Control, and Busy Trigger Control Register descriptions in the A16 address space.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Status Register — Read Only		
ADDR	A24/A32 Offset +0x204	
D15 - D12	Hardware Revision Code	This code is incremented each time hardware/firmware changes are made to an SMIP *II* board.
D11	Odometer/ FLASH Capable	0 = Indicates no odometer functionality 1 = Indicates Odometer / FLASH capable module. If a module is capable of using the Odometer/FLASH capability, reading this bit will return a 1. If the module cannot utilize this function, a 0 will be returned.
D10 - D1	Unused	
D0	Front Panel Open signal set by this module	0 = Indicates that this module's Front Panel Open signal was not activated by the user 1 = An indication that this module's Front Panel Open signal was activated as programmed by the user P_{on} state = 0 A read of this bit location will indicate whether the Front Panel Open signal was triggered from this plug-in module's front panel. In the event that multiple talkers have been programmed to drive the Openbus signal, this bit may be queried by the user to discover which module's Front Panel Open signal caused the Openbus Active Event to occur. A read of this register clears this bit to 0.

Flash Capable / Odometer Capable – Read & Write		
ADDR	A24/A32 Offset +0x206	
D15	Flash Write Protect Not bit	0 = Indicates that the Flash is write enabled. 1 = Indicates that the Flash cannot be written to. P_{on} state = 1 This bit must be set to a 0 to allow writes to the on board Odometer FLASH.
D14 - D13	Unused	
D12 – D0	Flash Address Paging Register	These bits in this register are directly used to page through the on board FLASH memory that is used to implement the Odometer function. For a complete description of which bits drive which FLASH address lines, please see the SMIP Driver. The driver contains all of the useful information regarding the Odometer function and the FLASH page sizes, FLASH sector update enable, FLASH sector update timing, FLASH sector swap timing, etc.

Flash – Read & Write		
ADDR	A24/A32 Offset +0x300 – 0x3FF	
D15 – D0	Odometer Flash	Location of odometer Flash on SMIP plug-in modules. The Flash paging register must be used to address the full odometer flash memory area. **NOTE**: It is highly advisable to consult the VXI Technology, Inc. SMIP driver before accessing this region.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

DEVICE MEMORY MAPS

MODULE RELAY CONTROL ADDRESS

Each module is assigned 1 kB (1024 bytes) of memory as shown in the SMIP *II* Configuration / Relay Register Map for A24/A32 address space. The lower 512 bytes of each module's memory are used for relay control. Each module is assigned its own base address. These base addresses are in 1 k increments as follows:

Module 0 (J100) Base Address = H0000
Module 1 (J101) Base Address = H0400
Module 2 (J102) Base Address = H0800
Module 3 (J103) Base Address = H0C00
Module 4 (J104) Base Address = H1000
Module 5 (J105) Base Address = H1400

The Module Base Address is then added to the A24/A32 Base Address to access a specific module's relays:

Module Relay Address = A24/A32 Base Address + Module Base Address

RELAY REGISTER OFFSET

The Relay Register Offset is located within the module's A24/32 address space. When data is sent to the register, the relay register offset is added to the A24/A32 base address and module base address:

Relay Register Address = A24/A32 Base Address + Module Base Address + Register Offset

or

Relay Register Address = Module Relay Address + Register Offset

WRITING TO THE RELAYS

Each bit of a 16-bit register represents the state of the relay (1 = closed, 0 = open). To change the state of any relay, it is only necessary to write a 16-bit integer to the specified register with the new configuration:

Relay Register Address, **data**

For example:

- writing a data value of "0" to the register at offset "0" would open the first sixteen relays
- writing a data value of 65535 to the same register would close the first 16 relays
- writing a data value of 65534 to the same register would close all relays except **K1**, which would be open

PROGRAMMING VIA VISA

With the introduction of VISA, sending a command to a register-based device is as simple as sending a command to a message-based device. Whether the application is graphical or standard,

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

sending commands to the register-based device is just as intuitive. The VISA template for transferring data to a register-based device, utilizing A32 extended memory space, is as follows:

```
viOut16 (Handle, VI_A32_SPACE, Offset, Data)
```

Handle is passed by reference whenever a VISA session to a particular device is opened.

VI_A32_SPACE is defined in the VISA header file. (VI_A16_SPACE and VI_A24_SPACE are also valid.)

Offset is determined from the memory map and is in decimal format.

Data is a 16-bit signed integer value representing the state of the relays.

The following example is for a SMP5001, 80-channel SPST relay card utilizing A32 extended memory space. To close relays **K1**, **K33**, and **K48** while leaving the other relays open, the following commands would be sent:

```
viOut16 (Handle, VI_A32_SPACE, 0, 1)      'closes relay 1, opens 2 - 16
viOut16 (Handle, VI_A32_SPACE, 4, 32769) 'closes relay 33 and 48,
                                           opens 34 - 47
```

VISA is the software architecture standard instituted by the VXI*plug&play* Alliance and is at a very high level of communication to a VXIbus device. The same philosophy and simplicity applies if the instrument is being programmed via lower level commands of an API (Application Programmer's Interface).

The individual device Relay Register Maps can be found in the module appendix section.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

PROGRAMMING VIA GPIB

In order to set and query relays on the SMIP *II* module with a GPIB or RS-232 interface, the following command sequence for switching one relay via RS-232 or GPIB-VXI is used:

A24 <A24 Address>, <Relay Data>
A24? <A24 Address>

For example, a device whose A24 offset has been allocated to 0x200000, to set relay 1 to ON:

A24 2097152, 1

Where "2097152" indicates the address to which we want to write the data, and "1" is the data to write to the specified offset. ("1" indicates relay **K1**. Refer to Relay Register Map in SMIP *II* module appendices.)

The above value (2097152) is calculated using the following procedure.

1.) Set address space on SMIP *II* module to A16/A24 using the DIP switch (see page 20).

2.) Calculate the *device base address* with the following formula:

Base Address = *V* * 64 + 49152
(where, *V* = the device's logical address)

If the logical address = 17, then:

Base Address = 17 * 64 + 49152 = 50240

3.) Type "A16? <Base address>" at GBIP-VXI prompt and press ENTER.

In this example, `A16? 50240`

4.) The returned value will give the contents of ID/Logical Address Register. Verify that return value is 0x4F4B.

NOTE	A returned value of 0x5F4B indicates that the device is configured for A32 Space.

5.) Query the device type. (Base address + 0x02)

In this example, `A16? 50242`

6.) The returned value indicates the *model code* in bits 0-11. For the SMIP *II*, the model code is 0x115. Bits 12-15 indicate the required memory and will be used as 'm' in the following steps to locate the assigned address offset. (See C.2.1.1.2 of the *VXIbus Specification*.)

In this example, 0x2115 (8469) read from A16 Address 0xC442 (50242).
'm' = 2

7.) Query the Offset Register. (Base address + 0x06)

In this example, `A16? 50246`

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

8.) The 'm' + 1 most significant bits of the contents of the offset register are the values of the 'm' + 1 most significant address bits for the selected address space.

Here, 0x2000 (8192) read from A16 address 0xC446 (50246).

'm' = 2

'm' + 1 = 3

0x2000		= 0010 0000 0000 0000
	A24 Offset	= 0010 0000 0000 0000 0000 0000
		= 0x200000
		= 2097152

This calculated value is the A24 offset for this device, which corresponds to the address of the board 0 location in the SMIP *II*. For the various relay offsets and boards within the SMIP *II* module, merely add the additional offset information to the A24 base address. See the SMIP *II* user manual for details on board and relay offset information.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SECTION 4

MODULE APPENDICES

INTRODUCTION

All modules in the SMIP *II* family modules function as independent instruments in the VXIbus chassis, where each relay of each module can be configured independently of all other modules installed in the VXIbus chassis.

Each module has its own front panel with two indicator LEDs. The ACC (ACCESS) LED flashes when read/write commands are being sent to the module. The FAIL LED glows green to indicate that the board is receiving power. This LED can be programmed to glow red when a fail condition occurs (see Section 3 for more details).

The following section details information common to most SMIP *II* modules, including installation of the module, logical module location assignments, and shielding information. Module appendices follow these general topics and detail the specifics of each individual SMIP *II* module, including connector pin locations, signal assignments, relay maps, schematics, electronic specifications, and connector mating accessories.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

MODULE INSTALLATION

Before installing a module into the SMIP *II* base unit, make sure that the mainframe is powered down. Insert the module into the base unit by orienting the module so that the metal cover of the module can be inserted into the slot of the base unit. Position the cover so that it fits into the module slot groove. Once the module is properly aligned, push the module back and firmly insert it into the backplane connector.

Number of Modules	SMP1200						SMP1100	
	Module #0	Module #1	Module #2	Module #3	Module #4	Module #5	Module #0	Module #1
1								*
2							*	*
3				*	*	*		
4	*	*		*	*			
5	*	*		*	*	*		
6	*	*	*	*	*	*		

TABLE 4-1: INSTALLED MODULE LOCATIONS BY CONFIGURATION QUANTITY

If modules are previously installed in the base units, they will be shipped in the positions indicated by the asterisks depending on the quantity of modules. The modules can be placed in different slots if desired upon receiving the base unit. It should be noted that modules installed in the SMP1100 and SMP1200 will differ in orientation by 180°, as illustrated in Figure 4-1 below.

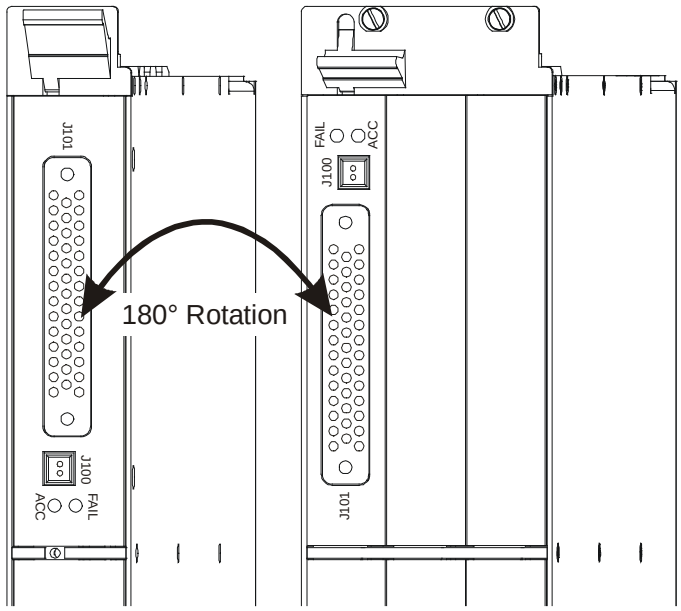


FIGURE 4-1: MODULE ORIENTATION

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

LOGICAL MODULE LOCATION ASSIGNMENTS

The figure below illustrates the logical location assignments for each module for both the SMP1100 and the SMP1200.

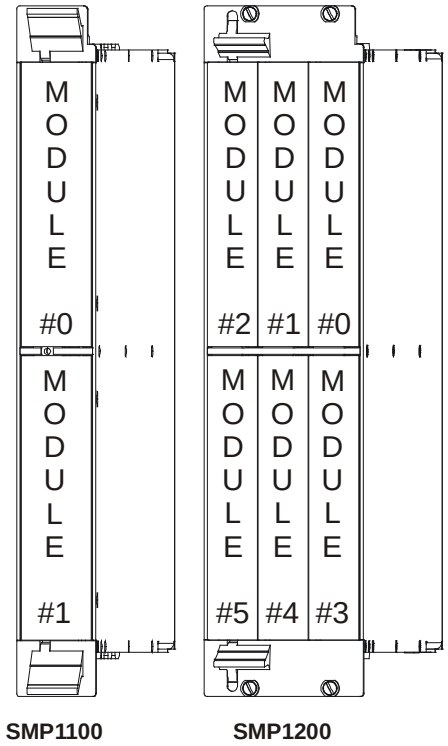


FIGURE 4-2: LOGICAL MODULE LOCATION ASSIGNMENTS

MODULE SHIELDING

Most SMIP *II* modules incorporate an integral shield into the design of the PCB that attenuates noise and crosstalk between adjacent channels/modules. To properly utilize this feature, tie the appropriate front panel connector pins to the mating cable's common shield and/or ground. If this feature is present on a module, the pins are identified in the module appendix in the *Connector Pin/Signal Assignment* table and the signal is noted as "SHIELD."

Leaving the SHIELD pins unconnected may have detrimental effects on signal crosstalk and isolation. If no cable shield connection is available, chassis ground may be used to attach the SHIELD pins.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

BLANKING PANEL

For slots not occupied by SMIP *II* modules, it is recommended that a blank front panel (VTI P/N: 70-0155-000) be used to cover the empty slots. This is accomplished by placing the blank front panel into the module slot groove and sliding it into the base unit until the front of the front panel is flush with the front of the base unit. See Figure 4-3 below.

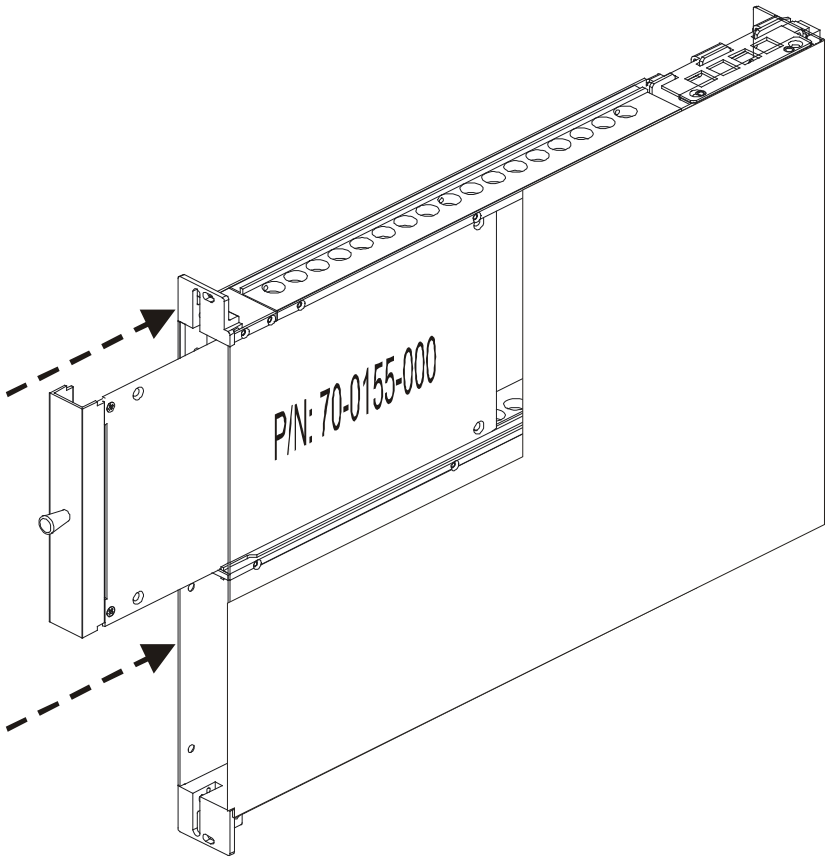


FIGURE 4-3: BLANKING PANEL INSTALLATION

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP2001A

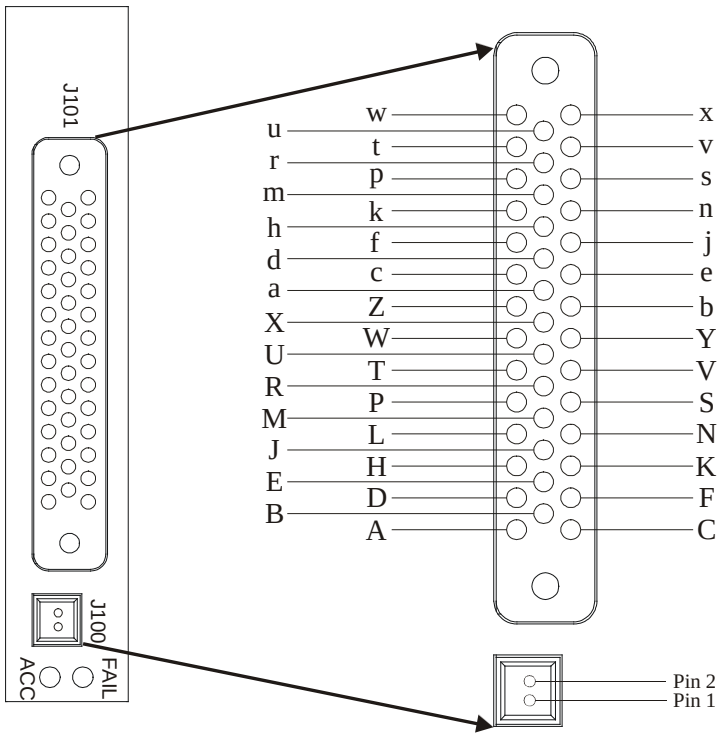
SMP2001A – 20-CHANNEL 16 AMP SPST POWER SWITCH

The SMP2001A switch module functions as a 20-channel, 16 amp single-pole, single-throw (or as a 10-channel double-pole, single-throw) relay power switch. All relays are independently controllable. This appendix shows the 41-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP2000A 16 A switch module series was the first to break the 13 A switching barrier found on other VXI power switching cards. Up to 72 SPDT relays can be accommodated in two VXIbus card slots for maximum density or mixed and matched with other SMIP *II* cards for flexibility. The SMP2001A module can be used for ac or dc line power switching, among other applications.

All relays are driven from the VXIbus +5 V supply line since VXI bus mainframes always have ample current capability on this supply line, as opposed to the +24 or +12 V supply lines. Since these modules typically switch power to the UUT or interface, a fail-safe interrupt input line is provided on the front panel that can open all relays automatically if a safety condition occurs. This approach instantly removes all power to the UUT or interface.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP2001A CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

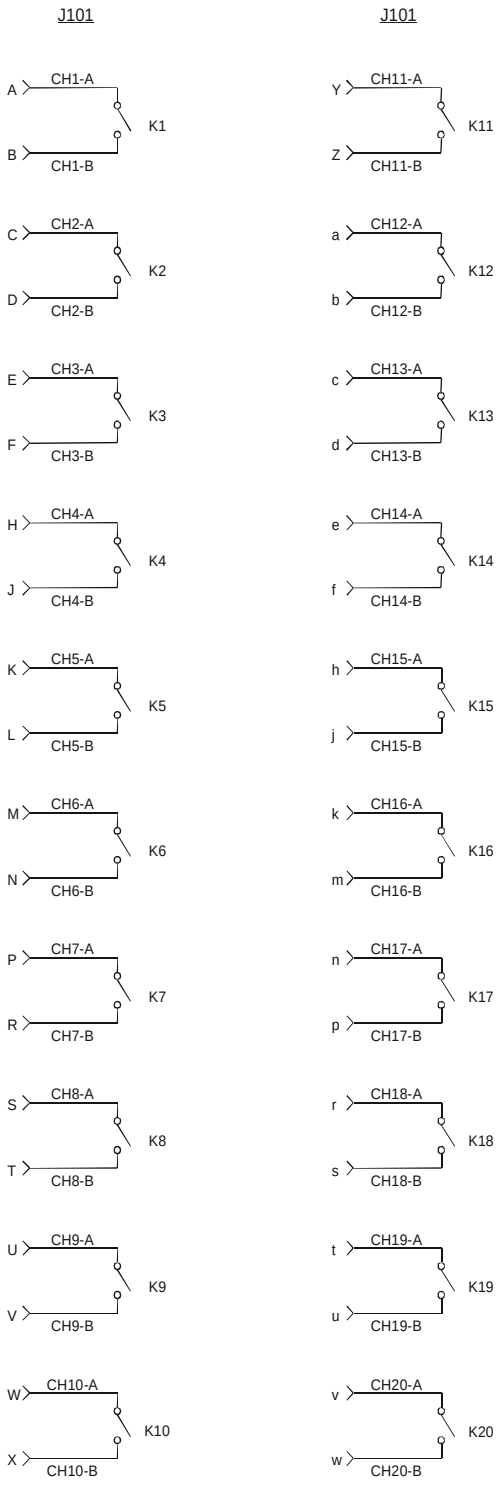
SMP2001A CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J100		J101			
PIN	**SIGNAL**	**PIN**	**SIGNAL**	**PIN**	**SIGNAL**
1	FP-OPEN[1]	A	CH1-A	Z	CH11-B
2	FP-GND[1]	B	CH1-B	a	CH12-A
		C	CH2-A	b	CH12-B
		D	CH2-B	c	CH13-A
		E	CH3-A	d	CH13-B
		F	CH3-B	e	CH14-A
		H	CH4-A	f	CH14-B
		J	CH4-B	h	CH15-A
		K	CH5-A	j	CH15-B
		L	CH5-B	k	CH16-A
		M	CH6-A	m	CH16-B
		N	CH6-B	n	CH17-A
		P	CH7-A	p	CH17-B
		R	CH7-B	r	CH18-A
		S	CH8-A	s	CH18-B
		T	CH8-B	t	CH19-A
		U	CH9-A	u	CH19-B
		V	CH9-B	v	CH20-A
		W	CH10-A	w	CH20-B
		X	CH10-B	x	SHIELD[2]
		Y	CH11-A		

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

NOTE[2] Pin x is connected to a shield layer located directly under the relays and connecting wires. Optimum performance is obtained when Pin x is tied to system or chassis ground and the front panel mounting screws are secured to the chassis frame.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP2001A SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2001A RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2													K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2001A SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	Power
CHANNELS	20 SPST
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 10 ms
RATED SWITCH OPERATIONS	
Mechanical	1×10^7
Electrical	1×10^5 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	400 V ac, 125 V dc
MAXIMUM SWITCHING CURRENT	16 A
MAXIMUM SWITCHING POWER	300 W dc, 4000 VA per Channel, 25 kW/switch module
DC PERFORMANCE	
PATH RESISTANCE	< 0.1 Ω
INSULATION RESISTANCE	$> 1 \times 10^9$ Ω
MAXIMUM THERMAL OFFSET / CHANNEL (HI-LO)	< 50 µV
ISOLATION	$> 1 \times 10^7$ Ω
MINIMUM CONTACT RATING	12 V dc, 0.1 A
CAPACITANCE	
OPEN CHANNEL	< 20 pF
CHANNEL-MAINFRAME	< 20 pF
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 20 MHz
INSERTION LOSS	
100 kHz	< 0.2 dB
1 MHz	< 0.5 dB
10 MHz	< 1.0 dB
CROSSTALK	
100 kHz	< -75 dB
1 MHz	< -50 dB
10 MHz	< -40 dB

ACCESSORIES

70-0190-001: 41-Pin Connector Kit with Strain Relief and Pins

Desc: Conn. Strain Relief, 41-Pin	Mfgr.: AMP	Mfgr P/N: 201766-1	Contact Info: 800-522-6752/www.amp.com
Desc: Conn. Housing	Mfgr.: Positronics	Mfgr P/N: GMCT41F000000	Contact Info: 800-641-4054/www.positronic.com
Desc: Contact, Crimp Pin, Qty: 44	Mfgr.: Positronics	Mfgr P/N: FC114N2	Contact Info: 800-641-4054/www.positronic.com

NOTE This backshell provides additional space for applications requiring full population of the connector.

70-0190-000: 41-Pin Connector Kit with Strain Relief (No Pins)

Desc: Conn. Strain Relief, 41-Pin	Mfgr.: AMP	Mfgr P/N: 201766-1	Contact Info: 800-522-6752/www.amp.com
Desc: Conn. Housing	Mfgr.: Positronics	Mfgr P/N: GMCT41F000000	Contact Info: 800-641-4054/www.positronic.com

NOTE This backshell provides additional space for applications requiring full population of the connector.

52-0102-001: Connector Kit (Including 1 ea. Connector & Backshell, Plus 44 Crimp Pins)

Desc: Connector & Backshell	Mfgr.: Positronics	Mfgr P/N: GMCT41F0E100J0	Contact Info: 800-641-4054/www.positronic.com
Desc: Crimp Pins	Mfgr.: Positronics	Mfgr P/N: FC114N2	Contact Info: 800-641-4054/www.positronic.com

NOTE At full population, this connector does not allow for cable dressing.

27-0144-002: 2-Pin Connector

Desc: 2-Pin Connector	Mfgr.: AMP	Mfgr P/N: 104257-1	Contact Info: 800-522-6752/www.amp.com

27-0087-041: 41-Pin Connector and Backshell

Desc: 2-Pin Connector	Mfgr.: AMP	Mfgr P/N: 104257-1	Contact Info: 800-522-6752/www.amp.com

27-0016-999: Crimp Pins

Desc: Crimp Pins	Mfgr.: AMP	Mfgr P/N: 530553-7	Contact Info: 800-522-6752/www.amp.com

52-0113-000: 10-Pin Cable Assembly

Desc: 6 ft 14 GA Wire, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0113-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0012-000: Crimp Tool w/ Turret Head

Desc: Crimp Tool w/ Turret Head	Mfgr.: Positronics	Mfgr P/N: 9501 and 9502-1	Contact Info: 800-641-4054/www.positronic.com

46-0014-000: Insertion Tool

Desc: Insertion Tool	Mfgr.: Positronics	Mfgr P/N: 9099	Contact Info: 800-641-4054/www.positronic.com

46-0015-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: Positronics	Mfgr P/N: 9081	Contact Info: 800-641-4054/www.positronic.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP2002A

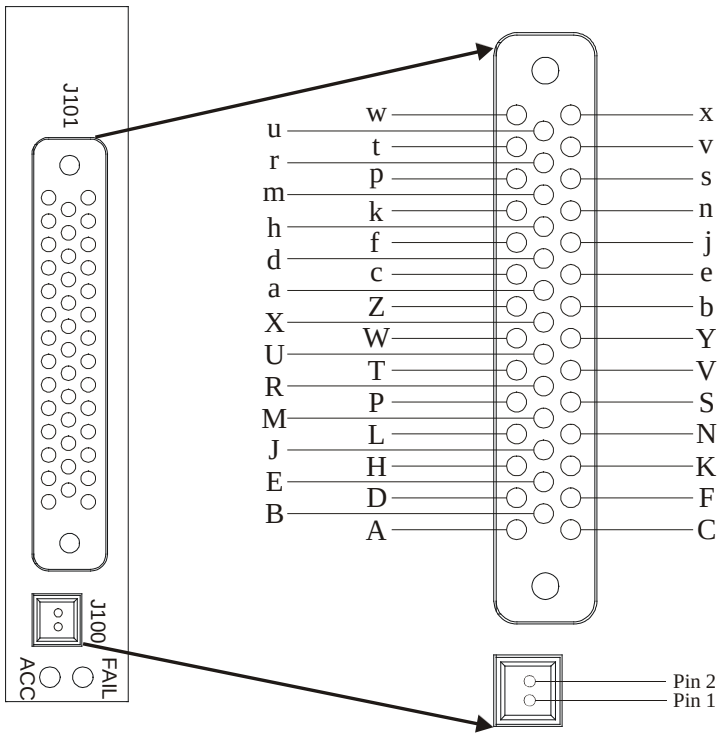
SMP2002A – 12-CHANNEL SPDT 16 AMP POWER SWITCH

The SMP2002A switch module is a 12-channel, 16 A single-pole, double-throw relay power switch. All relays are independently controllable. This appendix shows the 41-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP2000A 16 A switch module series was the first to break the 13 A switching barrier found on other VXI power switching cards. Up to 72 SPDT relays can be accommodated in two VXIbus card slots for maximum density or mixed and matched with other SMIP *II* cards for flexibility. The SMP2002A module can be used for ac or dc line power switching, among other applications.

All relays are driven from the VXIbus +5 V supply line since VXI bus mainframes always have ample current capability on this supply line, as opposed to the +24 V or +12 V supply lines. Since these modules typically switch power to the UUT or interface, a fail-safe interrupt input line is provided on the front panel that can open all relays automatically if a safety condition occurs. This approach instantly removes all power to the UUT or interface.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP2002A CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

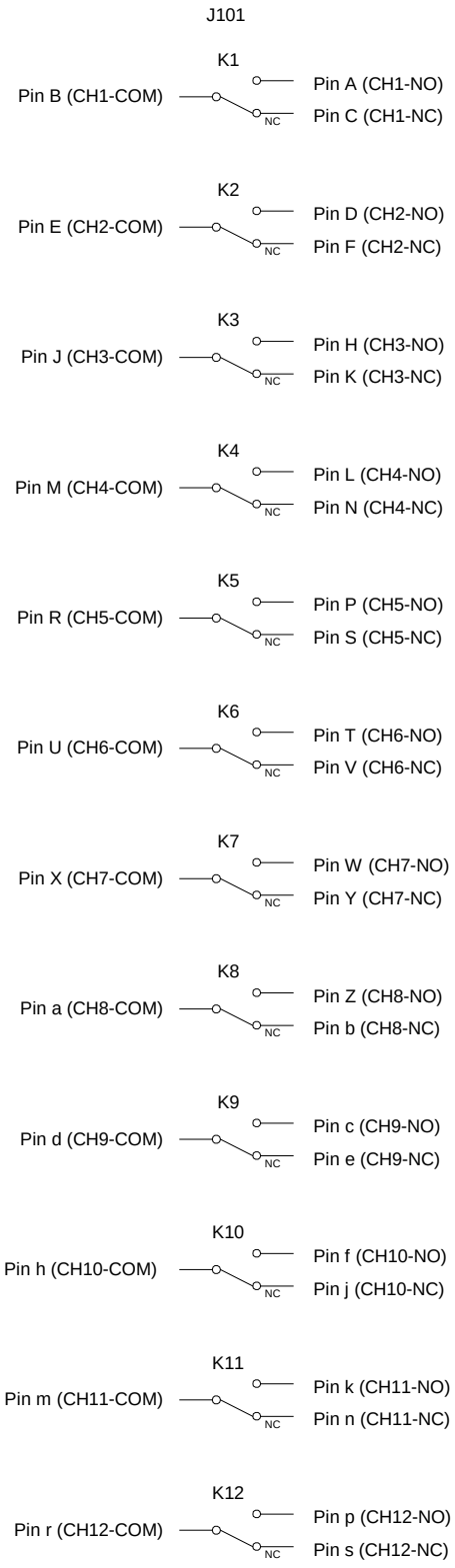
SMP2002A CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J100		J101			
PIN	**SIGNAL**	**PIN**	**SIGNAL**	**PIN**	**SIGNAL**
1	FP-OPEN[1]	A	CH1-NO	Z	CH8-NO
2	FP-GND[1]	B	CH1-COM	a	CH8-COM
		C	CH1-NC	b	CH8-NC
		D	CH2-NO	c	CH9-NO
		E	CH2-COM	d	CH9-COM
		F	CH2-NC	e	CH9-NC
		H	CH3-NO	f	CH10-NO
		J	CH3-COM	h	CH10-COM
		K	CH3-NC	j	CH10-NC
		L	CH4-NO	k	CH11-NO
		M	CH4-COM	m	CH11-COM
		N	CH4-NC	n	CH11-NC
		P	CH5-NO	p	CH12-NO
		R	CH5-COM	r	CH12-COM
		S	CH5-NC	s	CH12-NC
		T	CH6-NO	t	UNUSED
		U	CH6-COM	u	UNUSED
		V	CH6-NC	v	UNUSED
		W	CH7-NO	w	UNUSED
		X	CH7-COM	x	SHIELD[2]
		Y	CH7-NC		

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

NOTE[2] Pin x is connected to a shield layer located directly under the relays and connecting wires. Optimum performance is obtained when Pin x is tied to system or chassis ground and the front panel mounting screws are secured to the chassis frame.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP2002A SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2002A RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2																
0					K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2002A SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	Power
CHANNELS	12 SPDT
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 10 ms
RATED SWITCH OPERATIONS	
Mechanical	5×10^7
Electrical	1×10^5 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	250 V ac, 125 V dc
MAXIMUM SWITCHING CURRENT	16 A
MAXIMUM SWITCHING POWER	300 W dc, 2000 VA per Channel, 25 kW/switch module
DC PERFORMANCE	
PATH RESISTANCE	< 0.1 Ω
INSULATION RESISTANCE	$> 1 \times 10^9$ Ω
MAXIMUM THERMAL OFFSET / CHANNEL (HI-LO)	< 50 μV
ISOLATION	$> 1 \times 10^7$ Ω
MINIMUM CONTACT RATING	12 V dc, 0.1 A
CAPACITANCE	
OPEN CHANNEL	< 20 pF
CHANNEL-MAINFRAME	< 20 pF
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 20 MHz
INSERTION LOSS	
100 kHz	< 0.2 dB
1 MHz	< 0.5 dB
10 MHz	< 1.0 dB
CROSSTALK	
100 kHz	< -75 dB
1 MHz	< -50 dB
10 MHz	< -40 dB

ACCESSORIES

70-0190-001: 41-Pin Connector Kit with Strain Relief and Pins

Desc: Conn. Strain Relief, 41-Pin	Mfgr.: AMP	Mfgr P/N: 201766-1	Contact Info: 800-522-6752/www.amp.com
Desc: Conn. Housing	Mfgr.: Positronics	Mfgr P/N: GMCT41F000000	Contact Info: 800-641-4054/www.positronic.com
Desc: Contact, Crimp Pin, Qty: 44	Mfgr.: Positronics	Mfgr P/N: FC114N2	Contact Info: 800-641-4054/www.positronic.com

NOTE This backshell provides additional space for applications requiring full population of the connector.

70-0190-000: 41-Pin Connector Kit with Strain Relief (No Pins)

Desc: Conn. Strain Relief, 41-Pin	Mfgr.: AMP	Mfgr P/N: 201766-1	Contact Info: 800-522-6752/www.amp.com
Desc: Conn. Housing	Mfgr.: Positronics	Mfgr P/N: GMCT41F000000	Contact Info: 800-641-4054/www.positronic.com

NOTE This backshell provides additional space for applications requiring full population of the connector.

52-0102-001: Connector Kit (Including 1 ea. Connector & Backshell, Plus 44 Crimp Pins)

Desc: Connector & Backshell	Mfgr.: Positronics	Mfgr P/N: GMCT41F0E100J0	Contact Info: 800-641-4054/www.positronic.com
Desc: Crimp Pins	Mfgr.: Positronics	Mfgr P/N: FC114N2	Contact Info: 800-641-4054/www.positronic.com

NOTE At full population, this connector does not allow for cable dressing.

27-0144-002: 2-Pin Connector

Desc: 2-Pin Connector	Mfgr.: AMP	Mfgr P/N: 104257-1	Contact Info: 800-522-6752/www.amp.com

27-0087-041: 41-Pin Connector and Backshell

Desc: 2-Pin Connector	Mfgr.: AMP	Mfgr P/N: 104257-1	Contact Info: 800-522-6752/www.amp.com

27-0016-999: Crimp Pins

Desc: Crimp Pins	Mfgr.: AMP	Mfgr P/N: 530553-7	Contact Info: 800-522-6752/www.amp.com

52-0113-000: 10-Pin Cable Assembly

Desc: 6 ft 14 GA Wire, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0113-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0012-000: Crimp Tool w/ Turret Head

Desc: Crimp Tool w/ Turret Head	Mfgr.: Positronics	Mfgr P/N: 9501 and 9502-1	Contact Info: 800-641-4054/www.positronic.com

46-0014-000: Insertion Tool

Desc: Insertion Tool	Mfgr.: Positronics	Mfgr P/N: 9099	Contact Info: 800-641-4054/www.positronic.com

46-0015-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: Positronics	Mfgr P/N: 9081	Contact Info: 800-641-4054/www.positronic.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP2003

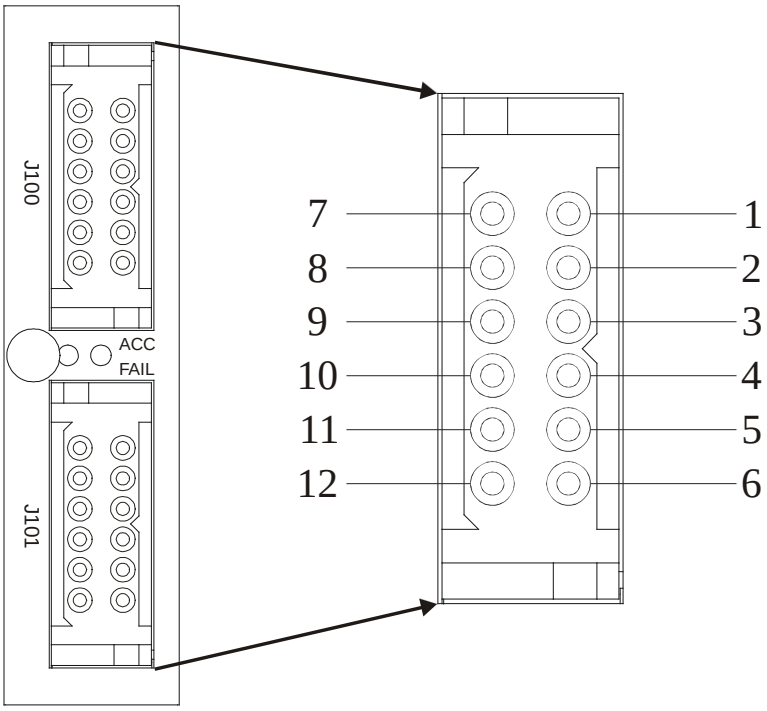
SMP2003 – 8-CHANNEL 20 AMP SPDT POWER SWITCH

The SMP2003 switch module is an 8-channel, 20 amp single-pole, double-throw relay power switch. All relays are independently controllable. This appendix shows the 12-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP2003 switch module is designed for heavy-duty power switching requirements. This module is ideal for automating the signal switching and testing of motors, ballasts or simple high-power ac or dc signal devices.

Some useful applications for the SMP2003 include automotive, home appliance, and large ATE systems. Since large power relays are used, these modules can only be configured in the SMP1100, but they may be mixed and matched with other modules. All SMIP *II* family modules can utilize the VXIbus TTL trigger lines to provide a fail-safe interrupt feature.

NOTE	The SMP2003 may only be installed in the SMP1100 Single-Wide Base Unit.



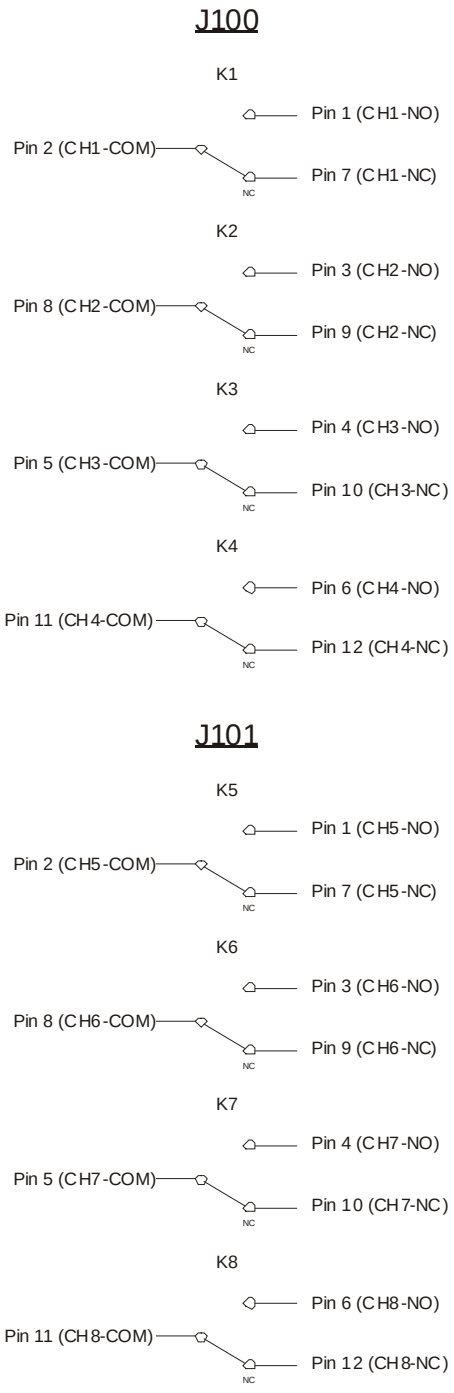
SMP2003 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2003 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J100		J101	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
1	CH1-NO	1	CH5-NO
2	CH1-COM	2	CH5-COM
3	CH2-NO	3	CH6-NO
4	CH3-NO	4	CH7-NO
5	CH3-COM	5	CH7-COM
6	CH4-NO	6	CH8-NO
7	CH1-NC	7	CH5-NC
8	CH2-COM	8	CH6-COM
9	CH2-NC	9	CH6-NC
10	CH3-NC	10	CH7-NC
11	CH4-COM	11	CH8-COM
12	CH4-NC	12	CH8-NC

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP2003 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2003 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2																
0									K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2003 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	Power
CHANNELS	8 SPDT
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 15 ms
RATED SWITCH OPERATIONS	
Mechanical	1×10^7
Electrical	1×10^5 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	270 V ac, 220 V dc
MAXIMUM SWITCHING CURRENT	20 A
MAXIMUM SWITCHING POWER	600 W dc, 5400 VA
DC PERFORMANCE	
PATH RESISTANCE	< 75 mΩ maximum
INSULATION RESISTANCE	$> 1 \times 10^7$ Ω
CAPACITANCE	
OPEN CHANNEL	< 20 pF
CHANNEL-MAINFRAME	< 20 pF
MINIMUM CONTACT RATING	5 V, 0.5 A
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 20 MHz
INSERTION LOSS	
100 kHz	< 0.2 dB
1 MHz	< 0.5 dB
10 MHz	< 1.0 dB
CROSSTALK	
100 kHz	< -75 dB
1 MHz	< -50 dB
10 MHz	< -40 dB

ACCESSORIES

70-0253-001: Connector Kit (Includes 2 ea. Connectors & Custom VTI Backshells and Support Bracket Plus 30 Crimp Pins)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell (VTI)	Mfgr.: VXI Tech	Mfgr P/N: 41-0367-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Backshell Support Bracket	Mfgr.: VXI Tech	Mfgr P/N: 41-0367-001	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Crimp Pins	Mfgr.: Positronics	Mfgr P/N: FC112N2S	Contact Info: 800-641-4054/www.positronic.com

52-0126-000: Connector Kit (Includes 2 ea. Connectors & Backshells Plus 20 Crimp Pins)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com
Desc: Crimp Pins	Mfgr.: Positronics	Mfgr P/N: FC112N2S	Contact Info: 800-641-4054/www.positronic.com

52-0125-001: 12-Pin Connector and Custom VTI Backshell and Support Bracket (No Pins) – Two Required

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com

52-0125-000: 12-Pin Connector and Backshell (No Pins) Two Required

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com

52-0124-000: 12-Pin Cable Assembly

Desc: 6 ft 12 GA Wire, 12 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0124-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0012-000: Crimp Tool w/ Turret Head

Desc: Crimp Tool w/ Turret Head	Mfgr.: Positronics	Mfgr P/N: 9501 and 9502-1	Contact Info: 800-641-4054/www.positronic.com

46-0014-000: Insertion Tool

Desc: Insertion Tool	Mfgr.: Positronics	Mfgr P/N: 9099	Contact Info: 800-641-4054/www.positronic.com

46-0015-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: Positronics	Mfgr P/N: 9081	Contact Info: 800-641-4054/www.positronic.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP2004

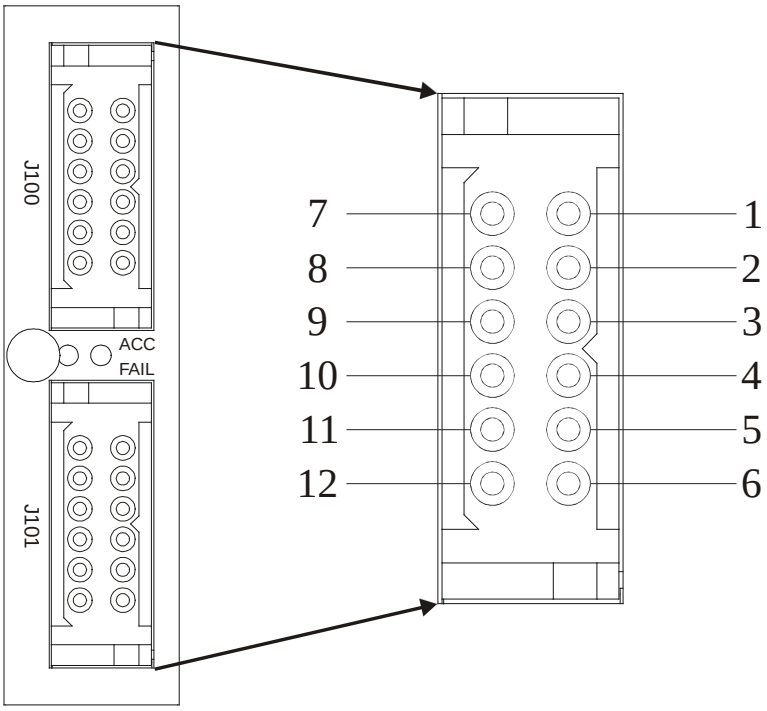
SMP2004 – 12-CHANNEL 20 AMP SPST RELAY SWITCH

The SMP2004 switch module is a 12-channel, 20 amp single-pole, single-throw relay power switch. All relays are independently controllable. This appendix shows the 12-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP2004 switch module is designed for heavy-duty power switching requirements. This module is ideal for automating the signal switching and testing of motors, ballasts, or simple high-power ac or dc signal devices.

Some useful applications for the SMP2004 include automotive, home appliance, and large ATE systems. Since large power relays are used, these modules can only be configured in the SMP1100, but they may be mixed and matched with other modules. All SMIP *II* family modules can utilize the VXIbus TTL trigger lines to provide a fail-safe interrupt feature.

NOTE	The SMP2004 may only be installed in the SMP1100 Single-Wide Base Unit.



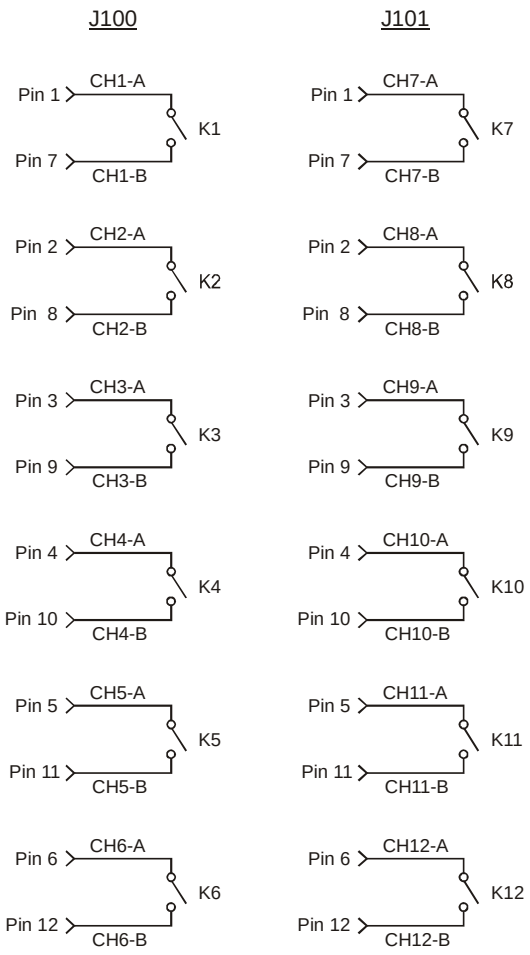
SMP2004 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2004 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J100		J101	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
1	CH1-A	1	CH7-A
2	CH2-A	2	CH8-A
3	CH3-A	3	CH9-A
4	CH4-A	4	CH10-A
5	CH5-A	5	CH11-A
6	CH6-A	6	CH12-A
7	CH1-B	7	CH7-B
8	CH2-B	8	CH8-B
9	CH3-B	9	CH9-B
10	CH4-B	10	CH10-B
11	CH5-B	11	CH11-B
12	CH6-B	12	CH12-B

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP2004 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2004 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2																
0					K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2004 Specifications and Accessories

General Specifications	
Model Type	Power
Channels	12 SPDT
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 15 ms
Rated Switch Operations	
Mechanical	1×10^7
Electrical	1×10^5 (Full Load)
Power Specifications	
Maximum Switching Voltage	270 V ac, 220 V dc
Maximum Switching Current	20 A
Maximum Switching Power	600 W dc, 5400 VA
DC Performance	
Path Resistance	< 75 mΩ maximum
Insulation Resistance	$> 1 \times 10^7$ Ω
Capacitance	
Open Channel	< 20 pF
Channel-Mainframe	< 20 pF
Minimum Contact Rating	5 V, 0.5 A
AC Performance	
Bandwidth (-3 dB)	> 20 MHz
Insertion Loss	
100 kHz	< 0.2 dB
1 MHz	< 0.5 dB
10 MHz	< 1.0 dB
Crosstalk	
100 kHz	< -75 dB
1 MHz	< -50 dB
10 MHz	< -40 dB

Accessories

70-0253-001: Connector Kit (Includes 2 ea. Connectors & Custom VTI Backshells and Support Bracket Plus 30 Crimp Pins)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell (VTI)	Mfgr.: VXI Tech	Mfgr P/N: 41-0367-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Backshell Support Bracket	Mfgr.: VXI Tech	Mfgr P/N: 41-0367-001	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Crimp Pins	Mfgr.: Positronics	Mfgr P/N: FC112N2S	Contact Info: 800-641-4054/www.positronic.com

52-0126-000: Connector Kit (Includes 2 ea. Connectors & Backshells Plus 20 Crimp Pins)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com
Desc: Crimp Pins	Mfgr.: Positronics	Mfgr P/N: FC112N2S	Contact Info: 800-641-4054/www.positronic.com

52-0125-001: 12-Pin Connector and Custom VTI Backshell and Support Bracket (No Pins) – Two Required

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com

52-0125-000: 12-Pin Connector and Backshell (No Pins) Two Required

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com

52-0124-000: 12-Pin Cable Assembly

Desc: 6 ft 12 GA Wire, 12 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0124-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0012-000: Crimp Tool w/ Turret Head

Desc: Crimp Tool w/ Turret Head	Mfgr.: Positronics	Mfgr P/N: 9501 and 9502-1	Contact Info: 800-641-4054/www.positronic.com

46-0014-000: Insertion Tool

Desc: Insertion Tool	Mfgr.: Positronics	Mfgr P/N: 9099	Contact Info: 800-641-4054/www.positronic.com

46-0015-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: Positronics	Mfgr P/N: 9081	Contact Info: 800-641-4054/www.positronic.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP2005

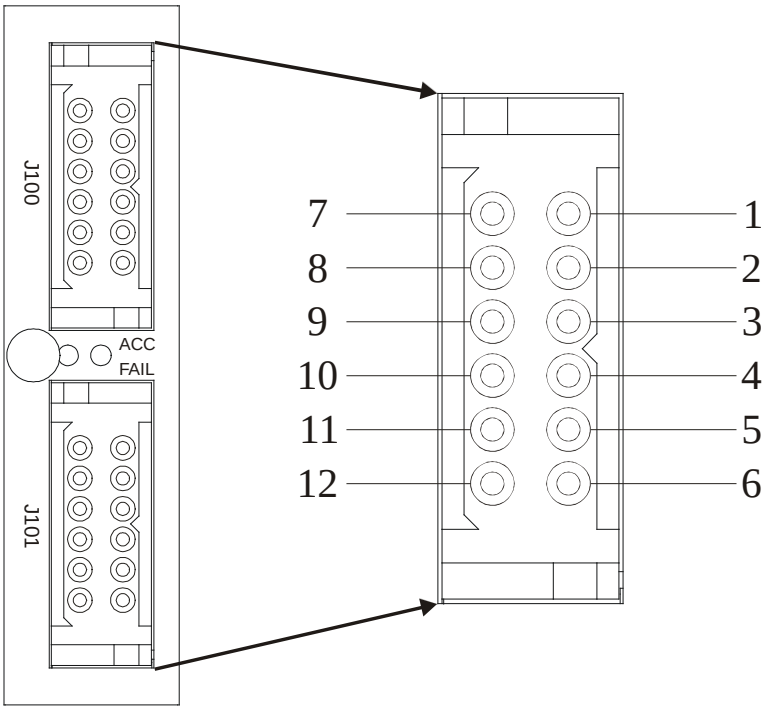
SMP2005 – 3 SPDT AND 3 SP4T 20 AMP SWITCH

The SMP2005 switch module is a 20 amp relay power switch that has three single-pole, double-throw channels and three single-pole, quadruple throw channels. All relays are independently controllable. This appendix shows the 12-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP2005 switch module is designed for heavy-duty power switching requirements. This module is ideal for automating the signal switching and testing of motors, ballasts, or simple high-power ac or dc signal devices.

Some useful applications for the SMP2005 include automotive, home appliance, and large ATE systems. Since large power relays are used, these modules can only be configured in the SMP1100, but they may be mixed and matched with other modules. All SMIP *II* family modules can utilize the VXIbus TTL trigger lines to provide a fail-safe interrupt feature.

NOTE	The SMP2005 may only be installed in the SMP1100 Single-Wide Base Unit.



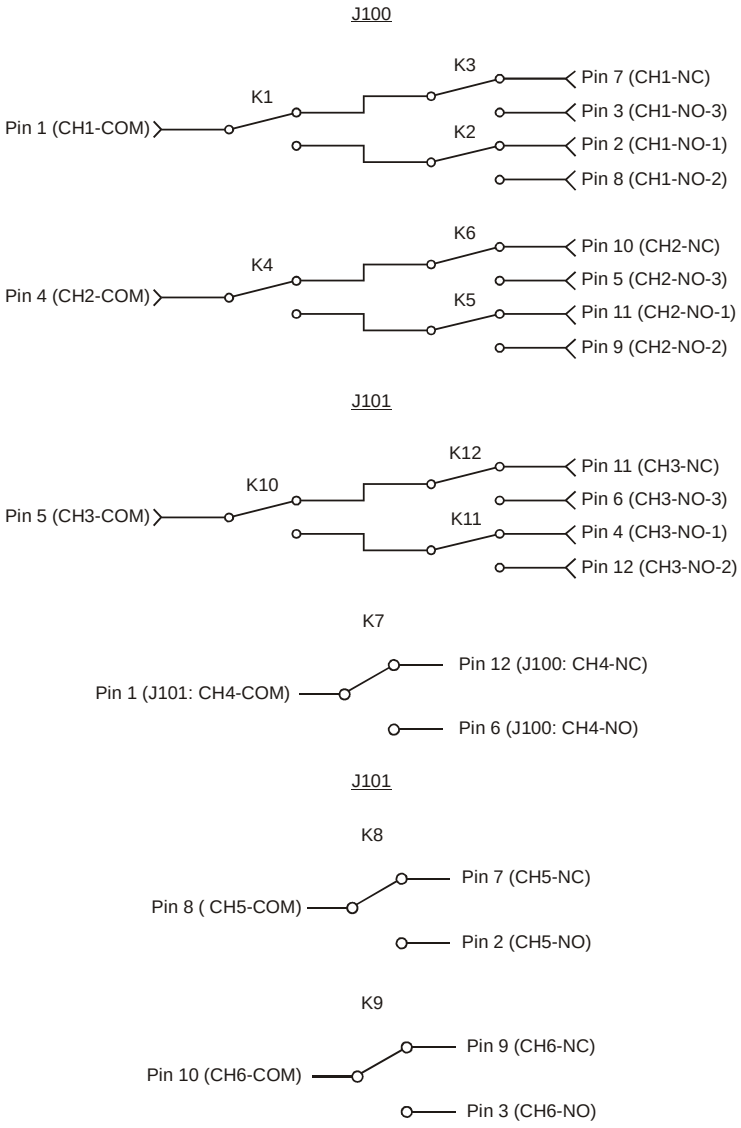
SMP2005 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2005 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J100		J101	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
1	CH1-COM	1	CH4-COM
2	CH1-NO-1	2	CH5-NO
3	CH1-NO-3	3	CH6-NO
4	CH2-COM	4	CH3-NO-1
5	CH2-NO-3	5	CH3-COM
6	CH4-NO	6	CH3-NO-3
7	CH1-NC	7	CH5-NC
8	CH1-NO-2	8	CH5-COM
9	CH2-NO-2	9	CH6-NC
10	CH2-NC	10	CH6-COM
11	CH2-NO-1	11	CH3-NC
12	CH4-NC	12	CH3-NO-2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP2005 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2005 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2																
0					K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2005 Specifications and Accessories

General Specifications	
Model Type	Power
Channels	3 SPDT & 3 SP4T
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 15 ms
Rated Switch Operations	
Mechanical	1 x 10^7
Electrical	1 x 10^5 (Full Load)
Power Specifications	
Maximum Switching Voltage	270 V ac, 220 V dc
Maximum Switching Current	20 A
Maximum Switching Power	600 W dc, 5400 VA
DC Performance	
Path Resistance	< 75 mΩ maximum
Insulation Resistance	> 1 x 10^7 Ω
Capacitance	
Open Channel	< 20 pF
Channel-Mainframe	< 20 pF
Minimum Contact Rating	5 V, 0.5 A
AC Performance	
Bandwidth (-3 dB)	> 20 MHz
Insertion Loss	
100 kHz	< 0.2 dB
1 MHz	< 0.5 dB
10 MHz	< 1.0 dB
Crosstalk	
100 kHz	< -75 dB
1 MHz	< -50 dB
10 MHz	< -40 dB

Accessories

70-0253-001: Connector Kit (Includes 2 ea. Connectors & Custom VTI Backshells and Support Bracket Plus 30 Crimp Pins)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell (VTI)	Mfgr.: VXI Tech	Mfgr P/N: 41-0367-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Backshell Support Bracket	Mfgr.: VXI Tech	Mfgr P/N: 41-0367-001	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Crimp Pins	Mfgr.: Positronics	Mfgr P/N: FC112N2S	Contact Info: 800-641-4054/www.positronic.com

52-0126-000: Connector Kit (Includes 2 ea. Connectors & Backshells Plus 20 Crimp Pins)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com
Desc: Crimp Pins	Mfgr.: Positronics	Mfgr P/N: FC112N2S	Contact Info: 800-641-4054/www.positronic.com

52-0125-001: 12-Pin Connector and Custom VTI Backshell and Support Bracket (No Pins) – Two Required

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com

52-0125-000: 12-Pin Connector and Backshell (No Pins) Two Required

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com

52-0124-000: 12-Pin Cable Assembly

Desc: 6 ft 12 GA Wire, 12 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0124-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0012-000: Crimp Tool w/ Turret Head

Desc: Crimp Tool w/ Turret Head	Mfgr.: Positronics	Mfgr P/N: 9501 and 9502-1	Contact Info: 800-641-4054/www.positronic.com

46-0014-000: Insertion Tool

Desc: Insertion Tool	Mfgr.: Positronics	Mfgr P/N: 9099	Contact Info: 800-641-4054/www.positronic.com

46-0015-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: Positronics	Mfgr P/N: 9081	Contact Info: 800-641-4054/www.positronic.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP2007 / SMP2007A

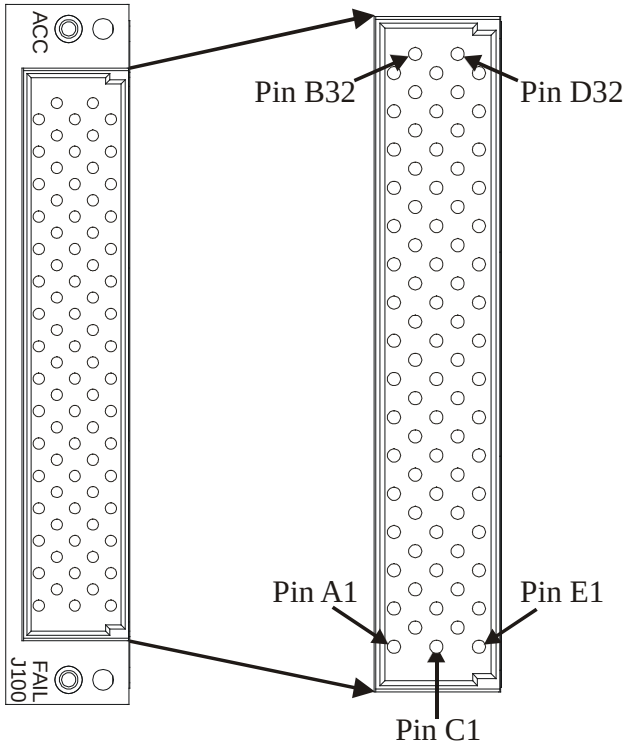
SMP2007/SMP20070A – 48-CHANNEL 500 V / 1000 V HIGH-VOLTAGE MULTIPLEXER

The SMP2007 and SMP2007A switch modules are 48-channel, 500 V and 1000 V multiplexing switch modules, respectively. All relays are independently controllable. This appendix shows the 80-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP2007/SMP2007As consist of two individual (1 x 12) 2-wire multiplexers or two (1 x 24) 1-wire multiplexers that can be interconnected under program control (via the bussing relays) to configure larger multiplexers as required. The SMP2007/SMP2007As are designed for scanning high-voltage multiple points to a common bus in either 1- or 2-wire configurations, synchronously with and instrument (i.e. using triggers) or asynchronously with individual relay control. Applications include Hipot or cable breakdown testing. When switching high voltages, the need for signal shielding becomes critical. The SMP2007/SMP2007As are designed to include large shield planes to improve crosstalk and voltage spikes to adjacent channels.

All relays are driven from the VXIbus +5 V supply lines since VXIbus mainframes always have ample current capability on this supply line, as opposed to the +24 or +12 V supply lines. Since these modules typically switch high voltage to the UUT or interface, a fail-safe interrupt input line is provided on the front panel that can open all relays automatically if a safety condition occurs. This approach instantly removes all power to the UUT or interface.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP2007/SMP2007A CONNECTOR PIN LOCATIONS — FIGURE 1

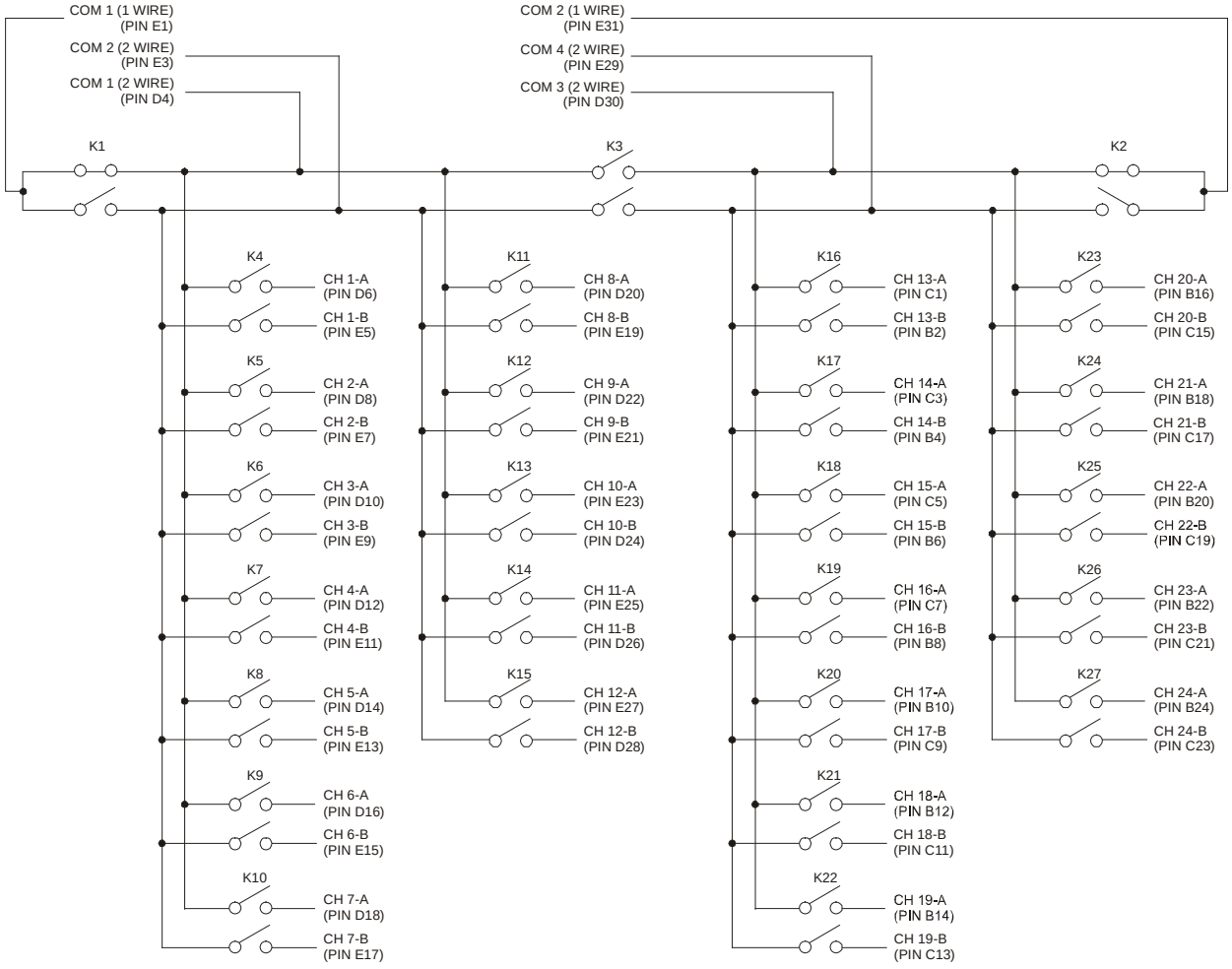
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2007/SMP2007A CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	SHIELD	2	CH13-B	1	CH13-A	2	UNSUED	1	COM 1 (1 WIRE)
3	SHIELD	4	CH14-B	3	CH14-A	4	COM 1 (2 WIRE)	3	COM 2 (2 WIRE)
5	SHIELD	6	CH15-B	5	CH15-A	6	CH1-A	5	CH1-B
7	SHIELD	8	CH16-B	7	CH16-A	8	CH2-A	7	CH2-B
9	SHIELD	10	CH17-A	9	CH17-B	10	CH3-A	9	CH3-B
11	SHIELD	12	CH18-A	11	CH18-B	12	CH4-A	11	CH4-B
13	SHIELD	14	CH19-A	13	CH19-B	14	CH5-A	13	CH5-B
15	SHIELD	16	CH20-A	15	CH20-B	16	CH6-A	15	CH6-B
17	SHIELD	18	CH21-A	17	CH21-B	18	CH7-A	17	CH7-B
19	SHIELD	20	CH22-A	19	CH22-B	20	CH8-A	19	CH8-B
21	SHIELD	22	CH23-A	21	CH23-B	22	CH9-A	21	CH9-B
23	SHIELD	24	CH24-A	23	CH24-B	24	CH10-B	23	CH10-A
25	SHIELD	26	UNSUED	25	UNSUED	26	CH11-B	25	CH11-A
27	SHIELD	28	UNSUED	27	UNSUED	28	CH12-B	27	CH12-A
29	SHIELD	30	FP-OPEN[1]	29	UNSUED	30	COM 3 (2 WIRE)	29	COM 4 (2 WIRE)
31	SHIELD	32	FP-GND[1]	31	UNSUED	32	UNSUED	31	COM 2 (1 WIRE)

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP2007/SMP2007A SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2007/SMP2007A RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2						K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2007/SMP2007A SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	High Voltage Multiplexer
CHANNELS	48
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 1 ms
RATED SWITCH OPERATIONS	
Mechanical	100×10^6
Electrical	1×10^6 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	
SMP2007	500 V dc
SMP2007A	1000 V dc
MAXIMUM SWITCHING CURRENT	1 A
MAXIMUM CARRY CURRENT	2 A
MAXIMUM SWITCHING POWER	25 W dc
DC PERFORMANCE	
PATH RESISTANCE	< 1 Ω (Resistive Load)
INSULATION RESISTANCE	$> 1 \times 10^7$ Ω
MINIMUM CONTACT RATING	5 V dc, 0.1 A
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 20 MHz

ACCESSORIES

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP2008

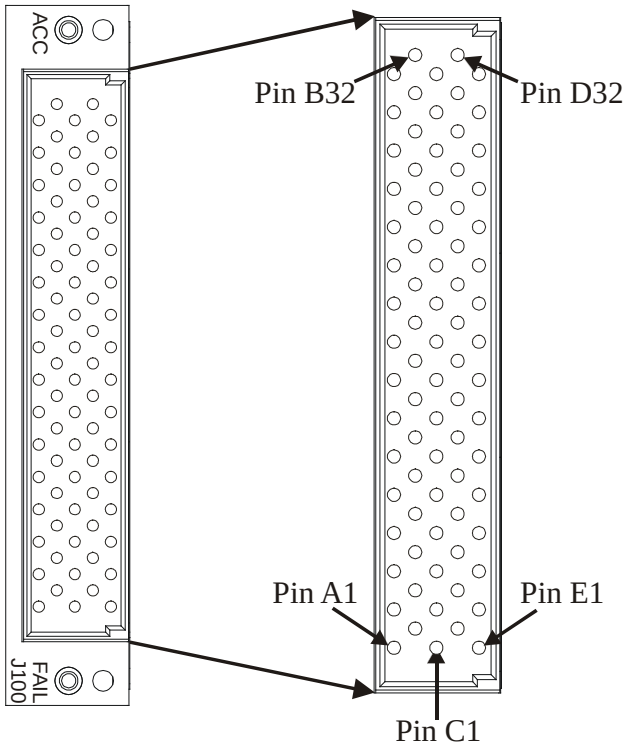
SMP2008 – 16-CHANNEL 500 V 1 AMP DPST SWITCH

The SMP2008 switch module is a sixteen channel, 1 amp double-pole, single-throw relay power switch. All relays are independently controllable. This appendix shows the 80-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP2008 has been designed for applications requiring high-voltage signal switching. This module has also been designed with controlled 75 Ω shielded signal paths. This improves signal shielding, while making these modules ideal for switching CATV and other communication signals. Up to 96 500 V DPST relays can be accommodated in two VXIbus card slots for maximum density or mixed and matched with other SMIP *II* cards for flexibility.

All relays are driven from the VXIbus +5 V supply lines since VXIbus mainframes always have ample current capability on this supply line, as opposed to the +24 or +12 V supply lines. Since these modules typically switch high voltage to the UUT or interface, a fail-safe interrupt input line is provided on the front panel that can open all relays automatically if a safety condition occurs. This approach instantly removes all power to the UUT or interface.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP2008 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2008 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	SHIELD	2	CH1-B INPUT	1	CH1-A INPUT	2	CH1-B OUTPUT	1	CH1-A OUTPUT
3	SHIELD	4	CH2-B INPUT	3	CH2-A INPUT	4	CH2-B OUTPUT	3	CH2-A OUTPUT
5	SHIELD	6	CH3-B INPUT	5	CH3-A INPUT	6	CH3-B OUTPUT	5	CH3-A OUTPUT
7	SHIELD	8	CH4-B INPUT	7	CH4-A INPUT	8	CH4-B OUTPUT	7	CH4-A OUTPUT
9	SHIELD	10	CH5-B INPUT	9	CH5-A INPUT	10	CH5-B OUTPUT	9	CH5-A OUTPUT
11	SHIELD	12	CH6-B INPUT	11	CH6-A INPUT	12	CH6-B OUTPUT	11	CH6-A OUTPUT
13	SHIELD	14	CH7-B INPUT	13	CH7-A INPUT	14	CH7-B OUTPUT	13	CH7-A OUTPUT
15	SHIELD	16	CH8-B INPUT	15	CH8-A INPUT	16	CH8-B OUTPUT	15	CH8-A OUTPUT
17	SHIELD	18	CH9-B INPUT	17	CH9-A INPUT	18	CH9-B OUTPUT	17	CH9-A OUTPUT
19	SHIELD	20	CH10-B INPUT	19	CH10-A INPUT	20	CH10-B OUTPUT	19	CH10-A OUTPUT
21	SHIELD	22	CH11-B INPUT	21	CH11-A INPUT	22	CH11-B OUTPUT	21	CH11-A OUTPUT
23	SHIELD	24	CH12-B INPUT	23	CH12-A INPUT	24	CH12-B OUTPUT	23	CH12-A OUTPUT
25	SHIELD	26	CH13-B INPUT	25	CH13-A INPUT	26	CH13-B OUTPUT	25	CH13-A OUTPUT
27	SHIELD	28	CH14-B INPUT	27	CH14-A INPUT	28	CH14-B OUTPUT	27	CH14-A OUTPUT
29	FP-OPEN[1]	30	CH15-B INPUT	29	CH15-A INPUT	30	CH15-B OUTPUT	29	CH15-A OUTPUT
31	FP-GND[1]	32	CH16-B INPUT	31	CH16-A INPUT	32	CH16-B OUTPUT	31	CH16-A OUTPUT

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP2008 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2008 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2																
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2008 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	High Voltage
CHANNELS	16 DPST
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 1 ms
RATED SWITCH OPERATIONS	
Mechanical	100×10^6
Electrical	1×10^6 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	500 V dc
MAXIMUM SWITCHING CURRENT	1 A
MAXIMUM CARRY CURRENT	2 A
MAXIMUM SWITCHING POWER	25 W (Resistive Load)
DC PERFORMANCE	
PATH RESISTANCE	< 1 Ω
INSULATION RESISTANCE	$> 1 \times 10^7$ Ω
MINIMUM CONTACT RATING	5 V dc, 0.1 A
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 35 MHz (75 Ω)

ACCESSORIES

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP2009

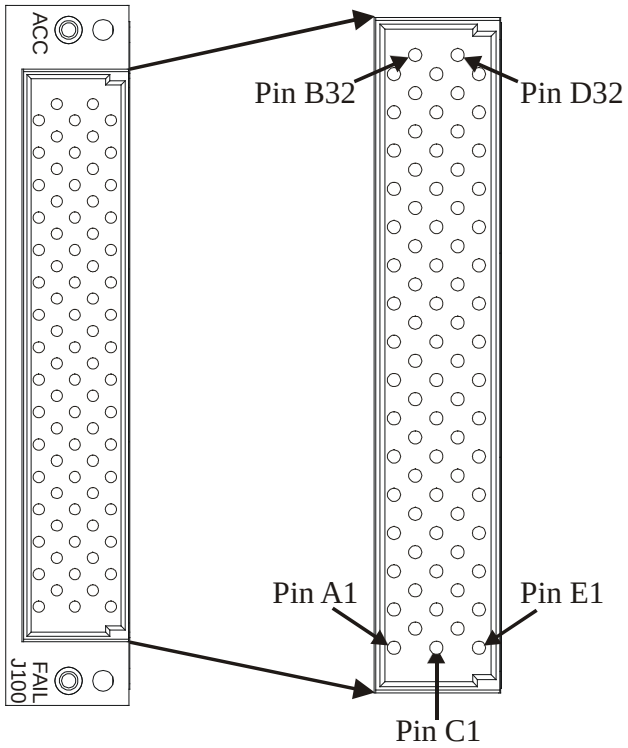
SMP2009 – 16-CHANNEL 500 V 1 AMP SPDT SWITCH

The SMP2009 switch module is a sixteen channel, 1 amp single-pole, double-throw relay power switch. All relays are independently controllable. This appendix shows the 80-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP2009 has been designed for applications requiring high-voltage signal switching. This module has also been designed with controlled 75 Ω shielded signal paths. This improves signal shielding, while making these modules idea for switching CATV and other communication signals. Up to 96 500 V DPST or SPDT relays can be accommodated in two VXIbus card slots for maximum density or mixed and matched with other SMIP *II* cards for flexibility.

All relays are driven from the VXIbus +5 V supply lines since VXIbus mainframes always have ample current capability on this supply line, as opposed to the +24 or +12 V supply lines. Since these modules typically switch high voltage to the UUT or interface, a fail-safe interrupt input line is provided on the front panel that can open all relays automatically if a safety condition occurs. This approach instantly removes all power to the UUT or interface.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP2009 CONNECTOR PIN LOCATIONS — FIGURE 1

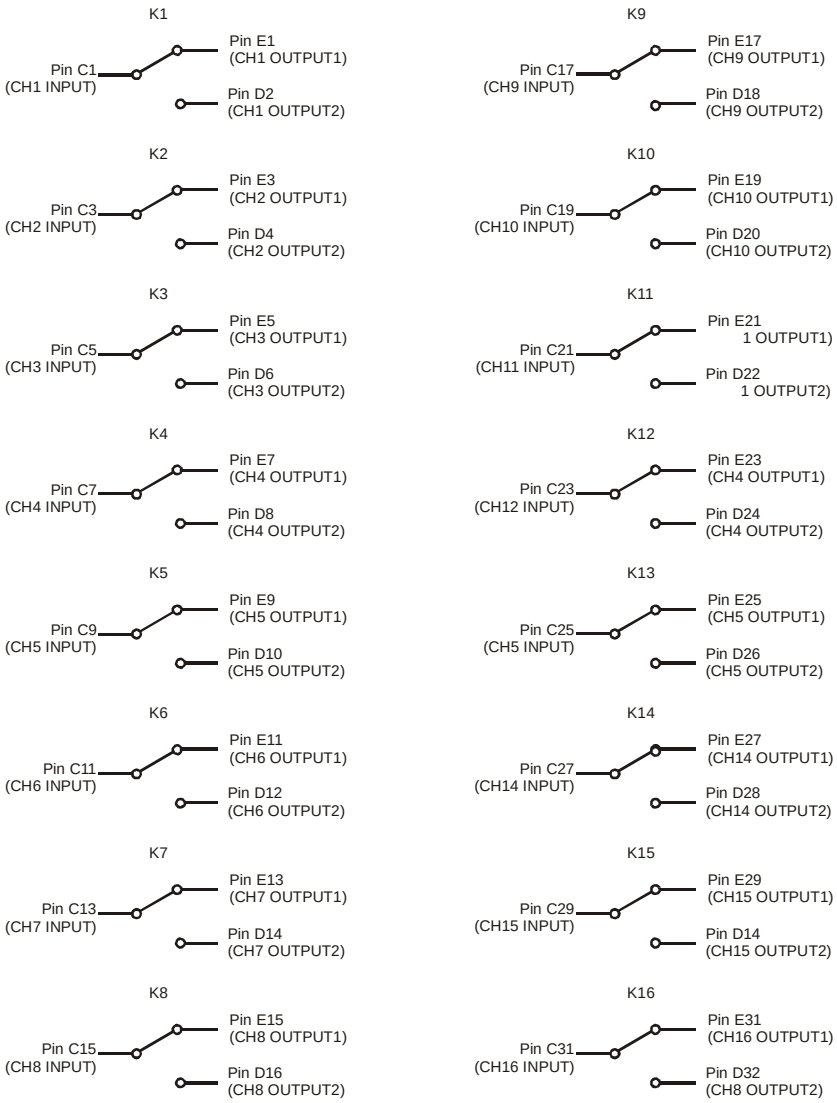
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2009 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	SHIELD	2	NC	1	CH1 INPUT	2	CH1 OUTPUT2	1	CH1 OUTPUT1
3	SHIELD	4	NC	3	CH2 INPUT	4	CH2 OUTPUT2	3	CH2 OUTPUT1
5	SHIELD	6	NC	5	CH3 INPUT	6	CH3 OUTPUT2	5	CH3 OUTPUT1
7	SHIELD	8	NC	7	CH4 INPUT	8	CH4 OUTPUT2	7	CH4 OUTPUT1
9	SHIELD	10	NC	9	CH5 INPUT	10	CH5 OUTPUT2	9	CH5 OUTPUT1
11	SHIELD	12	NC	11	CH6 INPUT	12	CH6 OUTPUT2	11	CH6 OUTPUT1
13	SHIELD	14	NC	13	CH7 INPUT	14	CH7 OUTPUT2	13	CH7 OUTPUT1
15	SHIELD	16	NC	15	CH8 INPUT	16	CH8 OUTPUT2	15	CH8 OUTPUT1
17	SHIELD	18	NC	17	CH9 INPUT	18	CH9 OUTPUT2	17	CH9 OUTPUT1
19	SHIELD	20	NC	19	CH10 INPUT	20	CH10 OUTPUT2	19	CH10 OUTPUT1
21	SHIELD	22	NC	21	CH11 INPUT	22	CH11 OUTPUT2	21	CH11 OUTPUT1
23	SHIELD	24	NC	23	CH12 INPUT	24	CH12 OUTPUT2	23	CH12 OUTPUT1
25	SHIELD	26	NC	25	CH13 INPUT	26	CH13 OUTPUT2	25	CH13 OUTPUT1
27	SHIELD	28	NC	27	CH14 INPUT	28	CH14 OUTPUT2	27	CH14 OUTPUT1
29	FP-OPEN[1]	30	NC	29	CH15 INPUT	30	CH15 OUTPUT2	29	CH15 OUTPUT1
31	FP-GND[1]	32	NC	31	CH16 INPUT	32	CH16 OUTPUT2	31	CH16 OUTPUT1

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP2009 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2009 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2																
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2009 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	High Voltage
CHANNELS	16 SPDT
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 1 ms
RATED SWITCH OPERATIONS	
Mechanical	100×10^6
Electrical	1×10^6 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	500 V dc
MAXIMUM SWITCHING CURRENT	1 A
MAXIMUM CARRY CURRENT	2 A
MAXIMUM SWITCHING POWER	25 W (Resistive Load)
DC PERFORMANCE	
PATH RESISTANCE	< 1 Ω
INSULATION RESISTANCE	$> 1 \times 10^7$ Ω
MINIMUM CONTACT RATING	5 V dc, 0.1 A
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 35 MHz (75 Ω)

ACCESSORIES

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP2012

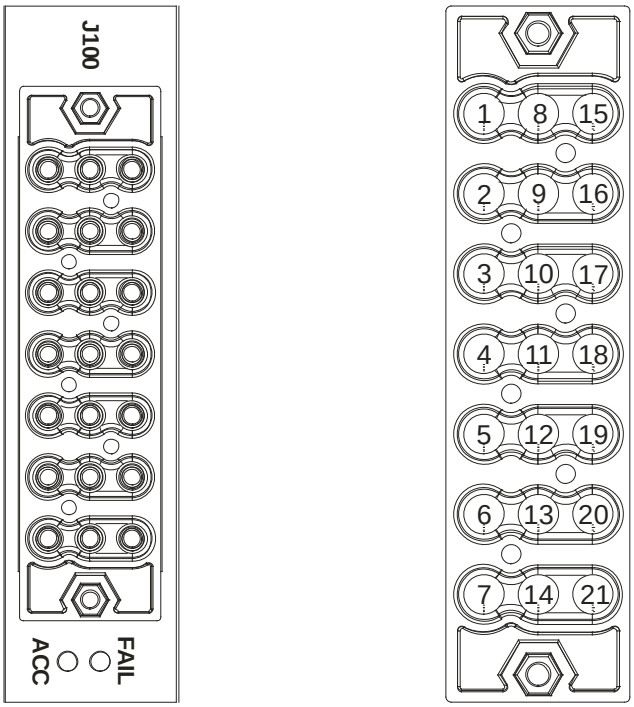
SMP2012 – 10-CHANNEL 30 AMP SPST RELAY SWITCH

The SMP2012 switch module is a 10-channel, 30 A single-pole, single-throw relay power switch. All relays are independently controllable. This appendix shows the 21-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP2012, 30 A switch modules are designed for heavy-duty power-switching requirements. These modules are ideal for automating the signal switching and testing of motors, ballasts, or simple high-power ac or dc signal devices.

Some useful applications for the SMP2012 include automotive, home appliance, and large ATE systems. Since large power relays are used, these modules can only be configured in the SMP1100, but they may be mixed and matched with other modules. All SMIP *II* family modules can utilize the VXIbus TTL trigger lines to provide a fail-safe interrupt feature.

NOTE	The SMP2012 may only be installed in the SMP1100 Single-Wide Base Unit.



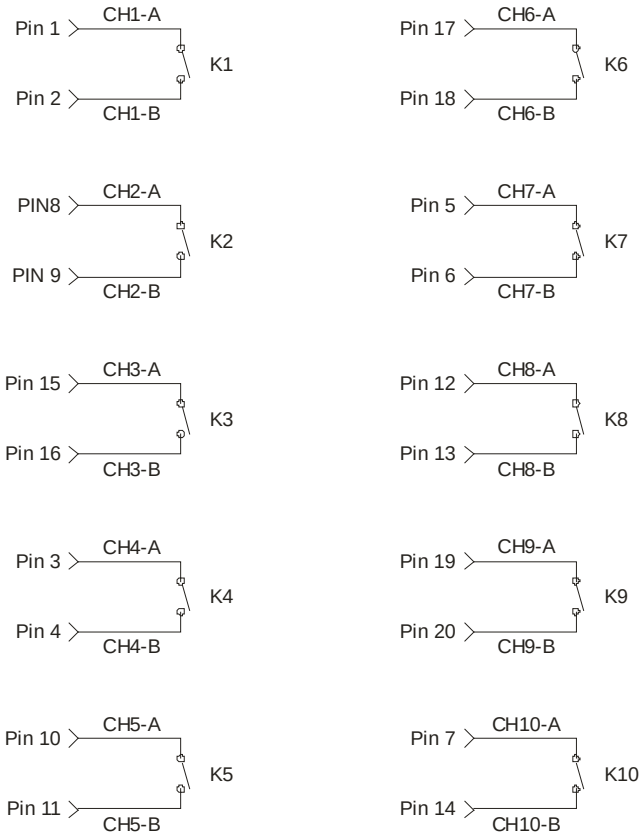
SMP2012 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2012 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J100	
PIN	**SIGNAL**
1	CH1-A
2	CH1-B
3	CH4-A
4	CH4-B
5	CH7-A
6	CH7-B
7	CH10-A
8	CH2-A
9	CH2-B
10	CH5-A
11	CH5-B
12	CH8-A
13	CH8-B
14	CH10-B
15	CH3-A
16	CH3-B
17	CH6-A
18	CH6-B
19	CH9-A
20	CH9-B
21	N/C

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP2012 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2012 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2																
0							K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2012 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	Power
CHANNELS	10 SPST
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 15 ms
RATED SWITCH OPERATIONS	
Mechanical	1×10^7
Electrical	1×10^5 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	277 V ac, 220 V dc
MAXIMUM SWITCHING CURRENT	30 A
MAXIMUM SWITCHING POWER	900 W dc, 8000 VA
DC PERFORMANCE	
PATH RESISTANCE	< 0.1 Ω
INSULATION RESISTANCE	$> 1 \times 10^7$ Ω
CAPACITANCE	
OPEN CHANNEL	< 20 pF
CHANNEL-MAINFRAME	< 20 pF
MINIMUM CONTACT RATING	5 V dc, 0.1 A
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 20 MHz
INSERTION LOSS	
100 kHz	< 0.2 dB
1 MHz	< 0.5 dB
10 MHz	< 1.0 dB
CROSSTALK	
100 kHz	< -75 dB
1 MHz	< -50 dB
10 MHz	< -40 dB

ACCESSORIES

70-0293-000: Mating Connector
Desc: Mating Connector — Mfgr.: VXI Tech. — Mfgr P/N: 70-0293-000 — Contact Info: 949-955-1VXI/www.vxitech.com

27-0102-003: Mating Pins
Desc: Crimp Sockets — Mfgr.: APP — Mfgr P/N: SC12-SN — Contact Info: www.andersonpower.com

Crimp Tool
Desc: Crimp Tool — Mfgr.: DMC Tools — Mfgr P/N: AF8 — Contact Info: 407-855-6161/www.dmctools.com
Desc: Turret Head — Mfgr.: DMC Tools — Mfgr P/N: TH1A — Contact Info: 407-855-6161/www.dmctools.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP2104

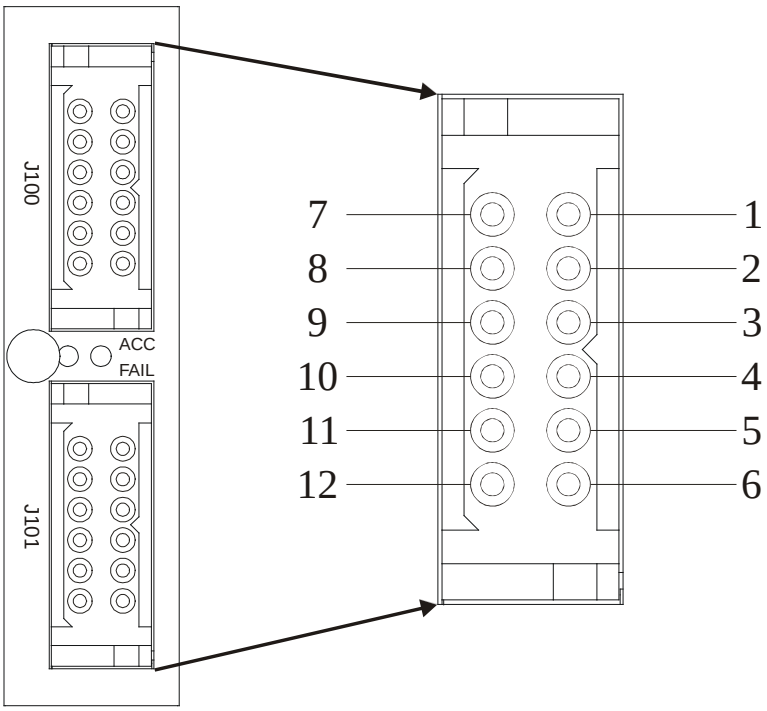
SMP2104 – 10-CHANNEL 20 AMP DC SOLID STATE SPST POWER SWITCH

The SMP2104 is a polarized solid state power switch, with ten 20 A single-pole, single-throw relays. All relays are independently controllable. This appendix shows the 12-pin connector, connector pin assignments, schematic, a relay register map, and electrical specifications for this module

As with all 20 A power modules, the SMP2104 may only be installed in the SMP1100 Single-Wide Base Unit. Applications for the module include switching of signals with large in-rush currents (< 70 A dc), as well as to provide unlimited dc switch life and high-speed switching for manufacturing environments.

Since these modules typically switch power to the UUT or interface, a fail-safe interrupt input line is provided on the front panel that can open all relays automatically if a safety condition occurs. This approach instantly removes all power to the UUT or interface.

NOTE	The SMP2104 may only be installed in the SMP1100 Single-Wide Base Unit.



SMP2104 CONNECTOR PIN LOCATIONS — FIGURE 1

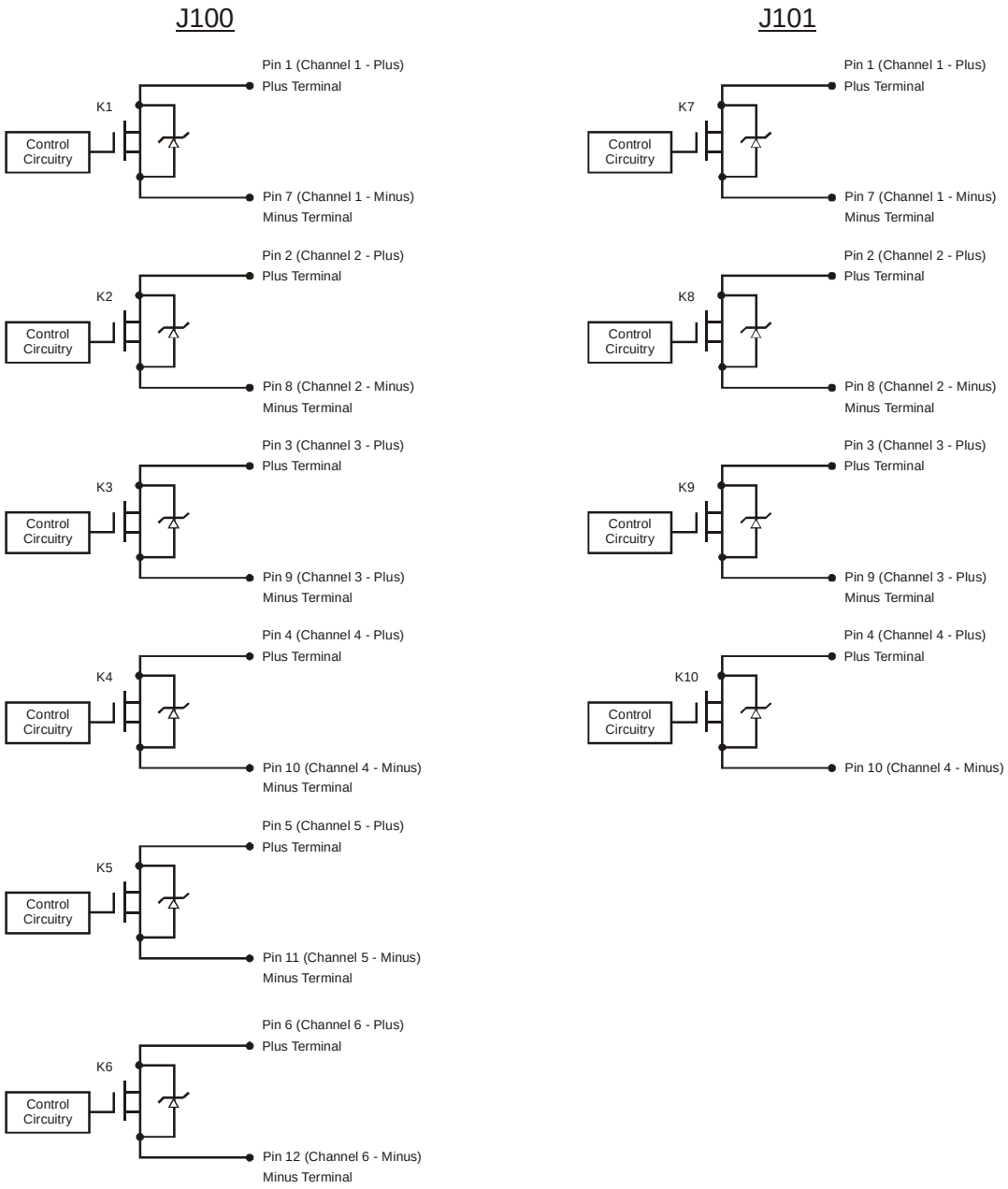
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2104 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J100		J101	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
1	CH1-PLUS	1	CH7-PLUS
2	CH2-PLUS	2	CH8-PLUS
3	CH3-PLUS	3	CH9-PLUS
4	CH4-PLUS	4	CH10-PLUS
5	CH5-PLUS	5	UNUSED
6	CH6-PLUS	6	FP-OPEN[1]
7	CH1-MINUS	7	CH7-MINUS
8	CH2-MINUS	8	CH8-MINUS
9	CH3-MINUS	9	CH9-MINUS
10	CH4-MINUS	10	CH10-MINUS
11	CH5-MINUS	11	UNUSED
12	CH6-MINUS	12	FP-GND[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP2104 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2104 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2																
0							K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2104 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	Power
CHANNELS	10 SPST
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	2 ms
RATED SWITCH OPERATIONS	
NO LOAD	Unlimited
RATED LOAD	Unlimited
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	60 V dc
MAXIMUM SWITCHING CURRENT	20 A dc at ≤ 60 °C
MAXIMUM CARRY CURRENT	20 A
SURGE CURRENT	70 A dc for ≤ 100 ms
MAXIMUM SWITCHING POWER	1200 W dc (resistive load)
DC PERFORMANCE	
PATH RESISTANCE	0.05 Ω
ISOLATION	
At 25 °C	≤ 25 µA leakage at 60 V
At 60 °C	≤ 150 µA leakage at 60 V
MINIMUM CONTACT RATING	Dry Switch
MAXIMUM THERMAL OFFSET / CHANNEL (HI-LO)	< 25 µV

ACCESSORIES

70-0253-001: Connector Kit (Includes 2 ea. Connectors & Custom VTI Backshells and Support Bracket Plus 30 Crimp Pins)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell (VTI)	Mfgr.: VXI Tech	Mfgr P/N: 41-0367-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Backshell Support Bracket	Mfgr.: VXI Tech	Mfgr P/N: 41-0367-001	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Crimp Pins	Mfgr.: Positronics	Mfgr P/N: FC112N2S	Contact Info: 800-641-4054/www.positronic.com

52-0126-000: Connector Kit (Includes 2 ea. Connectors & Backshells Plus 20 Crimp Pins)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com
Desc: Crimp Pins	Mfgr.: Positronics	Mfgr P/N: FC112N2S	Contact Info: 800-641-4054/www.positronic.com

52-0125-001: 12-Pin Connector and Custom VTI Backshell and Support Bracket (No Pins) – Two Required

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com

52-0125-000: 12-Pin Connector and Backshell (No Pins) Two Required

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com

52-0124-000: 12-Pin Cable Assembly

Desc: 6 ft 12 GA Wire, 12 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0124-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0012-000: Crimp Tool w/ Turret Head

Desc: Crimp Tool w/ Turret Head	Mfgr.: Positronics	Mfgr P/N: 9501 and 9502-1	Contact Info: 800-641-4054/www.positronic.com

46-0014-000: Insertion Tool

Desc: Insertion Tool	Mfgr.: Positronics	Mfgr P/N: 9099	Contact Info: 800-641-4054/www.positronic.com

46-0015-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: Positronics	Mfgr P/N: 9081	Contact Info: 800-641-4054/www.positronic.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

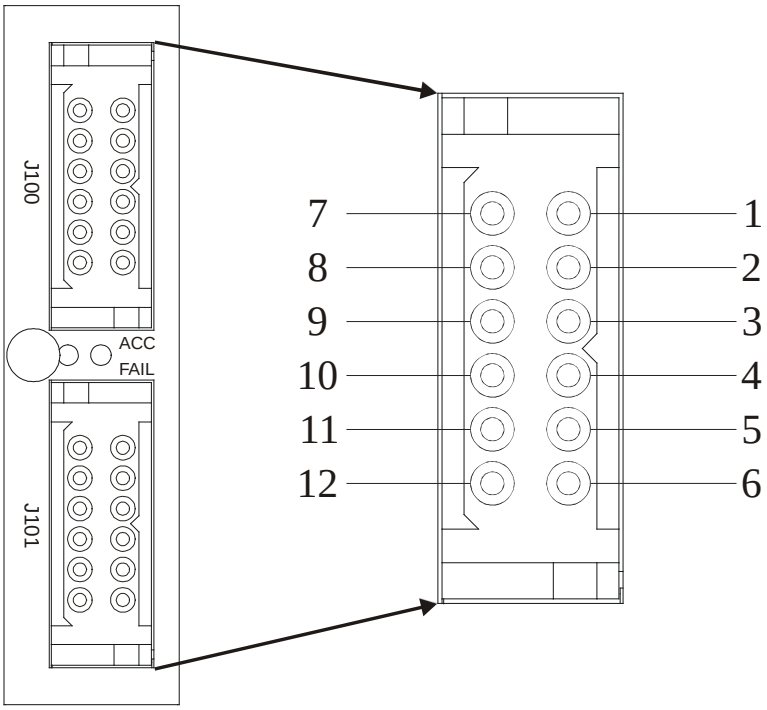
APPENDIX SMP2113

SMP2113 – 4-CHANNEL (3 SP4T, 1 SPDT), 25 A POWER SWITCH

The SMP2113 switch module is a four channel, twenty amp switch with three singe-pole, four-throw latching relays and one single-pole, double throw latching relay. All relays can be controlled independently. This appendix shows the 12-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and mating connector information for this module.

The SMP2113 switch module is designed for heavy-duty power switching requirements. This module is ideal for automating the signal switching and testing of motors, ballasts, or simple high-power ac or dc signal devices.

Some useful applications for the SMP2113 include automotive, home appliance, and large ATE systems. Since large power relays are used, these modules can only be configured in the SMP1100, but they may be mixed and matched with other modules. All SMIP *II* family modules can utilize the VXIbus TTL trigger lines to provide a fail-safe interrupt feature.



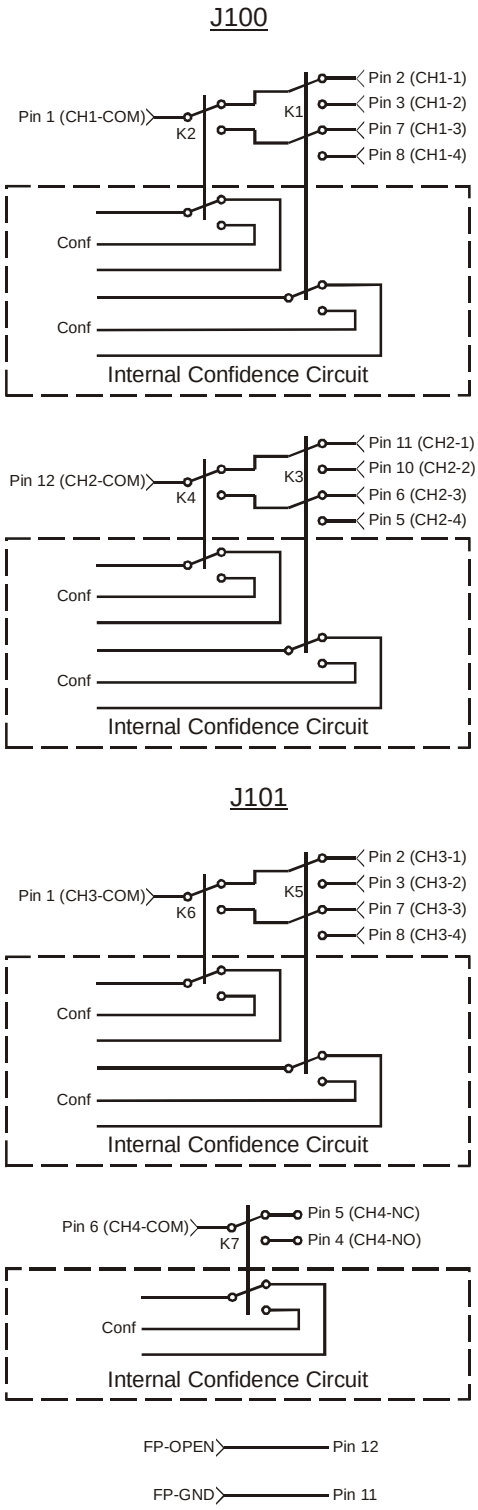
SMP2113 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2113 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J100		J101	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
1	CH1-COM	1	CH3-COM
2	CH1-1	2	CH3-1
3	CH1-2	3	CH3-2
4	UNUSED	4	CH4-NO
5	CH2-4	5	CH4-NC
6	CH2-3	6	CH4-COM
7	CH1-3	7	CH3-3
8	CH1-4	8	CH3-4
9	UNUSED	9	UNUSED
10	CH2-2	10	UNUSED
11	CH2-1	11	FP-GND
12	CH2-COM	12	FP-OPEN

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



Note: Relays are shown in the reset state.

SMP2113 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2113 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2																
0			K7-Reset	K7-Set	K6-Reset	K6-Set	K5-Reset	K5-Set	K4-Reset	K4-Set	K3-Reset	K3-Set	K2-Reset	K2-Set	K1-Reset	K1-Set

NOTE If all 1's are sent to the relay data bus, only the reset bits will be set.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

MASTER RESET BIT

In addition to the standard registers found in all SMIP *II* modules, an additional bit (D10) has been added to the Control Register in A24/A32 memory (see *Description of SMIP II Module Registers - A24 / A32 - Extended Memory* for more information). Below is an excerpt from the Control Register with an explanation of the Master Reset bit.

Control Register — Read and Write		
ADDR	A24/A32 Offset + 0x200	
D10	Master Reset Bit	0 = Clears the master reset bit 1 = Causes a reset of all relays P_{on} state = 0 The rising edge of this bit is used to cause a reset of all relays on the module. To cause another master reset of the relays, this bit must first be cleared (set to 0) and then reset (set to 1).

DELAY REGISTER

With most SMIP *II* modules, it is possible to set time the Board Busy signal is held by the module. The SMP2113 delay register has been hard coded for a delay of 30 ms for its latching relays. It is possible to write to this register, but this will not affect the delay. An excerpt from the Delay Register is included below along with a description of the register (see *Description of SMIP II Module Registers - A24 / A32 - Extended Memory* for more information).

Control Register — Read and Write		
ADDR	A24/A32 Offset + 0x200	
D15-D0	Data Bus (16-bit)	This register is invalid for units with latching relays and is hard coded for a 30 ms delay for this module. This register has been disabled.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2113 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	Power
CHANNELS	3 SP4T, 1 SPDT
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 15 ms
RATED SWITCH OPERATIONS	
Mechanical	1x 10^7
Electrical	1 x 10^5 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	28 V dc, 115 V ac / 400 Hz
MAXIMUM SWITCHING CURRENT	25 A
MAXIMUM SWITCHING POWER RESISTIVE	700 W dc
DC PERFORMANCE	
PATH RESISTANCE	< 0.1 Ω
INSULATION RESISTANCE	> 1 x 10^7 Ω
MINIMUM CONTACT RATING	5 V dc, 0.1 A
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 20 MHz
INSERTION LOSS	
100 kHz	< 0.2 dB
1 MHz	< 0.5 dB
10 MHz	< 1.0 dB
INSERTION LOSS	
100 kHz	< -75 dB
1 MHz	< -50 dB
10 MHz	< -40 dB
CAPACITANCE	
Open Channel	< 20 pF
Channel-Mainframe	< 20 pF

ACCESSORIES

70-0253-001: Connector Kit (Includes 2 ea. Connectors & Custom VTI Backshells and Support Bracket Plus 30 Crimp Pins)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell (VTI)	Mfgr.: VXI Tech	Mfgr P/N: 41-0367-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Backshell Support Bracket	Mfgr.: VXI Tech	Mfgr P/N: 41-0367-001	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Crimp Pins	Mfgr.: Positronics	Mfgr P/N: FC112N2S	Contact Info: 800-641-4054/www.positronic.com

52-0126-000: Connector Kit (Includes 2 ea. Connectors & Backshells Plus 20 Crimp Pins)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com
Desc: Crimp Pins	Mfgr.: Positronics	Mfgr P/N: FC112N2S	Contact Info: 800-641-4054/www.positronic.com

52-0125-001: 12-Pin Connector and Custom VTI Backshell and Support Bracket (No Pins) – Two Required

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com

52-0125-000: 12-Pin Connector and Backshell (No Pins) Two Required

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com

52-0124-000: 12-Pin Cable Assembly

Desc: 6 ft 12 GA Wire, 12 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0124-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0012-000: Crimp Tool w/ Turret Head

Desc: Crimp Tool w/ Turret Head	Mfgr.: Positronics	Mfgr P/N: 9501 and 9502-1	Contact Info: 800-641-4054/www.positronic.com

46-0014-000: Insertion Tool

Desc: Insertion Tool	Mfgr.: Positronics	Mfgr P/N: 9099	Contact Info: 800-641-4054/www.positronic.com

46-0015-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: Positronics	Mfgr P/N: 9081	Contact Info: 800-641-4054/www.positronic.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP2122

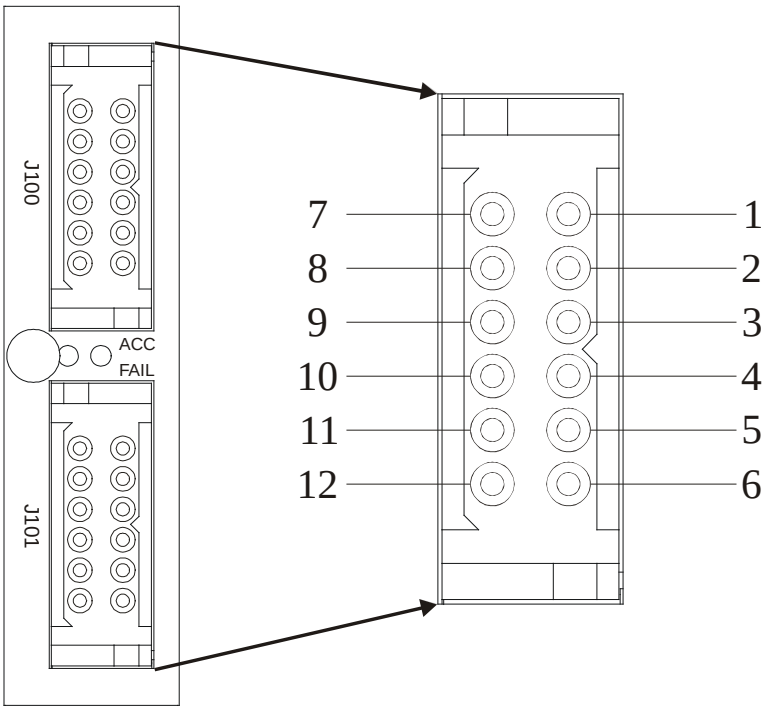
SMP2122 – 4-CHANNEL (2 SP4T, 2 DUAL GANGED SPDT) 25 A POWER SWITCH

The SMP2122 switch module is a four channel, twenty amp switch with two singe-pole, four-throw latching relays and two sets of ganged single-pole, double throw latching relays. All relays can be controlled independently. This appendix shows the 12-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and mating connector information for this module.

The SMP2122 switch module is designed for heavy-duty power switching requirements. This module is ideal for automating the signal switching and testing of motors, ballasts, or simple high-power ac or dc signal devices.

Some useful applications for the SMP2122 include automotive, home appliance, and large ATE systems. Since large power relays are used, these modules can only be configured in the SMP1100, but they may be mixed and matched with other modules. All SMIP *II* family modules can utilize the VXIbus TTL trigger lines to provide a fail-safe interrupt feature.

The SMP2122 is installed with an SMP2113 module in an SMP1100 base unit. The figure below shows the connector pin locations for this module.



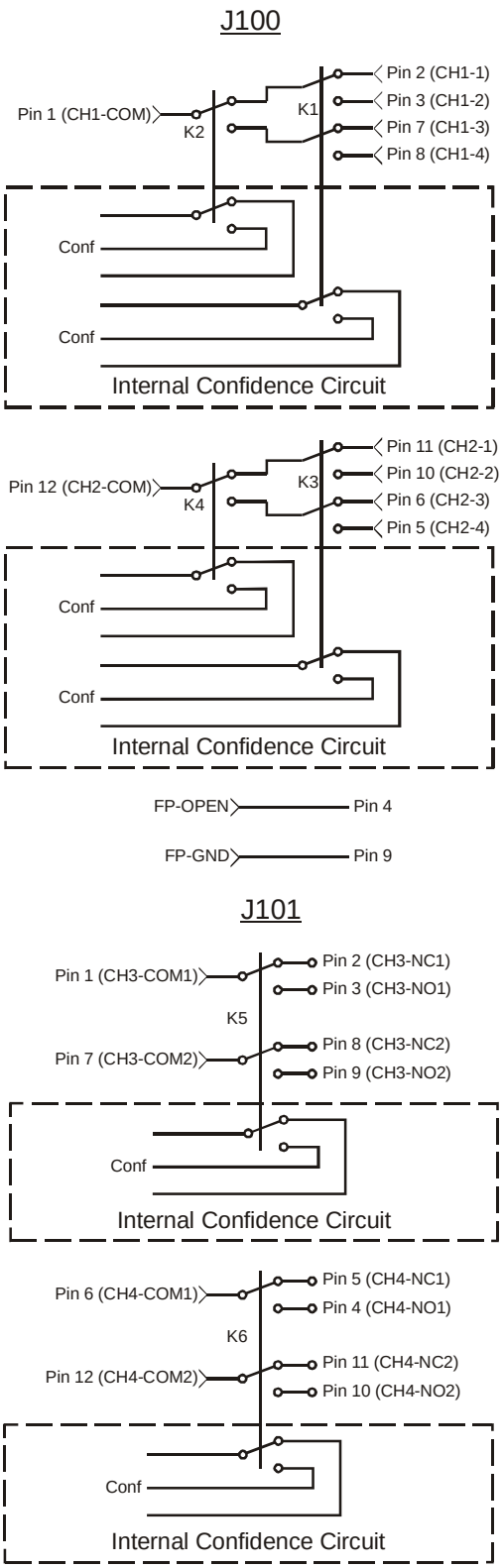
SMP2113 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2122 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J100		J101	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
1	CH1-COM	1	CH3-COM1
2	CH1-1	2	CH3-NC1
3	CH1-2	3	CH3-NO1
4	FP-OPEN	4	CH4-NO1
5	CH2-4	5	CH4-NC1
6	CH2-3	6	CH4-COM1
7	CH1-3	7	CH3-COM2
8	CH1-4	8	CH3-NC2
9	FP-GND	9	CH3-NO2
10	CH2-2	10	CH4-NO2
11	CH2-1	11	CH4-NC2
12	CH2-COM	12	CH4-COM2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



Note: Relays are shown in the reset state.

SMP2122 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2122 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2																
0					K6-Reset	K6-Set	K5-Reset	K5-Set	K4-Reset	K4-Set	K3-Reset	K3-Set	K2-Reset	K2-Set	K1-Reset	K1-Set

NOTE If all 1's are sent to the relay data bus, only the reset bits will be set.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

MASTER RESET BIT

In addition to the standard registers found in all SMIP *II* modules, an additional bit (D10) has been added to the Control Register in A24/A32 memory (see *Description of SMIP II Module Registers - A24 / A32 - Extended Memory* for more information). Below is an excerpt from the Control Register with an explanation of the Master Reset bit.

Control Register — Read and Write		
ADDR	A24/A32 Offset + 0x200	
D10	Master Reset Bit	0 = Clears the master reset bit 1 = Causes a reset of all relays P_{on} state = 0 The rising edge of this bit is used to cause a reset of all relays on the module. To cause another master reset of the relays, this bit must first be cleared (set to 0) and then reset (set to 1).

DELAY REGISTER

With most SMIP *II* modules, it is possible to set time the Board Busy signal is held by the module. The SMP2122 delay register has been hard coded for a delay of 30 ms for its latching relays. It is possible to write to this register, but this will not affect the delay. An excerpt from the Delay Register is included below along with a description of the register (see *Description of SMIP II Module Registers - A24 / A32 - Extended Memory* for more information).

Control Register — Read and Write		
ADDR	A24/A32 Offset + 0x200	
D15-D0	Data Bus (16-bit)	This register is invalid for units with latching relays and is hard coded for a 30 ms delay for this module. This register has been disabled.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2122 Specifications and Accessories

General Specifications	
Model Type	Power
Channels	2 SP4T, 2 Dual Ganged SPDT
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 15 ms
Rated Switch Operations	
Mechanical	1x 10^7
Electrical	1 x 10^5 (Full Load)
Power Specifications	
Maximum Switching Voltage	28 V dc, 115V ac / 400 Hz
Maximum Switching Current	25 A
Maximum Switching Power Resistive	700 W dc
DC Performance	
Path Resistance	< 0.1 Ω
Insulation Resistance	> 1 x 10^7 Ω
Minimum Contact Rating	5 V dc, 0.1 A
DC Performance	
Bandwidth (-3 dB)	> 20 MHz
Insertion Loss	
100 kHz	< 0.2 dB
1 MHz	< 0.5 dB
10 MHz	< 1.0 dB
Insertion Loss	
100 kHz	< -75 dB
1 MHz	< -50 dB
10 MHz	< -40 dB
Capacitance	
Open Channel	< 20 pF
Channel-Mainframe	< 20 pF

Accessories

70-0253-001: Connector Kit (Includes 2 ea. Connectors & Custom VTI Backshells and Support Bracket Plus 30 Crimp Pins)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell (VTI)	Mfgr.: VXI Tech	Mfgr P/N: 41-0367-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Backshell Support Bracket	Mfgr.: VXI Tech	Mfgr P/N: 41-0367-001	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Crimp Pins	Mfgr.: Positronics	Mfgr P/N: FC112N2S	Contact Info: 800-641-4054/www.positronic.com

52-0126-000: Connector Kit (Includes 2 ea. Connectors & Backshells Plus 20 Crimp Pins)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com
Desc: Crimp Pins	Mfgr.: Positronics	Mfgr P/N: FC112N2S	Contact Info: 800-641-4054/www.positronic.com

52-0125-001: 12-Pin Connector and Custom VTI Backshell and Support Bracket (No Pins) – Two Required

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com

52-0125-000: 12-Pin Connector and Backshell (No Pins) Two Required

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: PLB12F7000	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: Positronics	Mfgr P/N: PLB1200050	Contact Info: 800-641-4054/www.positronic.com

52-0124-000: 12-Pin Cable Assembly

Desc: 6 ft 12 GA Wire, 12 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0124-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0012-000: Crimp Tool w/ Turret Head

Desc: Crimp Tool w/ Turret Head	Mfgr.: Positronics	Mfgr P/N: 9501 and 9502-1	Contact Info: 800-641-4054/www.positronic.com

46-0014-000: Insertion Tool

Desc: Insertion Tool	Mfgr.: Positronics	Mfgr P/N: 9099	Contact Info: 800-641-4054/www.positronic.com

46-0015-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: Positronics	Mfgr P/N: 9081	Contact Info: 800-641-4054/www.positronic.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP2300

SMP2300 – 500 V COAXIAL 24-CHANNEL SPST HIGH VOLTAGE SWITCH

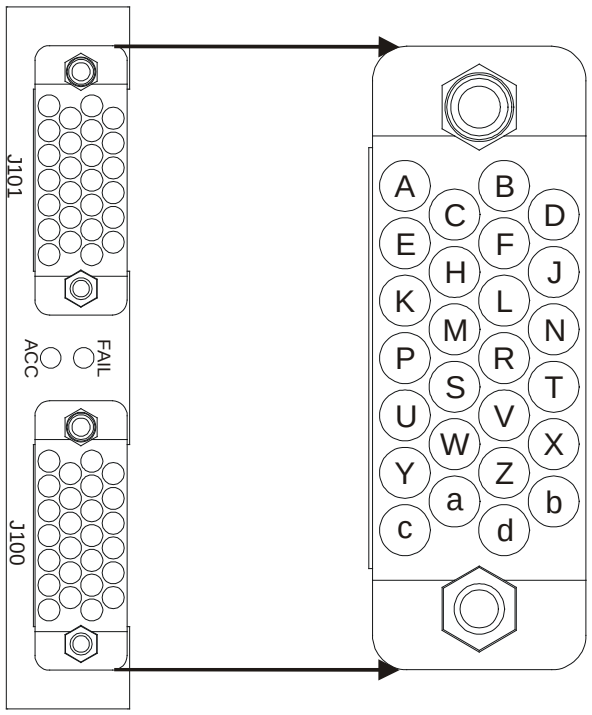
The SMP2300 switch module is a 24-channel, 500 V single-pole, single-throw high voltage switch. All relays are independently controllable. This appendix shows the two, 24-pin connectors, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP2300 is designed to switching high-voltage signals for device under test control and measurement purposes. Up to 144 channels can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density, or mixed and matched with other SMIP *II* cards for flexibility. Applications include Hipot or cable breakdown testing.

When switching high voltages, the need for signal shielding becomes critical. The SMP2300 has been designed to include large shield planes to improve crosstalk and voltage spikes to adjacent channels.

For ATE applications, such as switching high-voltage source measure units or power supplies, a fail-safe interrupt line is provided on the front panel. This can open all relays automatically if a safety condition occurs. This approach instantly removes all high voltages to the UUT or interface.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP2300 CONNECTOR PIN LOCATIONS — FIGURE 1

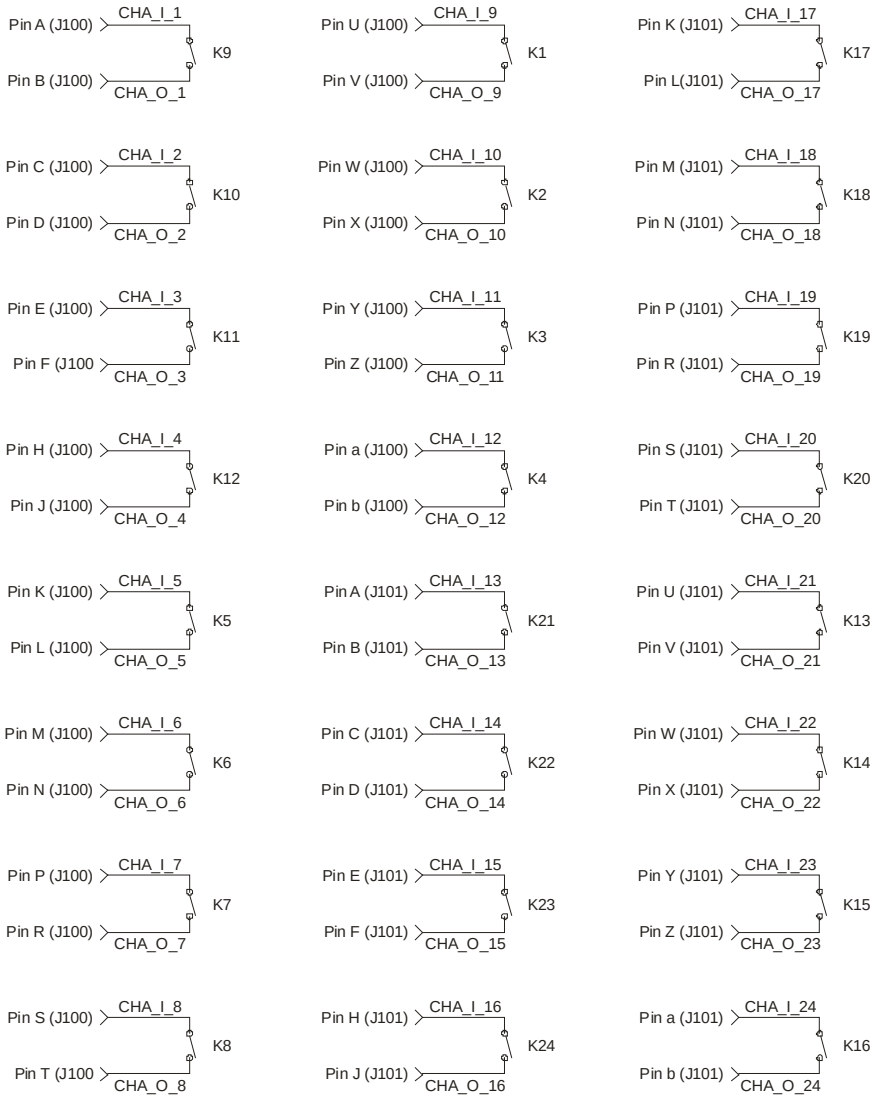
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2300 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J100		J101	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
A	CHA_I_1	A	CHA_I_13
B	CHA_O_1	B	CHA_O_13
C	CHA_I_2	C	CHA_I_14
D	CHA_O_2	D	CHA_O_14
E	CHA_I_3	E	CHA_I_15
F	CHA_O_3	F	CHA_O_15
H	CHA_I_4	H	CHA_I_16
J	CHA_O_4	J	CHA_O_16
K	CHA_I_5	K	CHA_I_17
L	CHA_O_5	L	CHA_O_17
M	CHA_I_6	M	CHA_I_18
N	CHA_O_6	N	CHA_O_18
P	CHA_I_7	P	CHA_I_19
R	CHA_O_7	R	CHA_O_19
S	CHA_I_8	S	CHA_I_20
T	CHA_O_8	T	CHA_O_20
U	CHA_I_9	U	CHA_I_21
V	CHA_O_9	V	CHA_O_21
W	CHA_I_10	W	CHA_I_22
X	CHA_O_10	X	CHA_O_22
Y	CHA_I_11	Y	CHA_I_23
Z	CHA_O_11	Z	CHA_O_23
a	CHA_I_12	a	CHA_I_24
b	CHA_O_12	b	CHA_O_24
c	Not Used	c	Not Used
d	FP-OPEN[1]	d	Not Used

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP2300 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2300 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2									K16	K15	K14	K13	K20	K19	K18	K17
0	K24	K23	K22	K21	K4	K3	K2	K1	K8	K7	K6	K5	K12	K11	K10	K9

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2300 Specifications and Accessories

General Specifications	
Model Type	High Voltage
Channels	24
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 3 ms
Rated Switch Operations	
Mechanical	100 x 10^6
Electrical	1 x 10^6 (Full Load)
Power Specifications	
Maximum Switching Voltage	500 V dc
Maximum Switching Current	1.0 A
Maximum Carry Current	2.0 A
Maximum Switching Power	25 W dc
DC Performance	
Path Resistance	< 1 Ω
Insulation Resistance	> 1 x 10^7 Ω
AC Performance	
Bandwidth (-3 dB)	> 25 MHz
Insertion Loss	
10 MHz	< 0.5 dB
100 MHz	< 1.5 dB
500 MHz	< 2.5 dB
Crosstalk	
10 MHz	< -65 dB
100 MHz	< -50 dB
500 MHz	< -45 dB
Isolation	
10 MHz	< -70 dB
100 MHz	< -55 dB
500 MHz	< -50 dB
VSWR	
100 MHz	< 1.2:1
500 MHz	< 1.5:1

Accessories

70-0149-001: 10-Pin/Ferrule Kit (RG178 50 Ω)

Desc: Contact, Coax, Pin (Qty: 10)	Mfgr.: AMP	Mfgr P/N: 226537-2	Contact Info: 800-522-6752/www.amp.com
Desc: Ferrule; Qty: 10	Mfgr.: AMP	Mfgr P/N: 1-332057-0	Contact Info: 800-522-6752/www.amp.com

70-0149-000: 10-Pin/Ferrule Kit (RG316 50 Ω)

Desc: Contact, Coax, Pin (Qty: 10)	Mfgr.: AMP	Mfgr P/N: 226537-1	Contact Info: 800-522-6752/www.amp.com
Desc: Ferrule, Qty: 10	Mfgr.: AMP	Mfgr P/N: 1-332056-0	Contact Info: 800-522-6752/www.amp.com

70-0150-000: 26-Pin Connector & Cable Housing (No Pins) 2 Required

Desc: Connector Housing	Mfgr.: AMP	Mfgr P/N: 201359-1	Contact Info: 800-522-6752/www.amp.com
Desc: Connector Strain Relief, 26-Pin	Mfgr.: AMP	Mfgr P/N: 201845-1	Contact Info: 800-522-6752/www.amp.com

52-0247-036: 50 Ω RF Cable, 36 Inches

Desc: 50 Ω RF Cable, 36 Inches	Mfgr.: VXI Tech	Mfgr P/N: 52-0247-036	Contact Info: 949-955-1VXI/www.vxitech.com

46-0021-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: AMP	Mfgr P/N: 305183	Contact Info: 800-522-6752/www.amp.com

46-0018-001: Crimp Tool, Coax RG174 50 Ω

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656	Contact Info: 800-522-6752/www.amp.com

46-0018-000: Crimp Tool, Coax RG178 50 Ω

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656-2	Contact Info: 800-522-6752/www.amp.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP2300-93

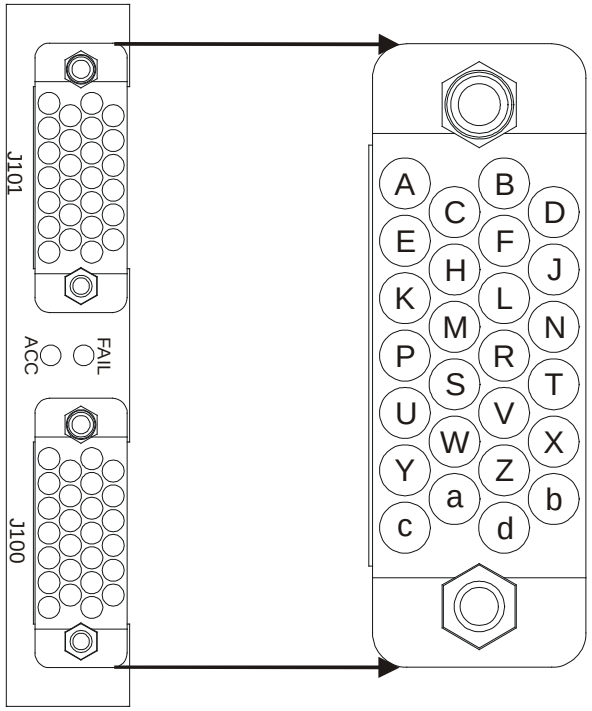
SMP2300-93 – 500 V COAXIAL 24-CHANNEL SPST HIGH VOLTAGE SWITCH

The SMP2300-93 switch module is a 24-channel, 500 V single-pole, single-throw high voltage switch. All relays are independently controllable. This appendix shows the 24-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP2300-93 is designed to switching high-voltage signals for device under test control and measurement purposes. Up to 144 channels can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density, or mixed and matched with other SMIP *II* cards for flexibility.

Applications include Hipot or cable breakdown testing. When switching high voltages, the need for signal shielding becomes critical. The SMP2300-93 has been designed to include large shield planes to improve crosstalk and voltage spikes to adjacent channels.

For ATE applications, such as switching high-voltage source measure units or power supplies, a fail-safe interrupt line is provided on the front panel. This can open all relays automatically if a safety condition occurs. This approach instantly removes all high voltages to the UUT or interface.



SMP2300-93 CONNECTOR PIN LOCATIONS — FIGURE 1

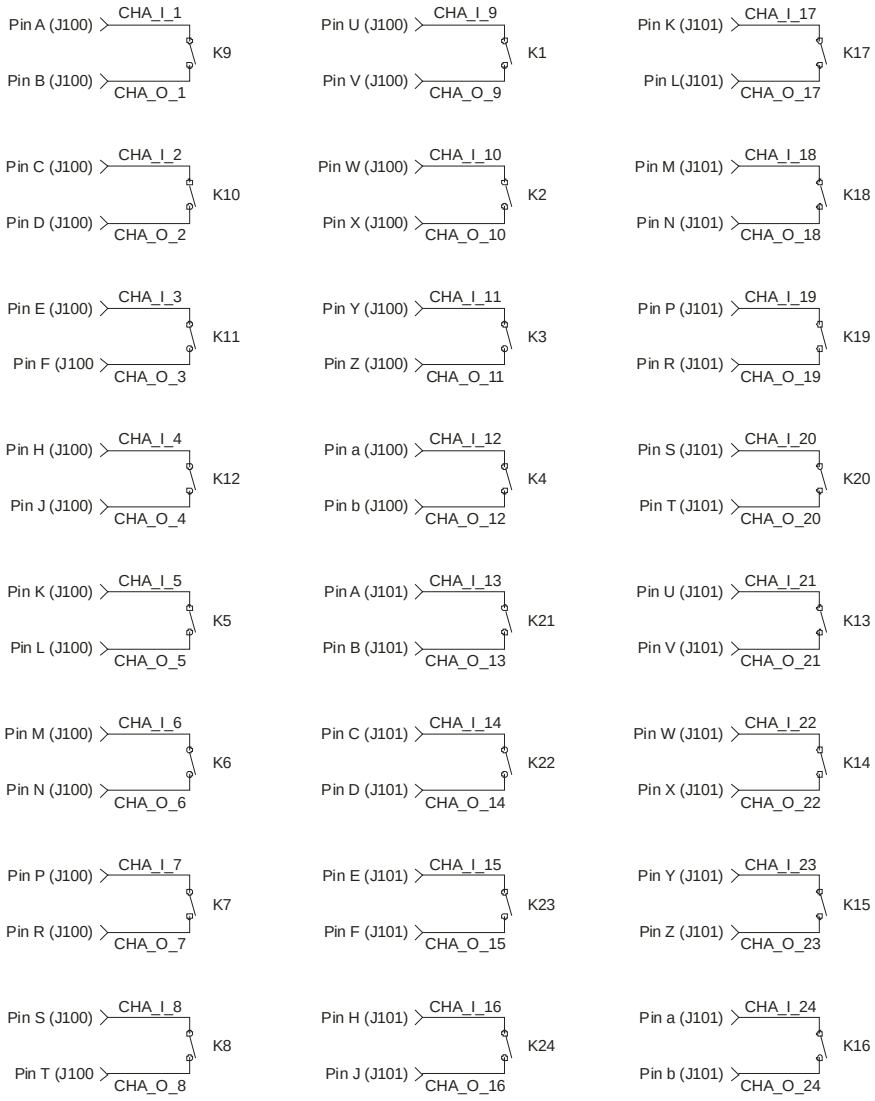
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2300-93 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J100		J101	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
A	CHA_I_1	A	CHA_I_13
B	CHA_O_1	B	CHA_O_13
C	CHA_I_2	C	CHA_I_14
D	CHA_O_2	D	CHA_O_14
E	CHA_I_3	E	CHA_I_15
F	CHA_O_3	F	CHA_O_15
H	CHA_I_4	H	CHA_I_16
J	CHA_O_4	J	CHA_O_16
K	CHA_I_5	K	CHA_I_17
L	CHA_O_5	L	CHA_O_17
M	CHA_I_6	M	CHA_I_18
N	CHA_O_6	N	CHA_O_18
P	CHA_I_7	P	CHA_I_19
R	CHA_O_7	R	CHA_O_19
S	CHA_I_8	S	CHA_I_20
T	CHA_O_8	T	CHA_O_20
U	CHA_I_9	U	CHA_I_21
V	CHA_O_9	V	CHA_O_21
W	CHA_I_10	W	CHA_I_22
X	CHA_O_10	X	CHA_O_22
Y	CHA_I_11	Y	CHA_I_23
Z	CHA_O_11	Z	CHA_O_23
a	CHA_I_12	a	CHA_I_24
b	CHA_O_12	b	CHA_O_24
c	Not Used	c	Not Used
d	FP-OPEN[1]	d	Not Used

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP2300-93 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2300-93 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2									K16	K15	K14	K13	K20	K19	K18	K17
0	K24	K23	K22	K21	K4	K3	K2	K1	K8	K7	K6	K5	K12	K11	K10	K9

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP2300-93 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	High Voltage
CHANNELS	24
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 3 ms
RATED SWITCH OPERATIONS	
Mechanical	100 x 10^6
Electrical	1 x 10^6 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	500 V ac
MAXIMUM SWITCHING CURRENT	1 A
MAXIMUM CARRY CURRENT	2 A
MAXIMUM SWITCHING POWER	25 W dc
DC PERFORMANCE	
PATH RESISTANCE	< 1 Ω
INSULATION RESISTANCE	> 1 x 10^7 Ω
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 25 MHz
INSERTION LOSS	
10 MHz	< 0.5 dB
100 MHz	< 1.5 dB
500 MHz	< 2.5 dB
CROSSTALK	
10 MHz	< -65 dB
100 MHz	< -50 dB
500 MHz	< -45 dB
ISOLATION	
10 MHz	< -70 dB
100 MHz	< -55 dB
500 MHz	< -50 dB
VSWR	
100 MHz	< 1.2:1
500 MHz	< 1.5:1

ACCESSORIES

70-0149-001: 10-Pin/Ferrule Kit (RG178 50 Ω)

Desc: Contact, Coax, Pin (Qty: 10)	Mfgr.: AMP	Mfgr P/N: 226537-2	Contact Info: 800-522-6752/www.amp.com
Desc: Ferrule; Qty: 10	Mfgr.: AMP	Mfgr P/N: 1-332057-0	Contact Info: 800-522-6752/www.amp.com

70-0149-000: 10-Pin/Ferrule Kit (RG316 50 Ω)

Desc: Contact, Coax, Pin (Qty: 10)	Mfgr.: AMP	Mfgr P/N: 226537-1	Contact Info: 800-522-6752/www.amp.com
Desc: Ferrule, Qty: 10	Mfgr.: AMP	Mfgr P/N: 1-332056-0	Contact Info: 800-522-6752/www.amp.com

70-0150-000: 26-Pin Connector & Cable Housing (No Pins) 2 Required

Desc: Connector Housing	Mfgr.: AMP	Mfgr P/N: 201359-1	Contact Info: 800-522-6752/www.amp.com
Desc: Connector Strain Relief, 26-Pin	Mfgr.: AMP	Mfgr P/N: 201845-1	Contact Info: 800-522-6752/www.amp.com

52-0247-036: 50 Ω RF Cable, 36 Inches

Desc: 50 Ω RF Cable, 36 Inches	Mfgr.: VXI Tech	Mfgr P/N: 52-0247-036	Contact Info: 949-955-1VXI/www.vxitech.com

46-0021-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: AMP	Mfgr P/N: 305183	Contact Info: 800-522-6752/www.amp.com

46-0018-001: Crimp Tool, Coax RG174 50 Ω

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656	Contact Info: 800-522-6752/www.amp.com

46-0018-000: Crimp Tool, Coax RG178 50 Ω

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656-2	Contact Info: 800-522-6752/www.amp.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

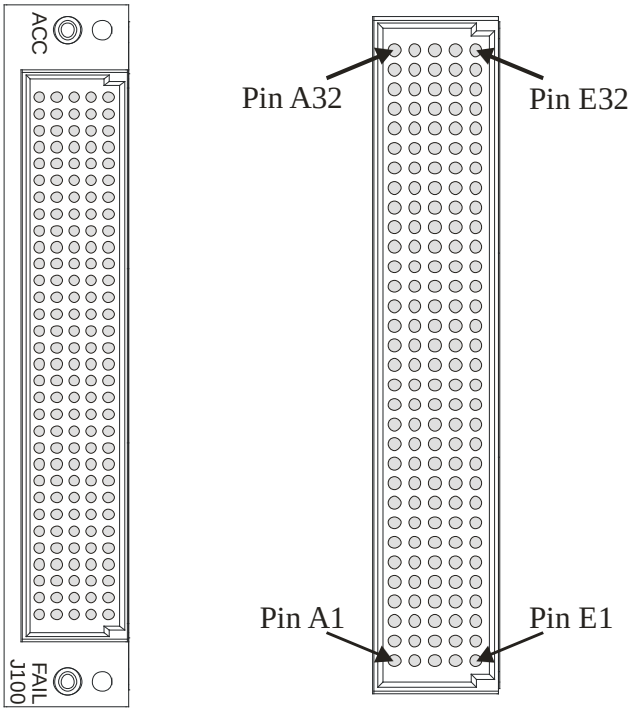
APPENDIX SMP3001

SMP3001 – 8 X 8 TO 1 MULTIPLEXER

The SMP3001 consists of eight individual (1 x 8) 2-wire multiplexers or eight (1 x 16) 1-wire multiplexers that can be interconnected under program control (via the bussing relays) to configure larger multiplexers as required. This eliminates external wiring and helps reduce unterminated stubs. All relays are also driven from the VXIbus +5 V supply line, since VXIbus mainframes always have ample current capacity on this line, as opposed to the +24 or +12 V supply lines. This appendix shows the 160-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP3001 high-density multiplexer module, designed for scanning of multiple points to a common bus, can be used in 1-, 2-, or 4-wire configurations. It can be configured either synchronously with an instrument (i.e., using triggers) or asynchronously with individual relay control. The SMP3001DS provides additional protection for sensitive devices, such as CMOS circuits, by having additional relays which, when actuated, allow for voltage dissipation. See Appendix SMP3001DS for more information. Up to 384 two-wire channels can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density or mixed and matched with other SMIP *II* cards for flexibility. Applications include cable harness testing, semiconductor and PCB testing or applications where multiple points need to be switched to a common resource. All relays have individual relay control and each path allows for 2 A switching.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP3001 CONNECTOR PIN LOCATIONS – FIGURE 1

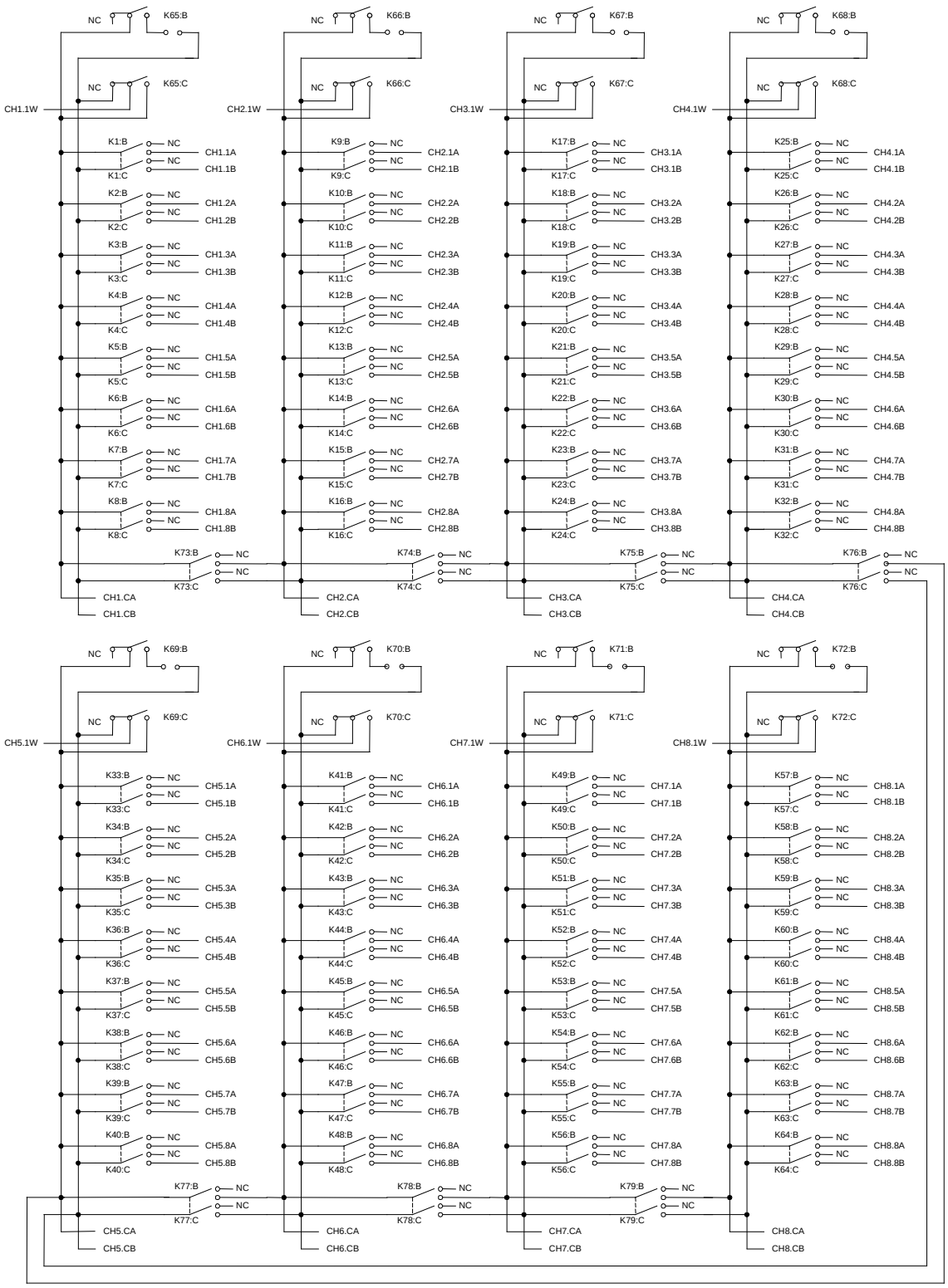
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP3001 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	CH1.1W	1	CH1.CA	1	CH1.1A	1	CH1.2A	1	CH1.3A
2	SHIELD	2	CH1.CB	2	CH1.1B	2	CH1.2B	2	CH1.3B
3	CH1.4A	3	CH1.5A	3	CH1.6A	3	CH1.7A	3	CH1.8A
4	CH1.4B	4	CH1.5B	4	CH1.6B	4	CH1.7B	4	CH1.8B
5	CH2.1W	5	CH2.CA	5	CH2.1A	5	CH2.2A	5	CH2.3A
6	SHIELD	6	CH2.CB	6	CH2.1B	6	CH2.2B	6	CH2.3B
7	CH2.4A	7	CH2.5A	7	CH2.6A	7	CH2.7A	7	CH2.8A
8	CH2.4B	8	CH2.5B	8	CH2.6B	8	CH2.7B	8	CH2.8B
9	CH3.1W	9	CH3.CA	9	CH3.1A	9	CH3.2A	9	CH3.3A
10	SHIELD	10	CH3.CB	10	CH3.1B	10	CH3.2B	10	CH3.3B
11	CH3.4A	11	CH3.5A	11	CH3.6A	11	CH3.7A	11	CH3.8A
12	CH3.4B	12	CH3.5B	12	CH3.6B	12	CH3.7B	12	CH3.8B
13	CH4.1W	13	CH4.CA	13	CH4.1A	13	CH4.2A	13	CH4.3A
14	SHIELD	14	CH4.CB	14	CH4.1B	14	CH4.2B	14	CH4.3B
15	CH4.4A	15	CH4.5A	15	CH4.6A	15	CH4.7A	15	CH4.8A
16	CH4.4B	16	CH4.5B	16	CH4.6B	16	CH4.7B	16	CH4.8B
17	CH5.1W	17	CH5.CA	17	CH5.1A	17	CH5.2A	17	CH5.3A
18	SHIELD	18	CH5.CB	18	CH5.1B	18	CH5.2B	18	CH5.3B
19	CH5.4A	19	CH5.5A	19	CH5.6A	19	CH5.7A	19	CH5.8A
20	CH5.4B	20	CH5.5B	20	CH5.6B	20	CH5.7B	20	CH5.8B
21	CH6.1W	21	CH6.CA	21	CH6.1A	21	CH6.2A	21	CH6.3A
22	SHIELD	22	CH6.CB	22	CH6.1B	22	CH6.2B	22	CH6.3B
23	CH6.4A	23	CH6.5A	23	CH6.6A	23	CH6.7A	23	CH6.8A
24	CH6.4B	24	CH6.5B	24	CH6.6B	24	CH6.7B	24	CH6.8B
25	CH7.1W	25	CH7.CA	25	CH7.1A	25	CH7.2A	25	CH7.3A
26	CH7.4A	26	CH7.CB	26	CH7.1B	26	CH7.2B	26	CH7.3B
27	CH7.4B	27	CH7.5A	27	CH7.6A	27	CH7.7A	27	CH7.8A
28	CH8.1W	28	CH7.5B	28	CH7.6B	28	CH7.7B	28	CH7.8B
29	CH8.CA	29	CH8.1A	29	CH8.2A	29	CH8.3A	29	CH8.4A
30	CH8.CB	30	CH8.1B	30	CH8.2B	30	CH8.3B	30	CH8.4B
31	CH8.5A	31	CH8.6A	31	CH8.7A	31	CH8.8A	31	FP-OPEN[1]
32	CH8.5B	32	CH8.6B	32	CH8.7B	32	CH8.8B	32	FP-GND[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



NOTE	**K1** - **K64** are channel relays. **K65** - **K79** are for 1, 2 or 4-wire configuration. The 1-wire configuration is not available with a SMP3001 that uses the discharge relay circuit, **K65** - **K72**. See schematic.

SMP3001 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP3001 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8		K79	K78	K77	K76	K75	K74	K73	K72	K71	K70	K69	K68	K67	K66	K65
6	K64	K63	K62	K61	K60	K59	K58	K57	K56	K55	K54	K53	K52	K51	K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

NOTE **K1** - **K64** are channel relays. **K65** - **K79** are for 1-, 2-, or 4-wire configuration. The 1-wire configuration is not available with a SMP3001 that uses the discharge relay circuit, **K65** - **K72**. See schematic.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP3001 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	Multiplexer
CHANNELS	64 x 1
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 3 ms
RATED SWITCH OPERATIONS	
Mechanical	1×10^7
Electrical	1×10^6 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	300 V ac rms, 300 V dc
MAXIMUM SWITCHING CURRENT	2 A
MAXIMUM SWITCHING POWER	60 W dc, 125 VA
DC PERFORMANCE	
PATH RESISTANCE	< 0.5 Ω
INSULATION RESISTANCE	$> 1 \times 10^9$ Ω
MINIMUM CONTACT RATING	10 mV dc, 10 µA
MAXIMUM THERMAL OFFSET / CHANNEL (HI-LO)	< 7 µV
CAPACITANCE	
Open Channel	< 50 pF
Channel-Mainframe	< 20 pF
High-Low	< 50 pF
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 100 MHz
INSERTION LOSS	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 0.5 dB
CROSSTALK	
100 kHz	< -90 dB
1 MHz	< -70 dB
10 MHz	< -50 dB
ISOLATION	
100 kHz	< -90 dB
1 MHz	< -70 dB
10 MHz	< -60 dB

ACCESSORIES

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

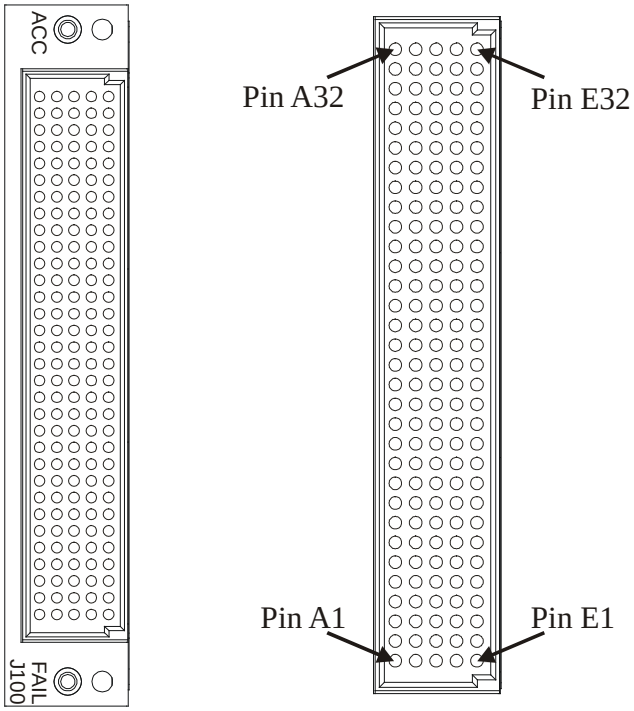
APPENDIX SMP3001DS

SMP3001DS – 64-CHANNEL MULTIPLEXER

The SMP3001DS consists of eight individual (1 x 8) 2-wire multiplexers or eight (1 x 16) 1-wire multiplexers that can be interconnected under program control (via the bussing relays) to configure larger multiplexers as required. This eliminates external wiring and helps reduce unterminated stubs. All relays are also driven from the VXIbus +5 V supply line, since VXIbus mainframes always have ample current capacity on this line, as opposed to the +24 or +12 V supply lines. This appendix shows the 160-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

In contrast to the SMP3001 (see page 103), the SMP3001DS has internal residual voltage discharge relays that can be enabled to momentarily short out the measurement path when changing from one input channel to the next. This dissipates any voltage held by the wiring and instrument input capacitance. These relays protect sensitive devices, such as CMOS circuits, from residual voltages caused by previous high-voltage measurements. This feature can also be disabled in low-voltage applications where maximum throughput speed is important.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP3001DS CONNECTOR PIN LOCATIONS – FIGURE 1

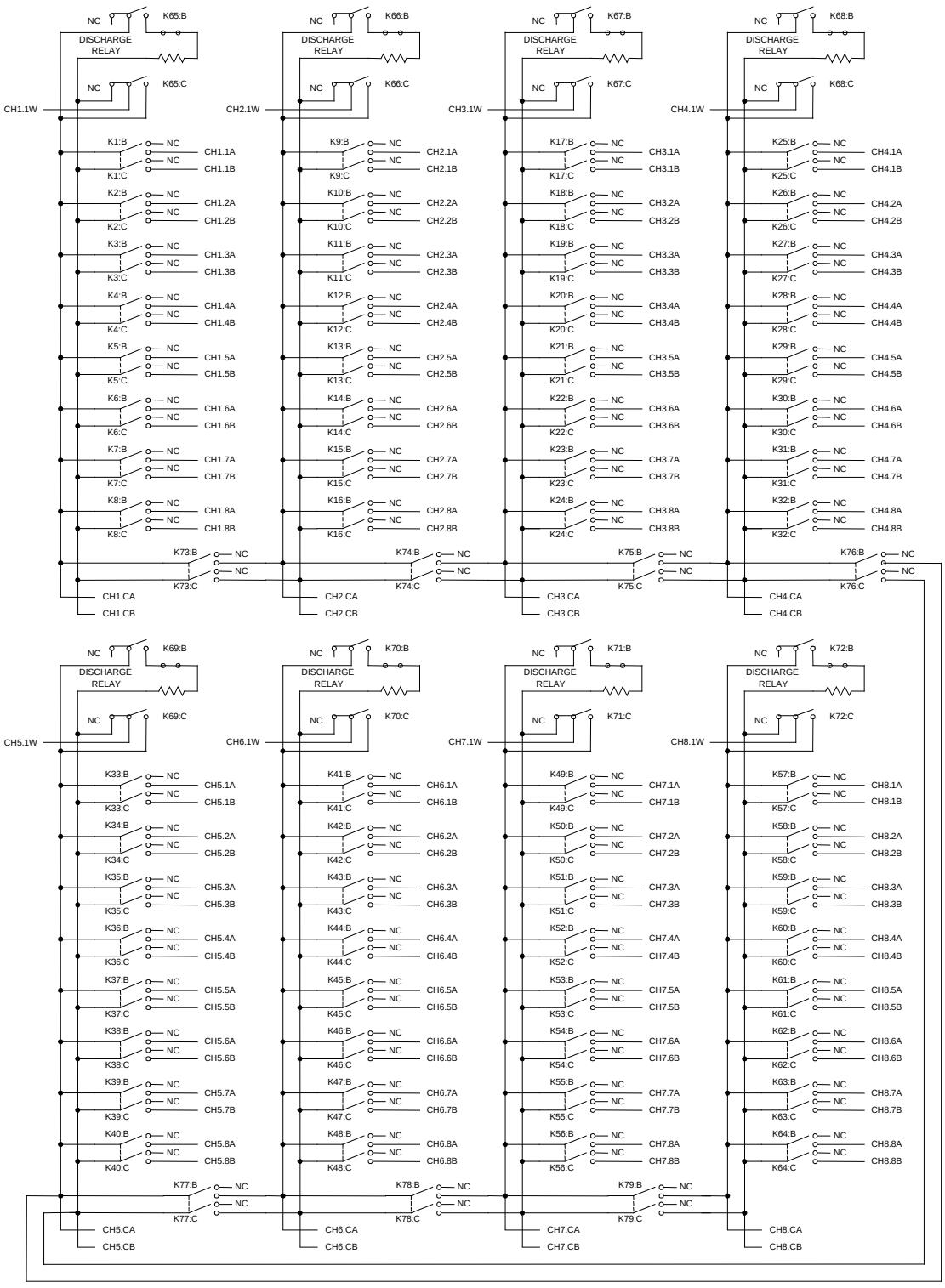
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP3001DS CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	CH1.1W	1	CH1.CA	1	CH1.1A	1	CH1.2A	1	CH1.3A
2	SHIELD	2	CH1.CB	2	CH1.1B	2	CH1.2B	2	CH1.3B
3	CH1.4A	3	CH1.5A	3	CH1.6A	3	CH1.7A	3	CH1.8A
4	CH1.4B	4	CH1.5B	4	CH1.6B	4	CH1.7B	4	CH1.8B
5	CH2.1W	5	CH2.CA	5	CH2.1A	5	CH2.2A	5	CH2.3A
6	SHIELD	6	CH2.CB	6	CH2.1B	6	CH2.2B	6	CH2.3B
7	CH2.4A	7	CH2.5A	7	CH2.6A	7	CH2.7A	7	CH2.8A
8	CH2.4B	8	CH2.5B	8	CH2.6B	8	CH2.7B	8	CH2.8B
9	CH3.1W	9	CH3.CA	9	CH3.1A	9	CH3.2A	9	CH3.3A
10	SHIELD	10	CH3.CB	10	CH3.1B	10	CH3.2B	10	CH3.3B
11	CH3.4A	11	CH3.5A	11	CH3.6A	11	CH3.7A	11	CH3.8A
12	CH3.4B	12	CH3.5B	12	CH3.6B	12	CH3.7B	12	CH3.8B
13	CH4.1W	13	CH4.CA	13	CH4.1A	13	CH4.2A	13	CH4.3A
14	SHIELD	14	CH4.CB	14	CH4.1B	14	CH4.2B	14	CH4.3B
15	CH4.4A	15	CH4.5A	15	CH4.6A	15	CH4.7A	15	CH4.8A
16	CH4.4B	16	CH4.5B	16	CH4.6B	16	CH4.7B	16	CH4.8B
17	CH5.1W	17	CH5.CA	17	CH5.1A	17	CH5.2A	17	CH5.3A
18	SHIELD	18	CH5.CB	18	CH5.1B	18	CH5.2B	18	CH5.3B
19	CH5.4A	19	CH5.5A	19	CH5.6A	19	CH5.7A	19	CH5.8A
20	CH5.4B	20	CH5.5B	20	CH5.6B	20	CH5.7B	20	CH5.8B
21	CH6.1W	21	CH6.CA	21	CH6.1A	21	CH6.2A	21	CH6.3A
22	SHIELD	22	CH6.CB	22	CH6.1B	22	CH6.2B	22	CH6.3B
23	CH6.4A	23	CH6.5A	23	CH6.6A	23	CH6.7A	23	CH6.8A
24	CH6.4B	24	CH6.5B	24	CH6.6B	24	CH6.7B	24	CH6.8B
25	CH7.1W	25	CH7.CA	25	CH7.1A	25	CH7.2A	25	CH7.3A
26	CH7.4A	26	CH7.CB	26	CH7.1B	26	CH7.2B	26	CH7.3B
27	CH7.4B	27	CH7.5A	27	CH7.6A	27	CH7.7A	27	CH7.8A
28	CH8.1W	28	CH7.5B	28	CH7.6B	28	CH7.7B	28	CH7.8B
29	CH8.CA	29	CH8.1A	29	CH8.2A	29	CH8.3A	29	CH8.4A
30	CH8.CB	30	CH8.1B	30	CH8.2B	30	CH8.3B	30	CH8.4B
31	CH8.5A	31	CH8.6A	31	CH8.7A	31	CH8.8A	31	FP-OPEN[1]
32	CH8.5B	32	CH8.6B	32	CH8.7B	32	CH8.8B	32	FP-GND[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



NOTES	1) **K1** - **K64** are channel relays. **K65** - **K79** are for 1-, 2-, or 4-wire configuration. The 1-wire configuration is not available with a SMP3001 that uses the discharge relay circuit, **K65** - **K72**. See schematic. 2) The user may use either the 1-wire connection or the discharge circuit, but not both.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP3001DS SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP3001DS RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8		K79	K78	K77	K76	K75	K74	K73	K72	K71	K70	K69	K68	K67	K66	K65
6	K64	K63	K62	K61	K60	K59	K58	K57	K56	K55	K54	K53	K52	K51	K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

NOTE **K1** - **K64** are channel relays. **K65** - **K79** are for 1-, 2-, or 4-wire configuration. The 1-wire configuration is not available with a SMP3001 that uses the discharge relay circuit, **K65** - **K72**. See schematic.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP3001DS Specifications and Accessories

General Specifications	
Model Type	Multiplexer
Channels	64 x 1
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 3 ms
Rated Switch Operations	
Mechanical	1×10^7
Electrical	1×10^6 (Full Load)
Power Specifications	
Maximum Switching Voltage	300 V ac rms, 300 V dc
Maximum Switching Current	2 A
Maximum Switching Power	60 W dc, 125 VA
DC Performance	
Path Resistance	< 0.5 Ω
Insulation Resistance	> 1×10^9 Ω
Minimum Contact Rating	10 mV dc, 10 µA
Maximum Thermal Offset / Channel (HI-LO)	< 7 µV
Capacitance	
Open Channel	< 50 pF
Channel-Mainframe	< 20 pF
High-Low	< 50 pF
AC Performance	
Bandwidth (-3 dB)	> 100 MHz
Insertion Loss	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 0.5 dB
Crosstalk	
100 kHz	< -90 dB
1 MHz	< -70 dB
10 MHz	< -50 dB
Isolation	
100 kHz	< -90 dB
1 MHz	< -70 dB
10 MHz	< -60 dB

Accessories

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

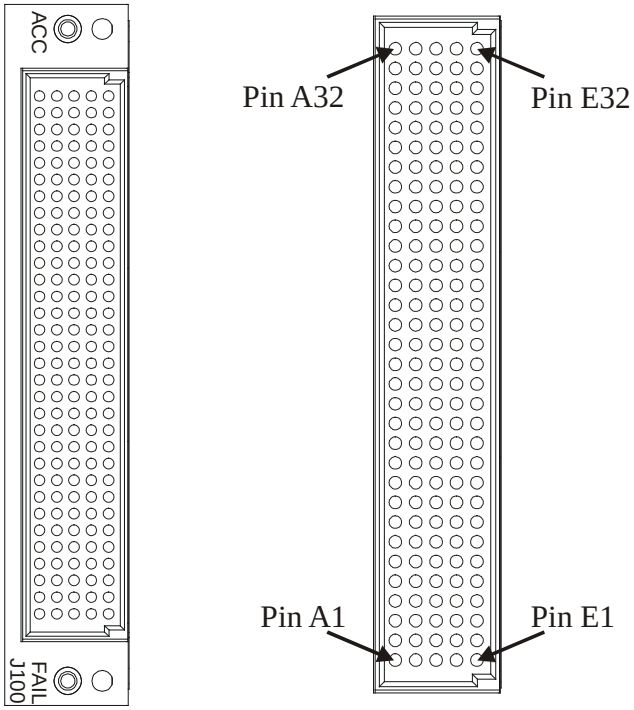
APPENDIX SMP3002

SMP3002 – 1X8 MULTIPLEXER BY 16

The SMP3002 consists of sixteen individual (1x8) 1-wire multiplexers. All relays are driven from the VXIbus +5 V supply line, since VXIbus mainframes always have ample current capacity on this line, as opposed to the +24 or +12 V supply lines. This appendix shows the 160-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP3002 high-density multiplexer module is designed for scanning of multiple points to a common bus. It can be configured either synchronously with an instrument (i.e., using triggers) or asynchronously with individual relay control. Up to 96 multiplexers can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density or mixed and matched with other SMIP *II* cards for flexibility. Applications include cable harness testing, semiconductor and PCB testing or applications where multiple points need to be switched to a common resource. All relays have individual relay control and each path allows for 2 A switching.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP3002 CONNECTOR PIN LOCATIONS – FIGURE 1

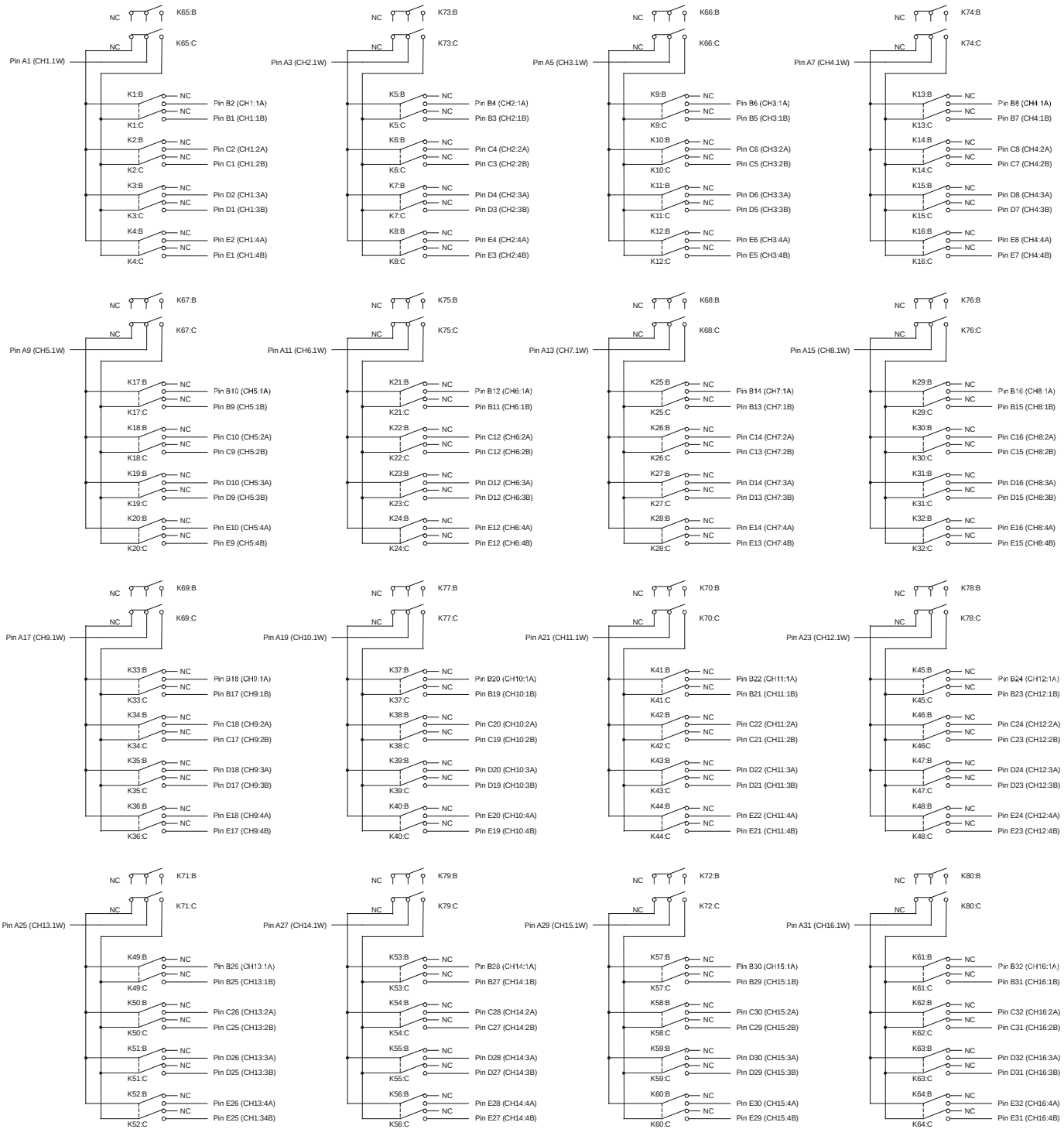
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP3002 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	CH1.1W	1	CH1.1B	1	CH1.2B	1	CH1.3B	1	CH1.4B
2	SHIELD	2	CH1.1A	2	CH1.2A	2	CH1.3A	2	CH1.4A
3	CH2.1W	3	CH2.1B	3	CH2.2B	3	CH2.3B	3	CH2.4B
4	SHIELD	4	CH2.1A	4	CH2.2A	4	CH2.3A	4	CH2.4A
5	CH3.1W	5	CH3.1B	5	CH3.2B	5	CH3.3B	5	CH3.4B
6	SHIELD	6	CH3.1A	6	CH3.2A	6	CH3.3A	6	CH3.4A
7	CH4.1W	7	CH4.1B	7	CH4.2B	7	CH4.3B	7	CH4.4B
8	SHIELD	8	CH4.1A	8	CH4.2A	8	CH4.3A	8	CH4.4A
9	CH5.1W	9	CH5.1B	9	CH5.2B	9	CH5.3B	9	CH5.4B
10	SHIELD	10	CH5.1A	10	CH5.2A	10	CH5.3A	10	CH5.4A
11	CH6.1W	11	CH6.1B	11	CH6.2B	11	CH6.3B	11	CH6.4B
12	SHIELD	12	CH6.1A	12	CH6.2A	12	CH6.3A	12	CH6.4A
13	CH7.1W	13	CH7.1B	13	CH7.2B	13	CH7.3B	13	CH7.4B
14	SHIELD	14	CH7.1A	14	CH7.2A	14	CH7.3A	14	CH7.4A
15	CH8.1W	15	CH8.1B	15	CH8.2B	15	CH8.3B	15	CH8.4B
16	SHIELD	16	CH8.1A	16	CH8.2A	16	CH8.3A	16	CH8.4A
17	CH9.1W	17	CH9.1B	17	CH9.2B	17	CH9.3B	17	CH9.4B
18	SHIELD	18	CH9.1A	18	CH9.2A	18	CH9.3A	18	CH9.4A
19	CH10.1W	19	CH10.1B	19	CH10.2B	19	CH10.3B	19	CH10.4B
20	SHIELD	20	CH10.1A	20	CH10.2A	20	CH10.3A	20	CH10.4A
21	CH11.1W	21	CH11.1B	21	CH11.2B	21	CH11.3B	21	CH11.4B
22	SHIELD	22	CH11.1A	22	CH11.2A	22	CH11.3A	22	CH11.4A
23	CH12.1W	23	CH12.1B	23	CH12.2B	23	CH12.3B	23	CH12.4B
24	SHIELD	24	CH12.1A	24	CH12.2A	24	CH12.3A	24	CH12.4A
25	CH13.1W	25	CH13.1B	25	CH13.2B	25	CH13.3B	25	CH13.4B
26	SHIELD	26	CH13.1A	26	CH13.2A	26	CH13.3A	26	CH13.4A
27	CH14.1W	27	CH14.1B	27	CH14.2B	27	CH14.3B	27	CH14.4B
28	SHIELD	28	CH14.1A	28	CH14.2A	28	CH14.3A	28	CH14.4A
29	CH15.1W	29	CH15.1B	29	CH15.2B	29	CH15.3B	29	CH15.4B
30	SHIELD	30	CH15.1A	30	CH15.2A	30	CH15.3A	30	CH15.4A
31	CH16.1W	31	CH16.1B	31	CH16.2B	31	CH16.3B	31	CH16.4B
32	SHIELD	32	CH16.1A	32	CH16.2A	32	CH16.3A	32	CH16.4A

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP3002 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP3002 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8	K80	K79	K78	K77	K76	K75	K74	K73	K72	K71	K70	K69	K68	K67	K66	K65
6	K64	K63	K62	K61	K60	K59	K58	K57	K56	K55	K54	K53	K52	K51	K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP3002 Specifications and Accessories

General Specifications	
Model Type	Multiplexer
Channels	16 (1x8) 2-wire channels
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 3 ms
Rated Switch Operations	
Mechanical	1×10^7
Electrical	5×10^5 (Full Load)
Power Specifications	
Maximum Switching Voltage	300 V ac rms, 300 V dc
Maximum Switching Current	2 A
Maximum Switching Power	60 W dc, 125 VA
DC Performance	
Path Resistance	< 0.5 Ω
Insulation Resistance	$> 1 \times 10^9$ Ω
Minimum Contact Rating	5 V dc, 0.1 A
Maximum Thermal Offset / Channel (HI-LO)	< 7 μV
Capacitance	
Open Channel	< 50 pF
Channel-Mainframe	< 20 pF
High-Low	< 50 pF
AC Performance	
Bandwidth (-3 dB)	> 100 MHz
Insertion Loss	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 0.5 dB
Crosstalk	
100 kHz	< -90 dB
1 MHz	< -70 dB
10 MHz	< -50 dB
Isolation	
100 kHz	< -90 dB
1 MHz	< -70 dB
10 MHz	< -60 dB

Accessories

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

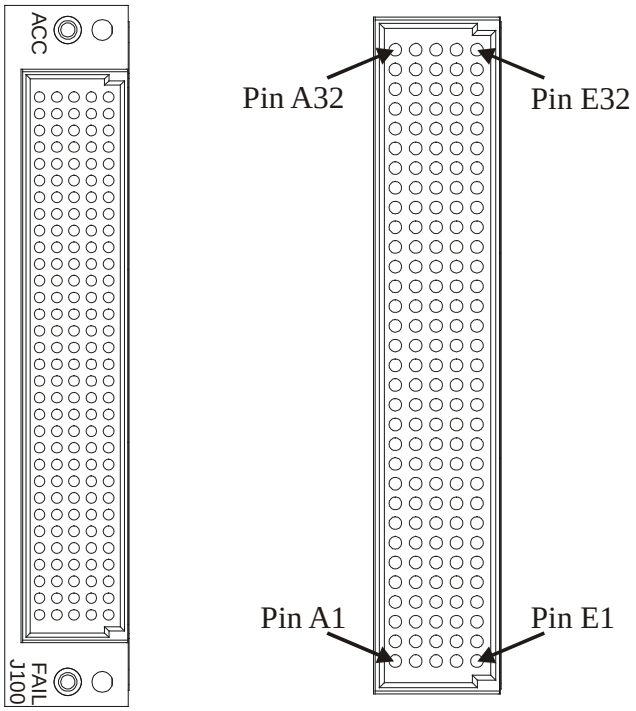
APPENDIX SMP3005

SMP3005 – 1X5 MULTIPLEXER BY 12

The SMP3005 consists of twelve individual (1x5) 2-wire multiplexers that can be interconnected under program control (via the bussing relays) to configure larger multiplexers as required. This eliminates external wiring and helps reduce unterminated stubs. All relays are also driven from the VXIbus +5 V supply line, since VXIbus mainframes always have ample current capacity on this line, as opposed to the +24 or +12 V supply lines. This appendix shows the 160-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP3005 high-density multiplexer module, designed for scanning of multiple points to a common bus, can be used in 1-, 2-, or 4-wire configurations. It can be configured either synchronously with an instrument (i.e., using triggers) or asynchronously with individual relay control. Up to 360 two-wire channels can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density or mixed and matched with other SMIP *II* cards for flexibility. Applications include cable harness testing, semiconductor and PCB testing or applications where multiple points need to be switched to a common resource. All relays have individual relay control and each path allows for 2 A switching.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP3005 CONNECTOR PIN LOCATIONS – FIGURE 1

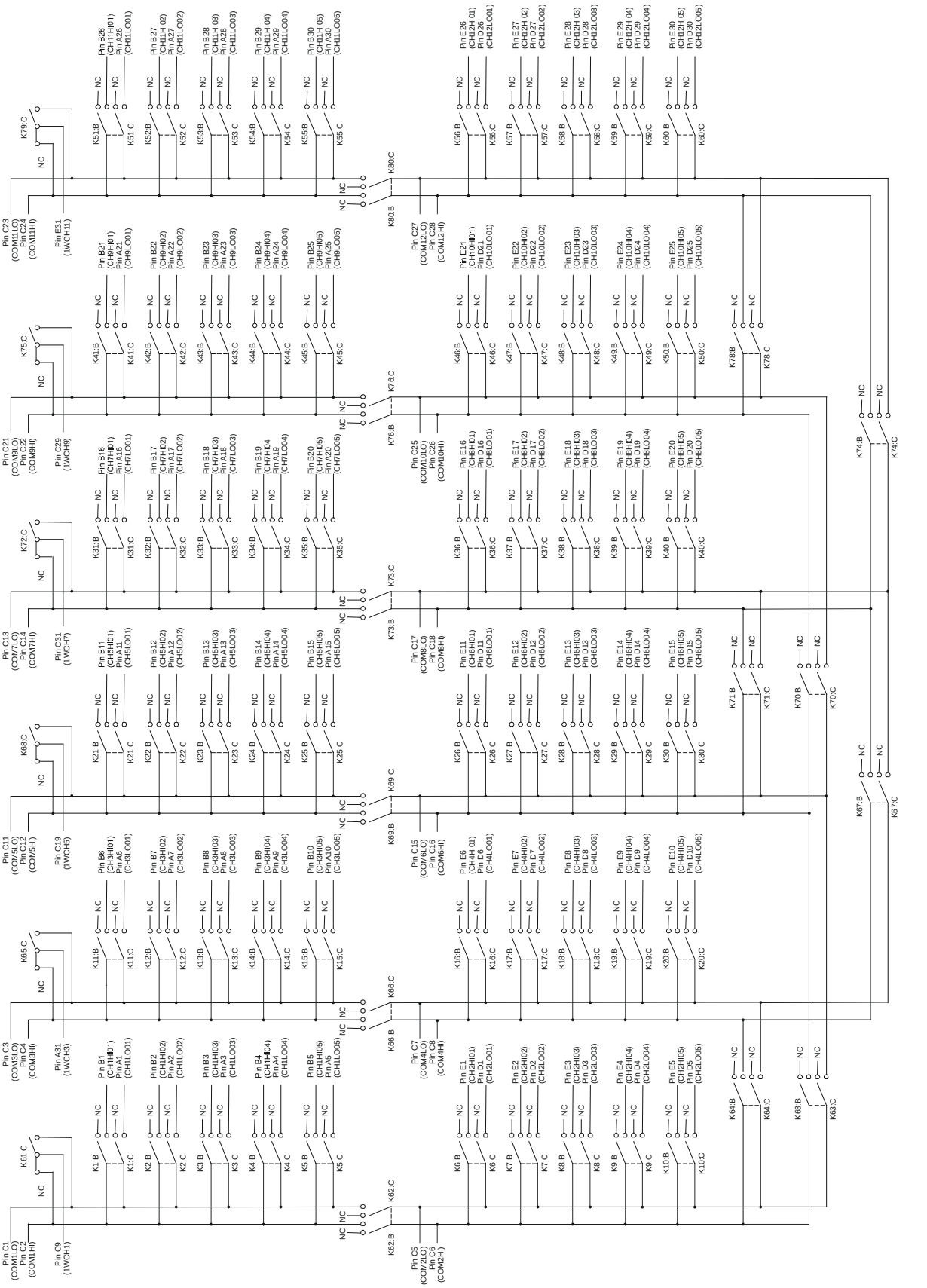
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP3005 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	CH1LO01	1	CH1HI01	1	COM1LO	1	CH2LO01	1	CH2HI01
2	CH1LO02	2	CH1HI 02	2	COM1HI	2	CH2LO02	2	CH2HI02
3	CH1LO03	3	CH1HI 03	3	COM3LO	3	CH2LO03	3	CH2HI03
4	CH1LO04	4	CH1HI04	4	COM3HI	4	CH2LO04	4	CH2HI04
5	CH1LO05	5	CH1HI05	5	COM2LO	5	CH2LO05	5	CH2HI05
6	CH3LO01	6	CH3HI01	6	COM2HI	6	CH4LO01	6	CH4HI01
7	CH3LO02	7	CH3HI02	7	COM4LO	7	CH4LO02	7	CH4HI02
8	CH3LO03	8	CH3HI03	8	COM4HI	8	CH4LO03	8	CH4HI03
9	CH3LO04	9	CH3HI04	9	1WCH1	9	CH4LO04	9	CH4HI04
10	CH3LO05	10	CH3HI05	10	N/C	10	CH4LO05	10	CH4HI05
11	CH5LO01	11	CH5HI01	11	COM5LO	11	CH6LO01	11	CH6HI01
12	CH5LO02	12	CH5HI02	12	COM5HI	12	CH6LO02	12	CH6HI02
13	CH5LO03	13	CH5HI03	13	COM7LO	13	CH6LO03	13	CH6HI03
14	CH5LO04	14	CH5HI04	14	COM7HI	14	CH6LO04	14	CH6HI04
15	CH5LO05	15	CH5HI05	15	COM6LO	15	CH6LO05	15	CH6HI05
16	CH7LO01	16	CH7HI01	16	COM6HI	16	CH8LO01	16	CH8HI01
17	CH7LO02	17	CH7HI02	17	COM8LO	17	CH8LO02	17	CH8HI02
18	CH7LO03	18	CH7HI03	18	COM8HI	18	CH8LO03	18	CH8HI03
19	CH7LO04	19	CH7HI04	19	1WCH5	19	CH8LO04	19	CH8HI04
20	CH7LO05	20	CH7HI05	20	N/C	20	CH8LO05	20	CH8HI05
21	CH9LO01	21	CH9HI01	21	COM9LO	21	CH10LO01	21	CH10HI01
22	CH9LO02	22	CH9HI02	22	COM9HI	22	CH10LO02	22	CH10HI02
23	CH9LO03	23	CH9HI03	23	COM11LO	23	CH10LO03	23	CH10HI03
24	CH9LO04	24	CH9HI04	24	COM11HI	24	CH10LO04	24	CH10HI04
25	CH9LO05	25	CH9HI05	25	COM10LO	25	CH10LO05	25	CH10HI05
26	CH11LO01	26	CH11HI01	26	COM10HI	26	CH12LO01	26	CH12HI01
27	CH11LO02	27	CH11HI02	27	COM12LO	27	CH12LO02	27	CH12HI02
28	CH11LO03	28	CH11HI03	28	COM12HI	28	CH12LO03	28	CH12HI03
29	CH11LO04	29	CH11HI04	29	1WCH9	29	CH12LO04	29	CH12HI04
30	CH11LO05	30	CH11HI05	30	N/C	30	CH12LO05	30	CH12HI05
31	1WCH3	31	SHIELD	31	1WCH7	31	SHIELD	31	1WCH11
32	N/C	32	SHIELD	32	FP-OPEN[1]	32	SHIELD	32	FP-GND[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP3005 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP3005 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8	K80	K79	K78		K76	K75	K74	K73	K72	K71	K70	K69	K68	K67	K66	K65
6	K64	K63	K62	K61	K60	K59	K58	K57	K56	K55	K54	K53	K52	K51	K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP3005 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	Multiplexer
CHANNELS	12 (1x5) 2-wire up to 1 (1x60) 2-wire 6 (1x20) 1-wire
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 3 ms
RATED SWITCH OPERATIONS	
Mechanical	5×10^7
Electrical	$5x10^5$ (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	300 V ac rms, 300 V dc
MAXIMUM SWITCHING CURRENT	2 A
MAXIMUM SWITCHING POWER	60 W dc, 125 VA
DC PERFORMANCE	
PATH RESISTANCE	< 0.5 Ω
INSULATION RESISTANCE	$> 1 \times 10^9$ Ω
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 40 MHz
CROSSTALK	
100 kHz	< -90 dB
1 MHz	< -70 dB
10 MHz	< -50 dB

ACCESSORIES

70-0246-000: Connector Kit (Includes Two 160-Pin Connector, Two Backshells and a 500 Crimp Pin Reel)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Backshell	Mfgr.: ERNI	Mfgr P/N: 173051	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

27-0088-160: 160-Pin DIN Connector

Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com

27-0236-001: Backshell

Desc: Backshell	Mfgr.: ERNI	Mfgr P/N: 173051	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-001:Crimp Pins (500 Pin Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

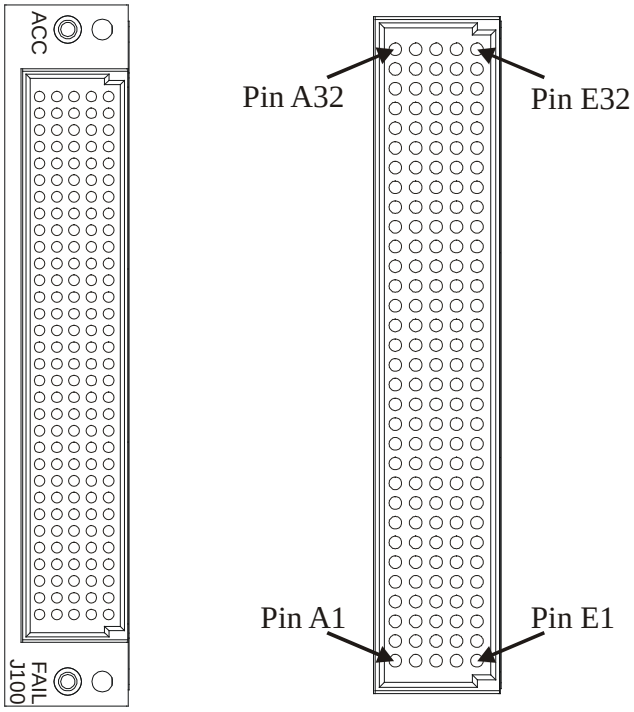
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP4001

SMP4001 – 9 (4 X 4) MATRIX

The SMP4001 high-density matrix module is designed for applications that require a true non-blocking matrix where the user has the ability to connect any row to any column. It consists of nine 4 x 4 2-wire matrices, and rows and columns can easily be expanded to form larger matrices. Up to a 4 x 216 two-wire matrix channels can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density or they can be mixed and matched with other SMIP *II* cards for flexibility. All relays have individual relay control and each path allows for 2 A switching. This appendix shows the 160-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP4001 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

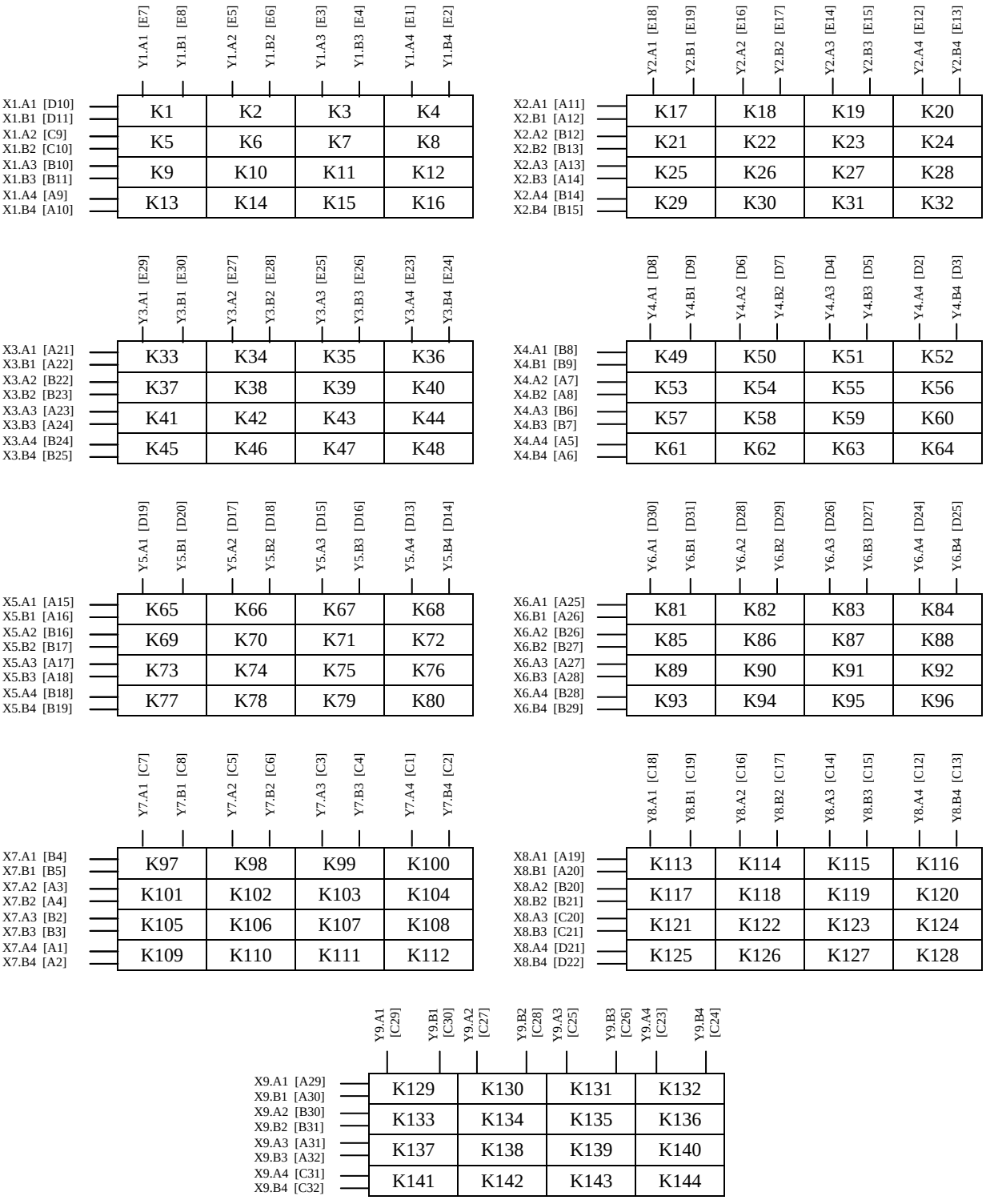
SMP4001 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	X7.A4	1	SHIELD	1	Y7.A4	1	SHIELD	1	Y1.A4
2	X7.B4	2	X7.A3	2	Y7.B4	2	Y4.A4	2	Y1.B4
3	X7.A2	3	X7.B3	3	Y7.A3	3	Y4.B4	3	Y1.A3
4	X7.B2	4	X7.A1	4	Y7.B3	4	Y4.A3	4	Y1.B3
5	X4.A4	5	X7.B1	5	Y7.A2	5	Y4.B3	5	Y1.A2
6	X4.B4	6	X4.A3	6	Y7.B2	6	Y4.A2	6	Y1.B2
7	X4.A2	7	X4.B3	7	Y7.A1	7	Y4.B2	7	Y1.A1
8	X4.B2	8	X4.A1	8	Y7.B1	8	Y4.A1	8	Y1.B1
9	X1.A4	9	X4.B1	9	X1.A2	9	Y4.B1	9	SHIELD
10	X1.B4	10	X1.A3	10	X1.B2	10	X1.A1	10	SHIELD
11	X2.A1	11	X1.B3	11	SHIELD	11	X1.B1	11	SHIELD
12	X2.B1	12	X2.A2	12	Y8.A4	12	SHIELD	12	Y2.A4
13	X2.A3	13	X2.B2	13	Y8.B4	13	Y5.A4	13	Y2.B4
14	X2.B3	14	X2.A4	14	Y8.A3	14	Y5.B4	14	Y2.A3
15	X5.A1	15	X2.B4	15	Y8.B3	15	Y5.A3	15	Y2.B3
16	X5.B1	16	X5.A2	16	Y8.A2	16	Y5.B3	16	Y2.A2
17	X5.A3	17	X5.B2	17	Y8.B2	17	Y5.A2	17	Y2.B2
18	X5.B3	18	X5.A4	18	Y8.A1	18	Y5.B2	18	Y2.A1
19	X8.A1	19	X5.B4	19	Y8.B1	19	Y5.A1	19	Y2.B1
20	X8.B1	20	X8.A2	20	X8.A3	20	Y5.B1	20	SHIELD
21	X3.A1	21	X8.B2	21	X8.B3	21	X8.A4	21	SHIELD
22	X3.B1	22	X3.A2	22	SHIELD	22	X8.B4	22	SHIELD
23	X3.A3	23	X3.B2	23	Y9.A4	23	SHIELD	23	Y3.A4
24	X3.B3	24	X3.A4	24	Y9.B4	24	Y6.A4	24	Y3.B4
25	X6.A1	25	X3.B4	25	Y9.A3	25	Y6.B4	25	Y3.A3
26	X6.B1	26	X6.A2	26	Y9.B3	26	Y6.A3	26	Y3.B3
27	X6.A3	27	X6.B2	27	Y9.A2	27	Y6.B3	27	Y3.A2
28	X6.B3	28	X6.A4	28	Y9.B2	28	Y6.A2	28	Y3.B2
29	X9.A1	29	X6.B4	29	Y9.A1	29	Y6.B2	29	Y3.A1
30	X9.B1	30	X9.A2	30	Y9.B1	30	Y6.A1	30	Y3.B1
31	X9.A3	31	X9.B2	31	X9.A4	31	Y6.B1	31	FP-OPEN[1]
32	X9.B3	32	SHIELD	32	X9.B4	32	SHIELD	32	FP-GND[1]

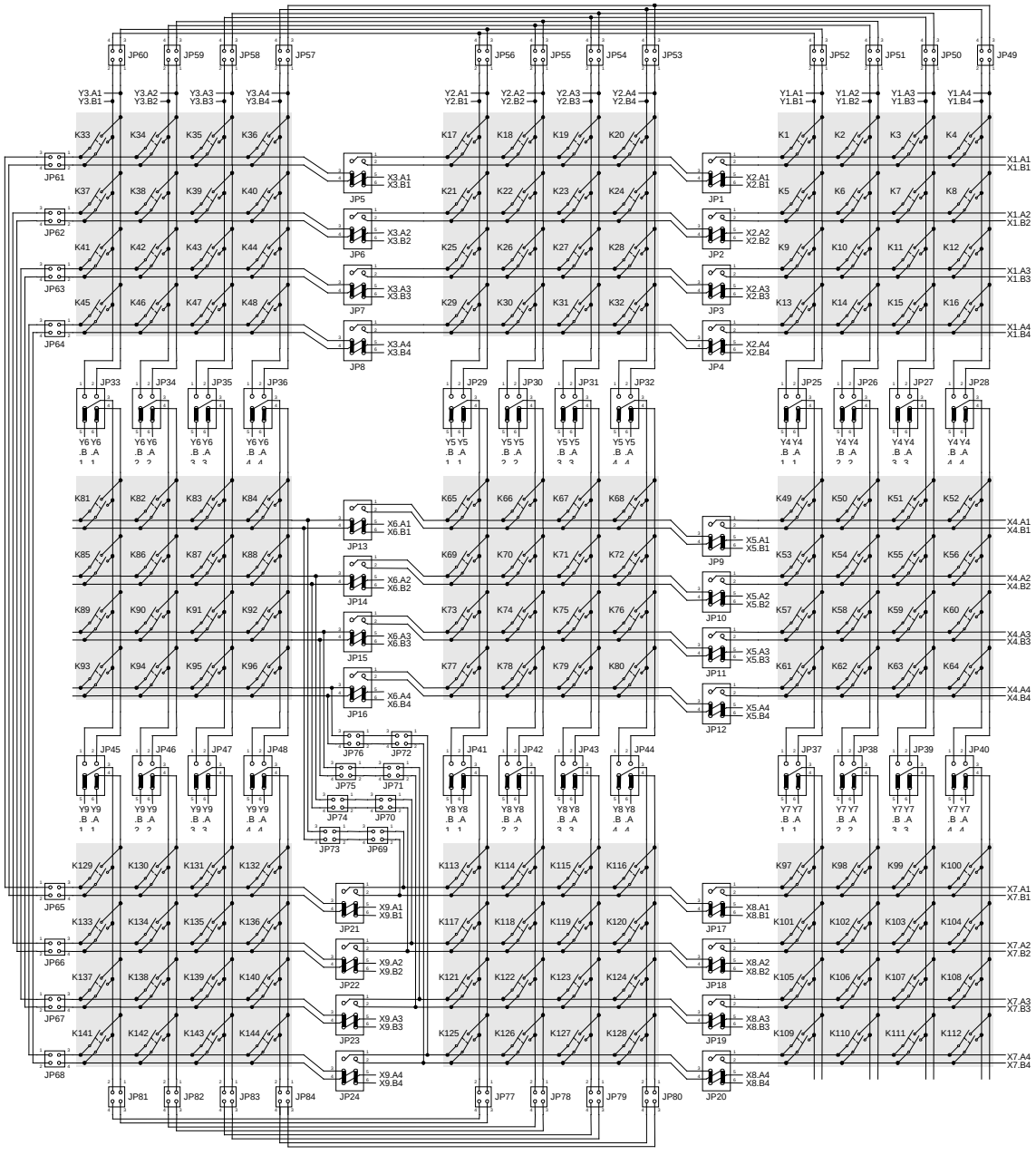
NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4001 FRONT PANEL PIN-OUT CONFIGURATION — TABLE 2



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP4001 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4001 RELAY REGISTER MAP — TABLE 3

Offset (Hex)																
12																
10	K144	K143	K142	K141	K140	K139	K138	K137	K136	K135	K134	K133	K132	K131	K130	K129
E	K128	K127	K126	K125	K124	K123	K122	K121	K120	K119	K118	K117	K116	K115	K114	K113
C	K112	K111	K110	K109	K108	K107	K106	K105	K104	K103	K102	K101	K100	K99	K98	K97
A	K96	K95	K94	K93	K92	K91	K90	K89	K88	K87	K86	K85	K84	K83	K82	K81
8	K80	K79	K78	K77	K76	K75	K74	K73	K72	K71	K70	K69	K68	K67	K66	K65
6	K64	K63	K62	K61	K60	K59	K58	K57	K56	K55	K54	K53	K52	K51	K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4001 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	Matrix
CHANNELS	As Configured
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 3 ms
RATED SWITCH OPERATIONS	
Mechanical	1×10^7
Electrical	1×10^6 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	300 V ac rms, 300 V dc
MAXIMUM SWITCHING CURRENT	2 A / Channel
MAXIMUM SWITCHING POWER	60 W dc, 125 VA
DC PERFORMANCE	
PATH RESISTANCE	< 0.5 Ω
INSULATION RESISTANCE	$> 1 \times 10^9$ Ω
MAXIMUM THERMAL OFFSET / CHANNEL (HI-LO)	< 7 μV
MINIMUM CONTACT RATING	100 mV dc, 100 μA
CAPACITANCE	
Open Channel	< 50 pF
Channel-Mainframe	< 80 pF
High-Low	< 50 pF
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 45 MHz
INSERTION LOSS	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 1.0 dB
CROSSTALK	
100 kHz	< -80 dB
1 MHz	< -70 dB
10 MHz	< -50 dB
ISOLATION	
100 kHz	< -80 dB
1 MHz	< -60 dB
10 MHz	< -50 dB

ACCESSORIES

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com

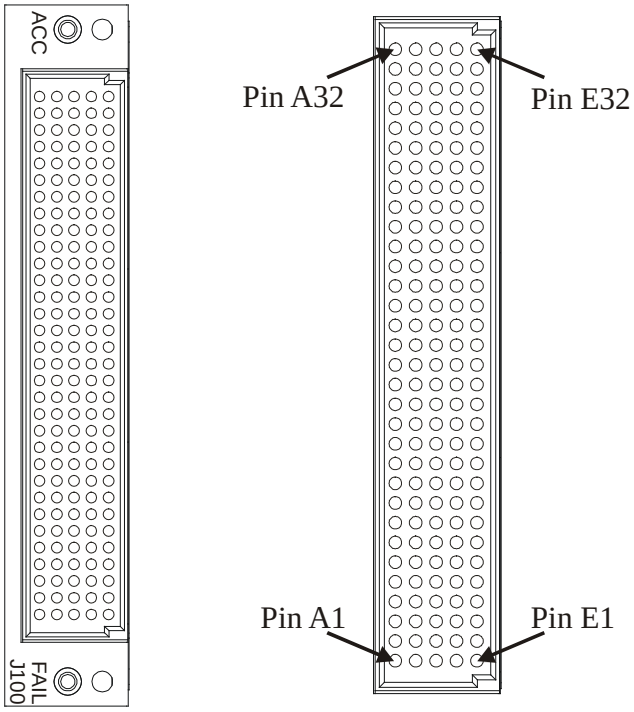
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP4002

SMP4002 – 4 X 36 MATRIX

The SMP4002 high-density matrix module is designed for applications that require a true non-blocking matrix where the user has the ability to connect any row to any column. The SMP4002 consists of one 4 x 36 2-wire matrix. Up to 4 x 216 two-wire matrix channels can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density or mixed and matched with other SMIP *II* cards for flexibility. All relays have individual relay control and each path allows for 2 A switching. This appendix shows the 160-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP4002 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4002 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	X7.A4	1	SHIELD	1	Y7.A4	1	SHIELD	1	Y1.A4
2	X7.B4	2	X7.A3	2	Y7.B4	2	Y4.A4	2	Y1.B4
3	X7.A2	3	X7.B3	3	Y7.A3	3	Y4.B4	3	Y1.A3
4	X7.B2	4	X7.A1	4	Y7.B3	4	Y4.A3	4	Y1.B3
5	X4.A4	5	X7.B1	5	Y7.A2	5	Y4.B3	5	Y1.A2
6	X4.B4	6	X4.A3	6	Y7.B2	6	Y4.A2	6	Y1.B2
7	X4.A2	7	X4.B3	7	Y7.A1	7	Y4.B2	7	Y1.A1
8	X4.B2	8	X4.A1	8	Y7.B1	8	Y4.A1	8	Y1.B1
9	X1.A4	9	X4.B1	9	X1.A2	9	Y4.B1	9	SHIELD
10	X1.B4	10	X1.A3	10	X1.B2	10	X1.A1	10	SHIELD
11	X2.A1	11	X1.B3	11	SHIELD	11	X1.B1	11	SHIELD
12	X2.B1	12	X2.A2	12	Y8.A4	12	SHIELD	12	Y2.A4
13	X2.A3	13	X2.B2	13	Y8.B4	13	Y5.A4	13	Y2.B4
14	X2.B3	14	X2.A4	14	Y8.A3	14	Y5.B4	14	Y2.A3
15	X5.A1	15	X2.B4	15	Y8.B3	15	Y5.A3	15	Y2.B3
16	X5.B1	16	X5.A2	16	Y8.A2	16	Y5.B3	16	Y2.A2
17	X5.A3	17	X5.B2	17	Y8.B2	17	Y5.A2	17	Y2.B2
18	X5.B3	18	X5.A4	18	Y8.A1	18	Y5.B2	18	Y2.A1
19	X8.A1	19	X5.B4	19	Y8.B1	19	Y5.A1	19	Y2.B1
20	X8.B1	20	X8.A2	20	X8.A3	20	Y5.B1	20	SHIELD
21	X3.A1	21	X8.B2	21	X8.B3	21	X8.A4	21	SHIELD
22	X3.B1	22	X3.A2	22	SHIELD	22	X8.B4	22	SHIELD
23	X3.A3	23	X3.B2	23	Y9.A4	23	SHIELD	23	Y3.A4
24	X3.B3	24	X3.A4	24	Y9.B4	24	Y6.A4	24	Y3.B4
25	X6.A1	25	X3.B4	25	Y9.A3	25	Y6.B4	25	Y3.A3
26	X6.B1	26	X6.A2	26	Y9.B3	26	Y6.A3	26	Y3.B3
27	X6.A3	27	X6.B2	27	Y9.A2	27	Y6.B3	27	Y3.A2
28	X6.B3	28	X6.A4	28	Y9.B2	28	Y6.A2	28	Y3.B2
29	X9.A1	29	X6.B4	29	Y9.A1	29	Y6.B2	29	Y3.A1
30	X9.B1	30	X9.A2	30	Y9.B1	30	Y6.A1	30	Y3.B1
31	X9.A3	31	X9.B2	31	X9.A4	31	Y6.B1	31	FP-OPEN[1]
32	X9.B3	32	SHIELD	32	X9.B4	32	SHIELD	32	FP-GND[1]

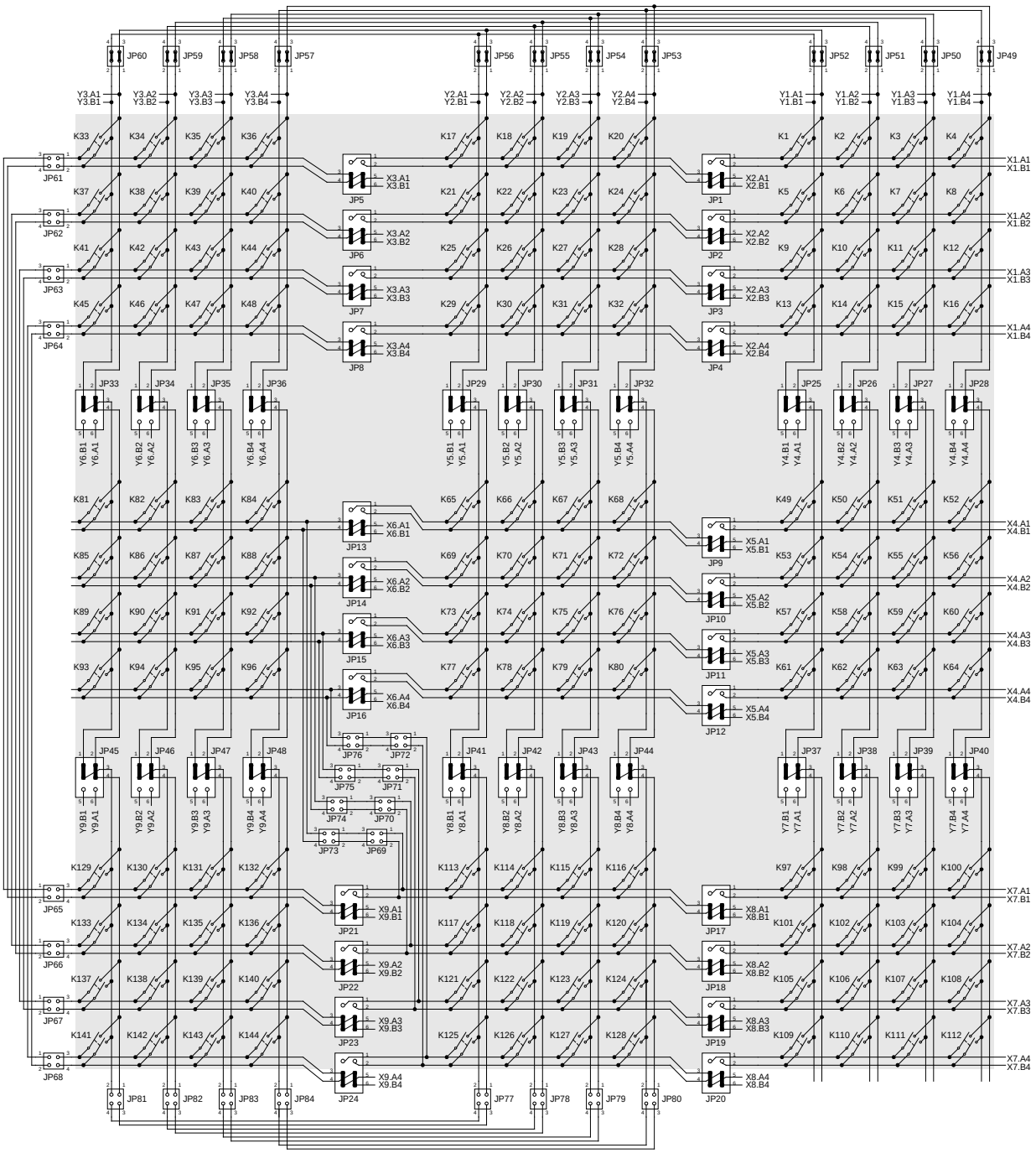
NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4002 FRONT PANEL PIN-OUT CONFIGURATION — TABLE 2

	Y2.A1 [E18]	Y2.B1 [E19]	Y2.A2 [E16]	Y2.B2 [E17]	Y2.A3 [E14]	Y2.B3 [E15]	Y2.A4 [E12]	Y2.B4 [E13]
X1.A1 [D10] X1.B1 [D11]	K1		K2		K3		K4	
X1.A2 [C9] X1.B2 [C10]	K5		K6		K7		K8	
X1.A3 [B10] X1.B3 [B11]	K9		K10		K11		K12	
X1.A4 [A9] X1.B4 [A10]	K13		K14		K15		K16	
X2.A1 [A11] X2.B1 [A12]	K17		K18		K19		K20	
X2.A2 [B12] X2.B2 [B13]	K21		K22		K23		K24	
X2.A3 [A13] X2.B3 [A14]	K25		K26		K27		K28	
X2.A4 [B14] X2.B4 [B15]	K29		K30		K31		K32	
X3.A1 [A21] X3.B1 [A22]	K33		K34		K35		K36	
X3.A2 [B22] X3.B2 [B23]	K37		K38		K39		K40	
X3.A3 [A23] X3.B3 [A24]	K41		K42		K43		K44	
X3.A4 [B24] X3.B4 [B25]	K45		K46		K47		K48	
X4.A1 [B8] X4.B1 [B9]	K49		K50		K51		K52	
X4.A2 [A7] X4.B2 [A8]	K53		K54		K55		K56	
X4.A3 [B6] X4.B3 [B7]	K57		K58		K59		K60	
X4.A4 [A5] X4.B4 [A6]	K61		K62		K63		K64	
X5.A1 [A15] X5.B1 [A16]	K65		K66		K67		K68	
X5.A2 [B16] X5.B2 [B17]	K69		K70		K71		K72	
X5.A3 [A17] X5.B3 [A18]	K73		K74		K75		K76	
X5.A4 [B18] X5.B4 [B19]	K77		K78		K79		K80	
X6.A1 [A25] X6.B1 [A26]	K81		K82		K83		K84	
X6.A2 [B26] X6.B2 [B27]	K85		K86		K87		K88	
X6.A3 [A27] X6.B3 [A28]	K89		K90		K91		K92	
X6.A4 [B28] X6.B4 [B29]	K93		K94		K95		K96	
X7.A1 [B4] X7.B1 [B5]	K97		K98		K99		K100	
X7.A2 [A3] X7.B2 [A4]	K101		K102		K103		K104	
X7.A3 [B2] X7.B3 [B3]	K105		K106		K107		K108	
X7.A4 [A1] X7.B4 [A2]	K109		K110		K111		K112	
X8.A1 [A19] X8.B1 [A20]	K113		K114		K115		K116	
X8.A2 [B20] X8.B2 [B21]	K117		K118		K119		K120	
X8.A3 [C20] X8.B3 [C21]	K121		K122		K123		K124	
X8.A4 [D21] X8.B4 [D22]	K125		K126		K127		K128	
X9.A1 [A29] X9.B1 [A30]	K129		K130		K131		K132	
X9.A2 [B30] X9.B2 [B31]	K133		K134		K135		K136	
X9.A3 [A31] X9.B3 [A32]	K137		K138		K139		K140	
X9.A4 [C31] X9.B4 [C32]	K141		K142		K143		K144	

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP4002 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4002 RELAY REGISTER MAP — TABLE 3

Offset (Hex)																
12																
10	K144	K143	K142	K141	K140	K139	K138	K137	K136	K135	K134	K133	K132	K131	K130	K129
E	K128	K127	K126	K125	K124	K123	K122	K121	K120	K119	K118	K117	K116	K115	K114	K113
C	K112	K111	K110	K109	K108	K107	K106	K105	K104	K103	K102	K101	K100	K99	K98	K97
A	K96	K95	K94	K93	K92	K91	K90	K89	K88	K87	K86	K85	K84	K83	K82	K81
8	K80	K79	K78	K77	K76	K75	K74	K73	K72	K71	K70	K69	K68	K67	K66	K65
6	K64	K63	K62	K61	K60	K59	K58	K57	K56	K55	K54	K53	K52	K51	K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4002 Specifications and Accessories

General Specifications	
Model Type	Matrix
Channels	As Configured
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 3 ms
Rated Switch Operations	
Mechanical	1×10^7
Electrical	1×10^6 (Full Load)
Power Specifications	
Maximum Switching Voltage	300 V ac rms, 300 V dc
Maximum Switching Current	2 A / Channel
Maximum Switching Power	60 W dc, 125 VA
DC Performance	
Path Resistance	< 0.5 Ω
Insulation Resistance	$> 1 \times 10^9$ Ω
Maximum Thermal Offset / Channel (HI-LO)	< 7 µV
Minimum Contact Rating	10 mV dc, 10 µA
Capacitance	
Open Channel	< 50 pF
Channel-Mainframe	< 80 pF
High-Low	< 50 pF
AC Performance	
Bandwidth (-3 dB)	> 45 MHz
Insertion Loss	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 1.0 dB
Crosstalk	
100 kHz	< -80 dB
1 MHz	< -70 dB
10 MHz	< -50 dB
Isolation	
100 kHz	< -80 dB
1 MHz	< -60 dB
10 MHz	< -50 dB

Accessories

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com

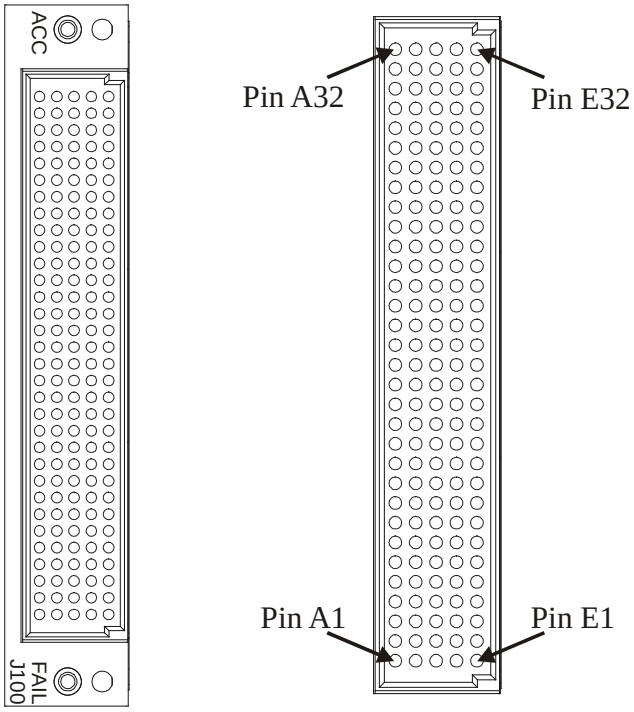
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP4003

SMP4003 – 2 (4 X 16) + 1 (4 X 4) MATRIX

The SMP4003 high-density matrix module is designed for applications that require a true non-blocking matrix where the user has the ability to connect any row to any column. The SMP4003 consists of two 4 x 16 and one 4 x 4 2-wire matrices. Up to 4 x 216 two-wire matrix channels can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density or mixed and matched with other SMIP *II* cards for flexibility. All relays have individual relay control and each path allows for 2 A switching. This appendix shows the 160-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP4003 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

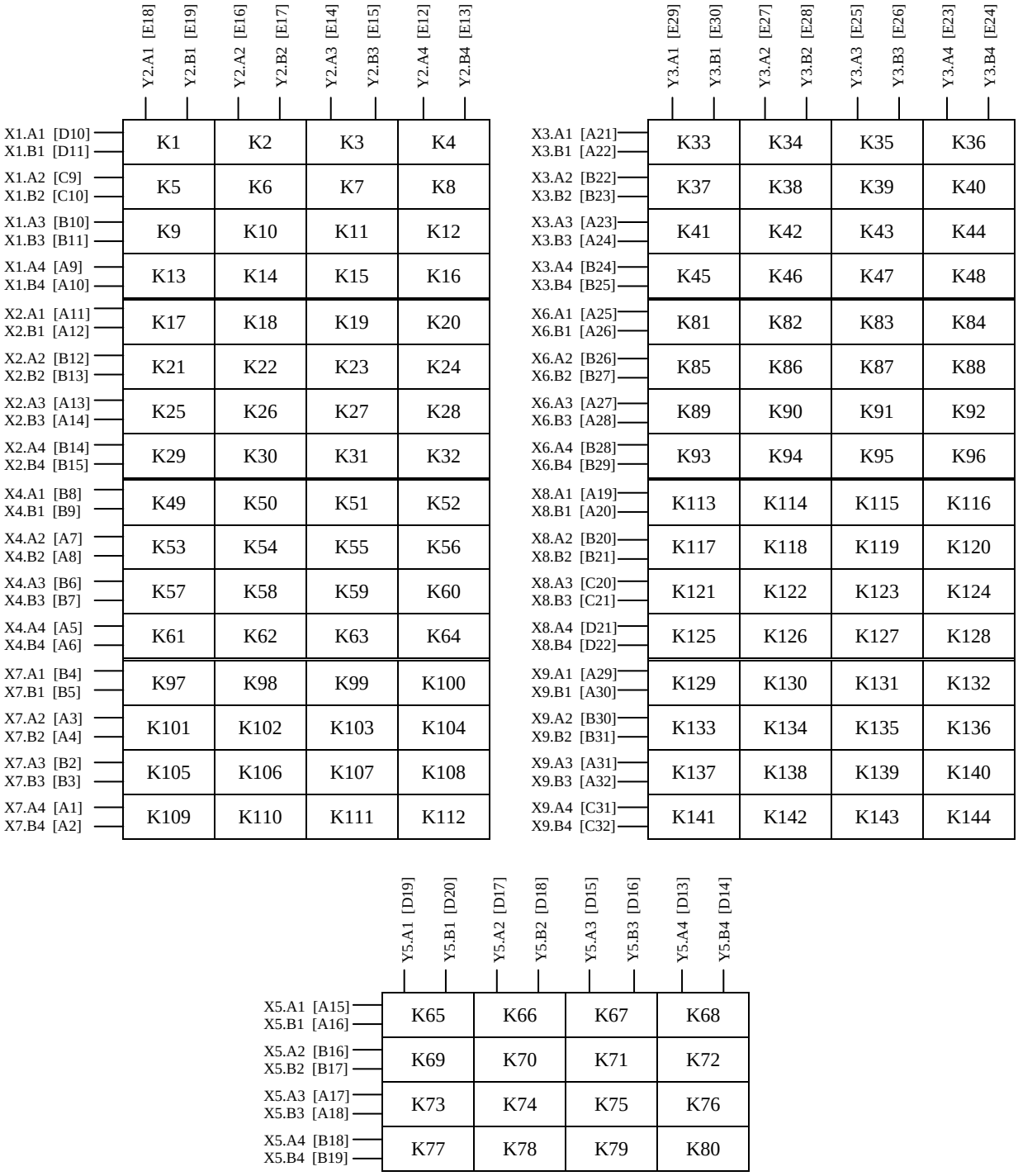
SMP4003 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	X7.A4	1	SHIELD	1	Y7.A4	1	SHIELD	1	Y1.A4
2	X7.B4	2	X7.A3	2	Y7.B4	2	Y4.A4	2	Y1.B4
3	X7.A2	3	X7.B3	3	Y7.A3	3	Y4.B4	3	Y1.A3
4	X7.B2	4	X7.A1	4	Y7.B3	4	Y4.A3	4	Y1.B3
5	X4.A4	5	X7.B1	5	Y7.A2	5	Y4.B3	5	Y1.A2
6	X4.B4	6	X4.A3	6	Y7.B2	6	Y4.A2	6	Y1.B2
7	X4.A2	7	X4.B3	7	Y7.A1	7	Y4.B2	7	Y1.A1
8	X4.B2	8	X4.A1	8	Y7.B1	8	Y4.A1	8	Y1.B1
9	X1.A4	9	X4.B1	9	X1.A2	9	Y4.B1	9	SHIELD
10	X1.B4	10	X1.A3	10	X1.B2	10	X1.A1	10	SHIELD
11	X2.A1	11	X1.B3	11	SHIELD	11	X1.B1	11	SHIELD
12	X2.B1	12	X2.A2	12	Y8.A4	12	SHIELD	12	Y2.A4
13	X2.A3	13	X2.B2	13	Y8.B4	13	Y5.A4	13	Y2.B4
14	X2.B3	14	X2.A4	14	Y8.A3	14	Y5.B4	14	Y2.A3
15	X5.A1	15	X2.B4	15	Y8.B3	15	Y5.A3	15	Y2.B3
16	X5.B1	16	X5.A2	16	Y8.A2	16	Y5.B3	16	Y2.A2
17	X5.A3	17	X5.B2	17	Y8.B2	17	Y5.A2	17	Y2.B2
18	X5.B3	18	X5.A4	18	Y8.A1	18	Y5.B2	18	Y2.A1
19	X8.A1	19	X5.B4	19	Y8.B1	19	Y5.A1	19	Y2.B1
20	X8.B1	20	X8.A2	20	X8.A3	20	Y5.B1	20	SHIELD
21	X3.A1	21	X8.B2	21	X8.B3	21	X8.A4	21	SHIELD
22	X3.B1	22	X3.A2	22	SHIELD	22	X8.B4	22	SHIELD
23	X3.A3	23	X3.B2	23	Y9.A4	23	SHIELD	23	Y3.A4
24	X3.B3	24	X3.A4	24	Y9.B4	24	Y6.A4	24	Y3.B4
25	X6.A1	25	X3.B4	25	Y9.A3	25	Y6.B4	25	Y3.A3
26	X6.B1	26	X6.A2	26	Y9.B3	26	Y6.A3	26	Y3.B3
27	X6.A3	27	X6.B2	27	Y9.A2	27	Y6.B3	27	Y3.A2
28	X6.B3	28	X6.A4	28	Y9.B2	28	Y6.A2	28	Y3.B2
29	X9.A1	29	X6.B4	29	Y9.A1	29	Y6.B2	29	Y3.A1
30	X9.B1	30	X9.A2	30	Y9.B1	30	Y6.A1	30	Y3.B1
31	X9.A3	31	X9.B2	31	X9.A4	31	Y6.B1	31	FP-OPEN[1]
32	X9.B3	32	SHIELD	32	X9.B4	32	SHIELD	32	FP-GND[1]

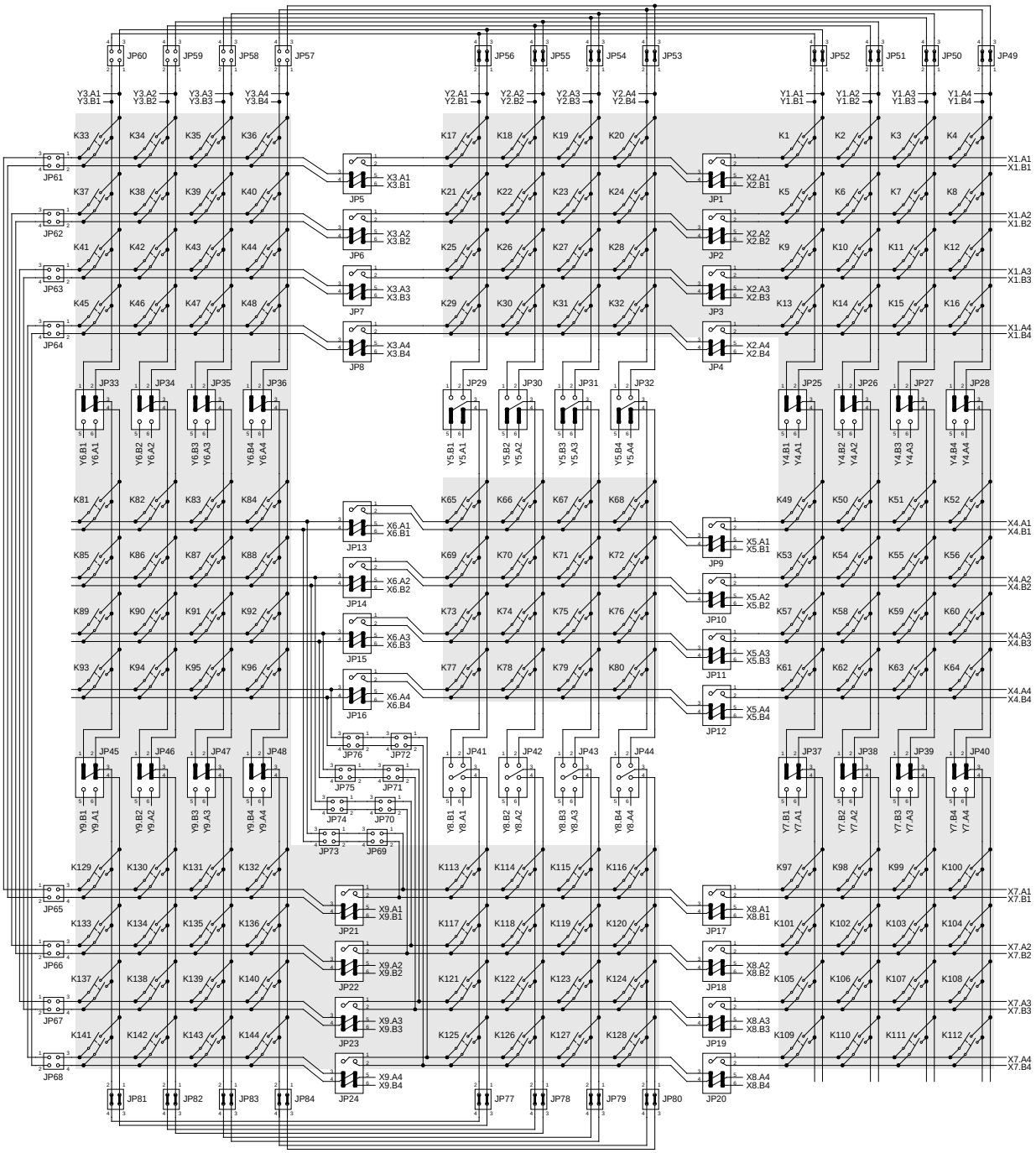
NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4003 FRONT PANEL PIN-OUT CONFIGURATION — TABLE 2



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP4003 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4003 RELAY REGISTER MAP — TABLE 3

Offset (Hex)																
12																
10	K144	K143	K142	K141	K140	K139	K138	K137	K136	K135	K134	K133	K132	K131	K130	K129
E	K128	K127	K126	K125	K124	K123	K122	K121	K120	K119	K118	K117	K116	K115	K114	K113
C	K112	K111	K110	K109	K108	K107	K106	K105	K104	K103	K102	K101	K100	K99	K98	K97
A	K96	K95	K94	K93	K92	K91	K90	K89	K88	K87	K86	K85	K84	K83	K82	K81
8	K80	K79	K78	K77	K76	K75	K74	K73	K72	K71	K70	K69	K68	K67	K66	K65
6	K64	K63	K62	K61	K60	K59	K58	K57	K56	K55	K54	K53	K52	K51	K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4003 Specifications and Accessories

General Specifications	
Model Type	Matrix
Channels	As Configured
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 3 ms
Rated Switch Operations	
Mechanical	1×10^7
Electrical	1×10^6 (Full Load)
Power Specifications	
Maximum Switching Voltage	300 V ac rms, 300 V dc
Maximum Switching Current	2 A / Channel
Maximum Switching Power	60 W dc, 125 VA
DC Performance	
Path Resistance	< 0.5 Ω
Insulation Resistance	$> 1 \times 10^9$ Ω
Maximum Thermal Offset / Channel (HI-LO)	< 7 µV
Minimum Contact Rating	10 mV dc, 10 µA
Capacitance	
Open Channel	< 50 pF
Channel-Mainframe	< 80 pF
High-Low	< 50 pF
AC Performance	
Bandwidth (-3 dB)	> 45 MHz
Insertion Loss	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 1.0 dB
Crosstalk	
100 kHz	< -80 dB
1 MHz	< -70 dB
10 MHz	< -50 dB
Isolation	
100 kHz	< -80 dB
1 MHz	< -60 dB
10 MHz	< -50 dB

Accessories

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com



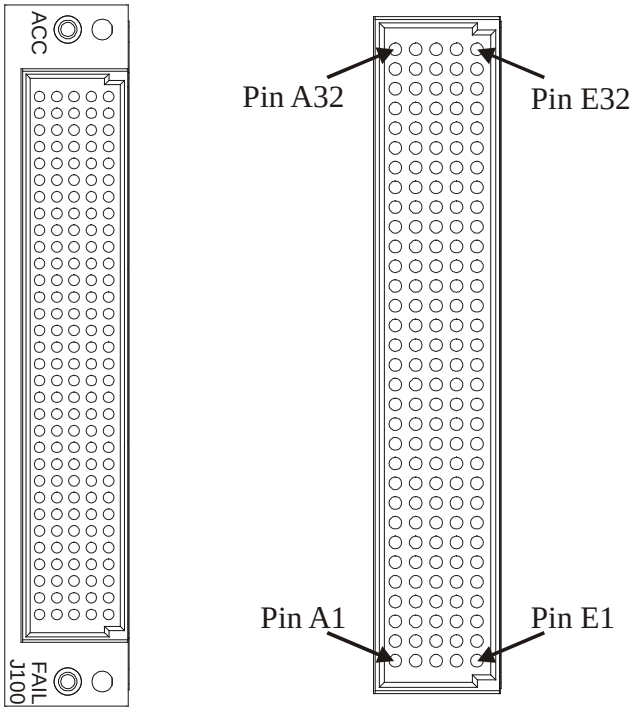
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP4004

SMP4004 – 1 (8 X 16) + 1 (4 X 4) MATRIX

The SMP4004 high-density matrix module is designed for applications that require a true non-blocking matrix where the user has the ability to connect any row to any column. The SMP4004 consists of one 8 x 16 and one 4 x 4 2-wire matrices. Up to 4 x 216 two-wire matrix channels can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density or mixed and matched with other SMIP *II* cards for flexibility. All relays have individual relay control and each path allows for 2 A switching. This appendix shows the 160-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP4004 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

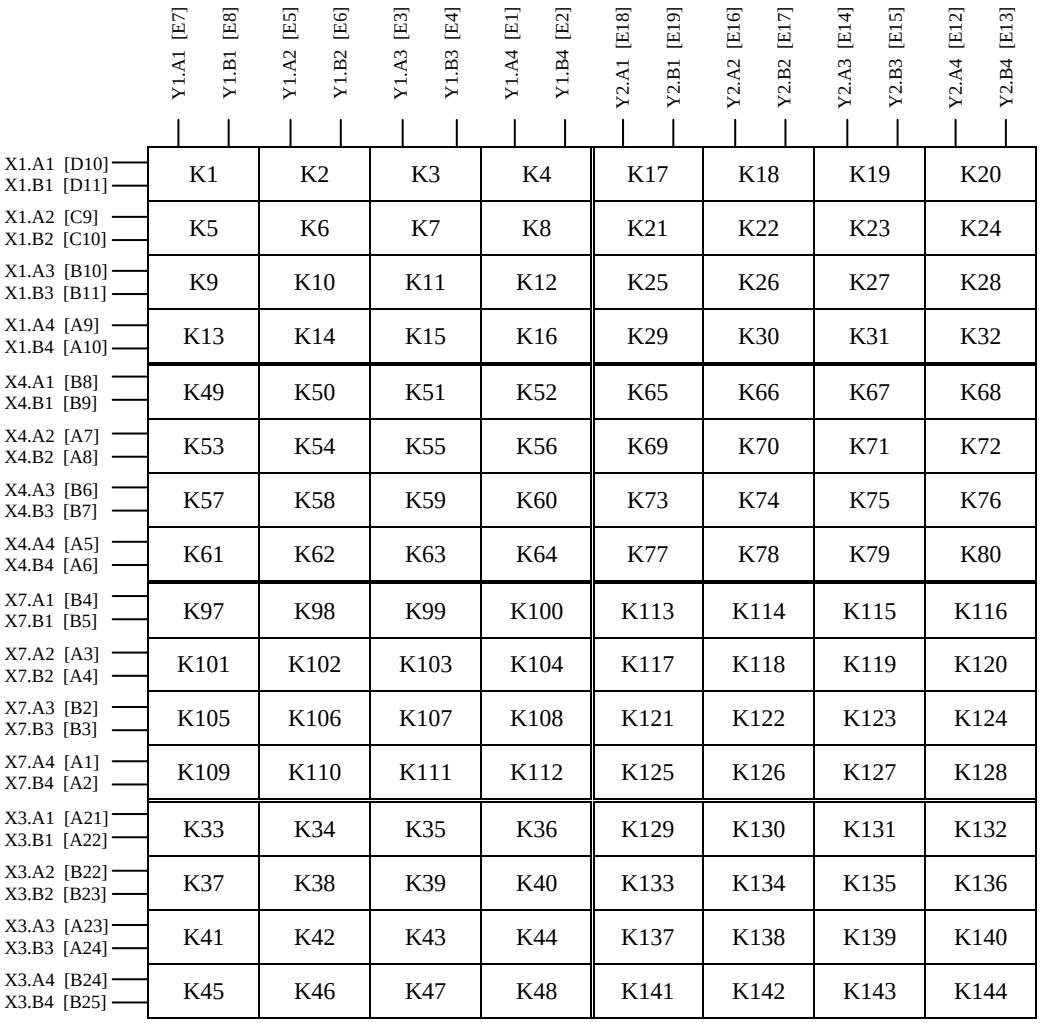
SMP4004 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	X7.A4	1	SHIELD	1	Y7.A4	1	SHIELD	1	Y1.A4
2	X7.B4	2	X7.A3	2	Y7.B4	2	Y4.A4	2	Y1.B4
3	X7.A2	3	X7.B3	3	Y7.A3	3	Y4.B4	3	Y1.A3
4	X7.B2	4	X7.A1	4	Y7.B3	4	Y4.A3	4	Y1.B3
5	X4.A4	5	X7.B1	5	Y7.A2	5	Y4.B3	5	Y1.A2
6	X4.B4	6	X4.A3	6	Y7.B2	6	Y4.A2	6	Y1.B2
7	X4.A2	7	X4.B3	7	Y7.A1	7	Y4.B2	7	Y1.A1
8	X4.B2	8	X4.A1	8	Y7.B1	8	Y4.A1	8	Y1.B1
9	X1.A4	9	X4.B1	9	X1.A2	9	Y4.B1	9	SHIELD
10	X1.B4	10	X1.A3	10	X1.B2	10	X1.A1	10	SHIELD
11	X2.A1	11	X1.B3	11	SHIELD	11	X1.B1	11	SHIELD
12	X2.B1	12	X2.A2	12	Y8.A4	12	SHIELD	12	Y2.A4
13	X2.A3	13	X2.B2	13	Y8.B4	13	Y5.A4	13	Y2.B4
14	X2.B3	14	X2.A4	14	Y8.A3	14	Y5.B4	14	Y2.A3
15	X5.A1	15	X2.B4	15	Y8.B3	15	Y5.A3	15	Y2.B3
16	X5.B1	16	X5.A2	16	Y8.A2	16	Y5.B3	16	Y2.A2
17	X5.A3	17	X5.B2	17	Y8.B2	17	Y5.A2	17	Y2.B2
18	X5.B3	18	X5.A4	18	Y8.A1	18	Y5.B2	18	Y2.A1
19	X8.A1	19	X5.B4	19	Y8.B1	19	Y5.A1	19	Y2.B1
20	X8.B1	20	X8.A2	20	X8.A3	20	Y5.B1	20	SHIELD
21	X3.A1	21	X8.B2	21	X8.B3	21	X8.A4	21	SHIELD
22	X3.B1	22	X3.A2	22	SHIELD	22	X8.B4	22	SHIELD
23	X3.A3	23	X3.B2	23	Y9.A4	23	SHIELD	23	Y3.A4
24	X3.B3	24	X3.A4	24	Y9.B4	24	Y6.A4	24	Y3.B4
25	X6.A1	25	X3.B4	25	Y9.A3	25	Y6.B4	25	Y3.A3
26	X6.B1	26	X6.A2	26	Y9.B3	26	Y6.A3	26	Y3.B3
27	X6.A3	27	X6.B2	27	Y9.A2	27	Y6.B3	27	Y3.A2
28	X6.B3	28	X6.A4	28	Y9.B2	28	Y6.A2	28	Y3.B2
29	X9.A1	29	X6.B4	29	Y9.A1	29	Y6.B2	29	Y3.A1
30	X9.B1	30	X9.A2	30	Y9.B1	30	Y6.A1	30	Y3.B1
31	X9.A3	31	X9.B2	31	X9.A4	31	Y6.B1	31	FP-OPEN[1]
32	X9.B3	32	SHIELD	32	X9.B4	32	SHIELD	32	FP-GND[1]

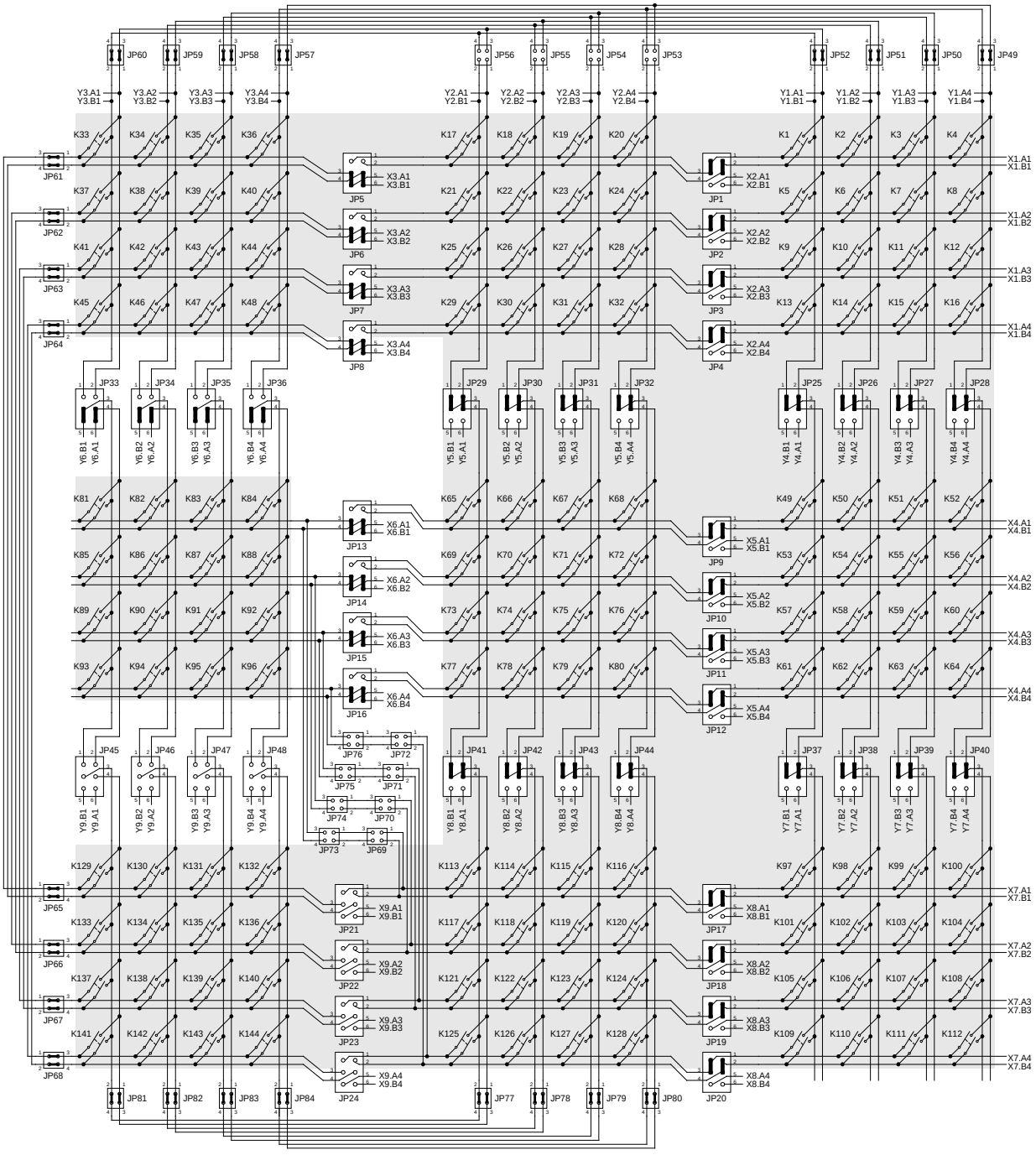
NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4004 FRONT PANEL PIN-OUT CONFIGURATION — TABLE 2



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP4004 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4004 RELAY REGISTER MAP — TABLE 3

Offset (Hex)																
12																
10	K144	K143	K142	K141	K140	K139	K138	K137	K136	K135	K134	K133	K132	K131	K130	K129
E	K128	K127	K126	K125	K124	K123	K122	K121	K120	K119	K118	K117	K116	K115	K114	K113
C	K112	K111	K110	K109	K108	K107	K106	K105	K104	K103	K102	K101	K100	K99	K98	K97
A	K96	K95	K94	K93	K92	K91	K90	K89	K88	K87	K86	K85	K84	K83	K82	K81
8	K80	K79	K78	K77	K76	K75	K74	K73	K72	K71	K70	K69	K68	K67	K66	K65
6	K64	K63	K62	K61	K60	K59	K58	K57	K56	K55	K54	K53	K52	K51	K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4004 Specifications and Accessories

General Specifications	
Model Type	Matrix
Channels	As Configured
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 3 ms
Rated Switch Operations	
Mechanical	1×10^7
Electrical	1×10^6 (Full Load)
Power Specifications	
Maximum Switching Voltage	300 V ac rms, 300 V dc
Maximum Switching Current	2 A / Channel
Maximum Switching Power	60 W dc, 125 VA
DC Performance	
Path Resistance	< 0.5 Ω
Insulation Resistance	$> 1 \times 10^9$ Ω
Maximum Thermal Offset / Channel (HI-LO)	< 7 µV
Minimum Contact Rating	10 mV dc, 10 µA
Capacitance	
Open Channel	< 50 pF
Channel-Mainframe	< 80 pF
High-Low	< 50 pF
AC Performance	
Bandwidth (-3 dB)	> 45 MHz
Insertion Loss	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 1.0 dB
Crosstalk	
100 kHz	< -80 dB
1 MHz	< -70 dB
10 MHz	< -50 dB
Isolation	
100 kHz	< -80 dB
1 MHz	< -60 dB
10 MHz	< -50 dB

Accessories

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com



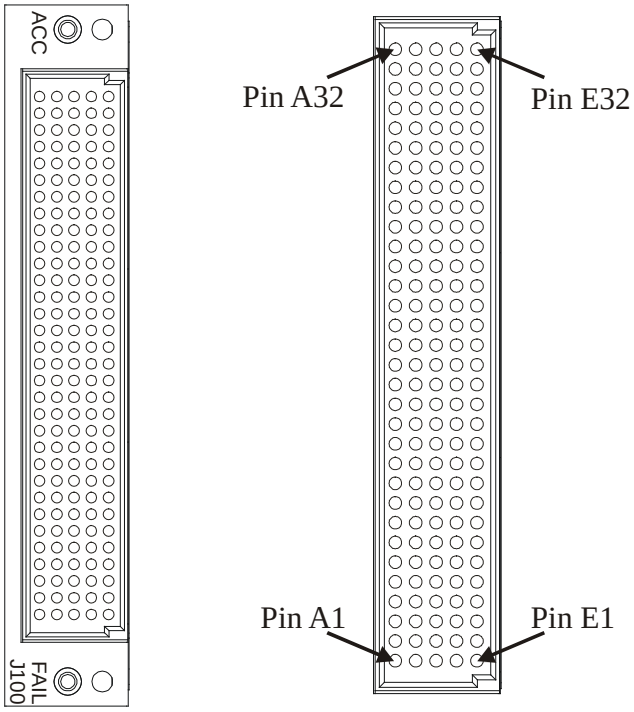
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP4005

SMP4005 – 12 X 12 MATRIX

The SMP4005 high-density matrix module is designed for applications that require a true non-blocking matrix where the user has the ability to connect any row to any column. The SMP4005 consists of one 12 x 12 2-wire matrices. Up to 4 x 216 two-wire matrix channels can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density or mixed and matched with other SMIP *II* cards for flexibility. All relays have individual relay control and each path allows for 2 A switching. This appendix shows the 160-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP4005 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

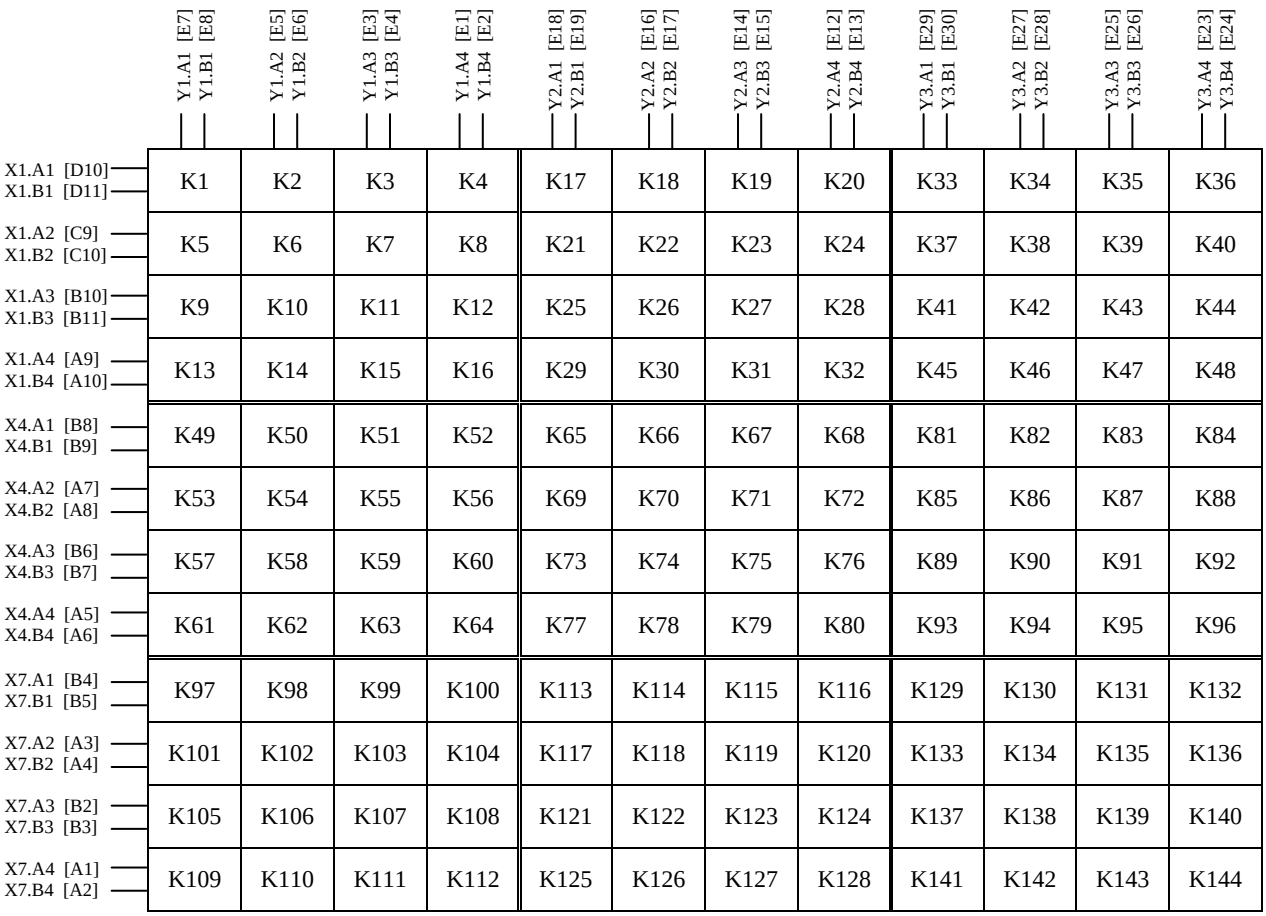
SMP4005 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	X7.A4	1	SHIELD	1	Y7.A4	1	SHIELD	1	Y1.A4
2	X7.B4	2	X7.A3	2	Y7.B4	2	Y4.A4	2	Y1.B4
3	X7.A2	3	X7.B3	3	Y7.A3	3	Y4.B4	3	Y1.A3
4	X7.B2	4	X7.A1	4	Y7.B3	4	Y4.A3	4	Y1.B3
5	X4.A4	5	X7.B1	5	Y7.A2	5	Y4.B3	5	Y1.A2
6	X4.B4	6	X4.A3	6	Y7.B2	6	Y4.A2	6	Y1.B2
7	X4.A2	7	X4.B3	7	Y7.A1	7	Y4.B2	7	Y1.A1
8	X4.B2	8	X4.A1	8	Y7.B1	8	Y4.A1	8	Y1.B1
9	X1.A4	9	X4.B1	9	X1.A2	9	Y4.B1	9	SHIELD
10	X1.B4	10	X1.A3	10	X1.B2	10	X1.A1	10	SHIELD
11	X2.A1	11	X1.B3	11	SHIELD	11	X1.B1	11	SHIELD
12	X2.B1	12	X2.A2	12	Y8.A4	12	SHIELD	12	Y2.A4
13	X2.A3	13	X2.B2	13	Y8.B4	13	Y5.A4	13	Y2.B4
14	X2.B3	14	X2.A4	14	Y8.A3	14	Y5.B4	14	Y2.A3
15	X5.A1	15	X2.B4	15	Y8.B3	15	Y5.A3	15	Y2.B3
16	X5.B1	16	X5.A2	16	Y8.A2	16	Y5.B3	16	Y2.A2
17	X5.A3	17	X5.B2	17	Y8.B2	17	Y5.A2	17	Y2.B2
18	X5.B3	18	X5.A4	18	Y8.A1	18	Y5.B2	18	Y2.A1
19	X8.A1	19	X5.B4	19	Y8.B1	19	Y5.A1	19	Y2.B1
20	X8.B1	20	X8.A2	20	X8.A3	20	Y5.B1	20	SHIELD
21	X3.A1	21	X8.B2	21	X8.B3	21	X8.A4	21	SHIELD
22	X3.B1	22	X3.A2	22	SHIELD	22	X8.B4	22	SHIELD
23	X3.A3	23	X3.B2	23	Y9.A4	23	SHIELD	23	Y3.A4
24	X3.B3	24	X3.A4	24	Y9.B4	24	Y6.A4	24	Y3.B4
25	X6.A1	25	X3.B4	25	Y9.A3	25	Y6.B4	25	Y3.A3
26	X6.B1	26	X6.A2	26	Y9.B3	26	Y6.A3	26	Y3.B3
27	X6.A3	27	X6.B2	27	Y9.A2	27	Y6.B3	27	Y3.A2
28	X6.B3	28	X6.A4	28	Y9.B2	28	Y6.A2	28	Y3.B2
29	X9.A1	29	X6.B4	29	Y9.A1	29	Y6.B2	29	Y3.A1
30	X9.B1	30	X9.A2	30	Y9.B1	30	Y6.A1	30	Y3.B1
31	X9.A3	31	X9.B2	31	X9.A4	31	Y6.B1	31	FP-OPEN[1]
32	X9.B3	32	SHIELD	32	X9.B4	32	SHIELD	32	FP-GND[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

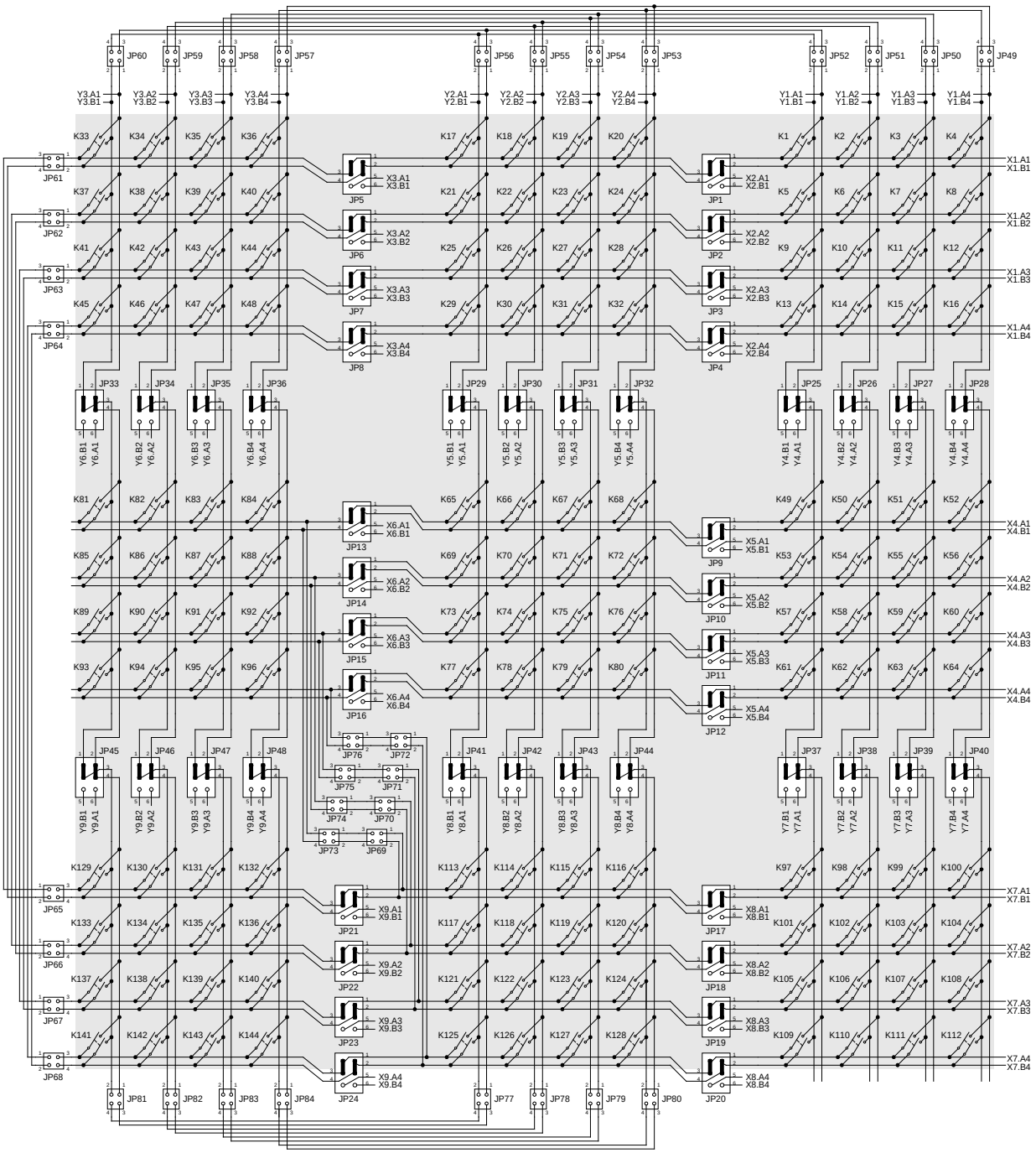
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4005 FRONT PANEL PIN-OUT CONFIGURATION — TABLE 2



	Y1.A1 [E7] Y1.B1 [E8]	Y1.A2 [E5] Y1.B2 [E6]	Y1.A3 [E3] Y1.B3 [E4]	Y1.A4 [E1] Y1.B4 [E2]	Y2.A1 [E18] Y2.B1 [E19]	Y2.A2 [E16] Y2.B2 [E17]	Y2.A3 [E14] Y2.B3 [E15]	Y2.A4 [E12] Y2.B4 [E13]	Y3.A1 [E29] Y3.B1 [E30]	Y3.A2 [E27] Y3.B2 [E28]	Y3.A3 [E25] Y3.B3 [E26]	Y3.A4 [E23] Y3.B4 [E24]
X1.A1 [D10] X1.B1 [D11]	K1	K2	K3	K4	K17	K18	K19	K20	K33	K34	K35	K36
X1.A2 [C9] X1.B2 [C10]	K5	K6	K7	K8	K21	K22	K23	K24	K37	K38	K39	K40
X1.A3 [B10] X1.B3 [B11]	K9	K10	K11	K12	K25	K26	K27	K28	K41	K42	K43	K44
X1.A4 [A9] X1.B4 [A10]	K13	K14	K15	K16	K29	K30	K31	K32	K45	K46	K47	K48
X4.A1 [B8] X4.B1 [B9]	K49	K50	K51	K52	K65	K66	K67	K68	K81	K82	K83	K84
X4.A2 [A7] X4.B2 [A8]	K53	K54	K55	K56	K69	K70	K71	K72	K85	K86	K87	K88
X4.A3 [B6] X4.B3 [B7]	K57	K58	K59	K60	K73	K74	K75	K76	K89	K90	K91	K92
X4.A4 [A5] X4.B4 [A6]	K61	K62	K63	K64	K77	K78	K79	K80	K93	K94	K95	K96
X7.A1 [B4] X7.B1 [B5]	K97	K98	K99	K100	K113	K114	K115	K116	K129	K130	K131	K132
X7.A2 [A3] X7.B2 [A4]	K101	K102	K103	K104	K117	K118	K119	K120	K133	K134	K135	K136
X7.A3 [B2] X7.B3 [B3]	K105	K106	K107	K108	K121	K122	K123	K124	K137	K138	K139	K140
X7.A4 [A1] X7.B4 [A2]	K109	K110	K111	K112	K125	K126	K127	K128	K141	K142	K143	K144

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP4005 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4005 RELAY REGISTER MAP — TABLE 3

Offset (Hex)																
12																
10	K144	K143	K142	K141	K140	K139	K138	K137	K136	K135	K134	K133	K132	K131	K130	K129
E	K128	K127	K126	K125	K124	K123	K122	K121	K120	K119	K118	K117	K116	K115	K114	K113
C	K112	K111	K110	K109	K108	K107	K106	K105	K104	K103	K102	K101	K100	K99	K98	K97
A	K96	K95	K94	K93	K92	K91	K90	K89	K88	K87	K86	K85	K84	K83	K82	K81
8	K80	K79	K78	K77	K76	K75	K74	K73	K72	K71	K70	K69	K68	K67	K66	K65
6	K64	K63	K62	K61	K60	K59	K58	K57	K56	K55	K54	K53	K52	K51	K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4005 Specifications and Accessories

General Specifications	
Model Type	Matrix
Channels	As Configured
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 3 ms
Rated Switch Operations	
Mechanical	1×10^7
Electrical	1×10^6 (Full Load)
Power Specifications	
Maximum Switching Voltage	300 V ac rms, 300 V dc
Maximum Switching Current	2 A / Channel
Maximum Switching Power	60 W dc, 125 VA
DC Performance	
Path Resistance	< 0.5 Ω
Insulation Resistance	$> 1 \times 10^9$ Ω
Maximum Thermal Offset / Channel (HI-LO)	< 7 µV
Minimum Contact Rating	10 mV dc, 10 µA
Capacitance	
Open Channel	< 50 pF
Channel-Mainframe	< 80 pF
High-Low	< 50 pF
AC Performance	
Bandwidth (-3 dB)	> 30 MHz
Insertion Loss	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 1.0 dB
Crosstalk	
100 kHz	< -80 dB
1 MHz	< -70 dB
10 MHz	< -50 dB
Isolation	
100 kHz	< -80 dB
1 MHz	< -60 dB
10 MHz	< -50 dB

Accessories

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

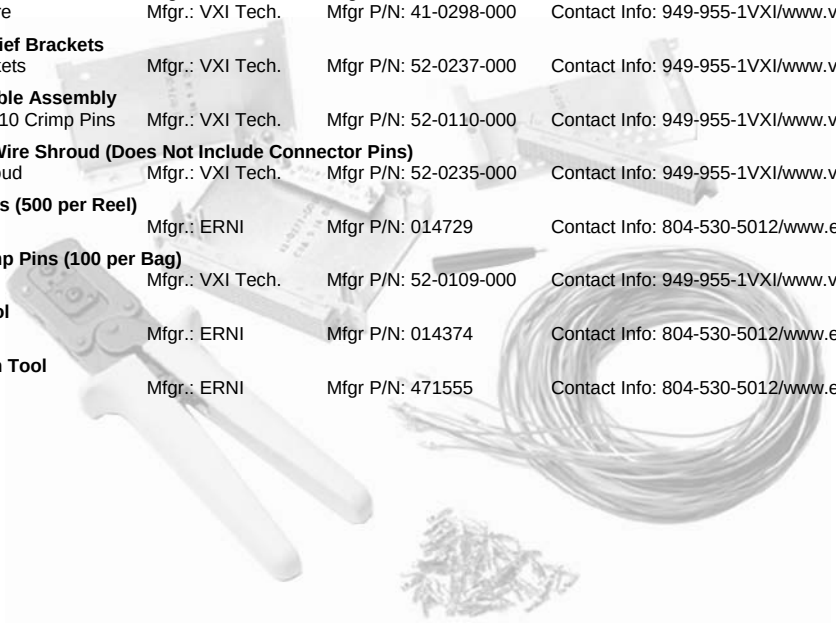
Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com



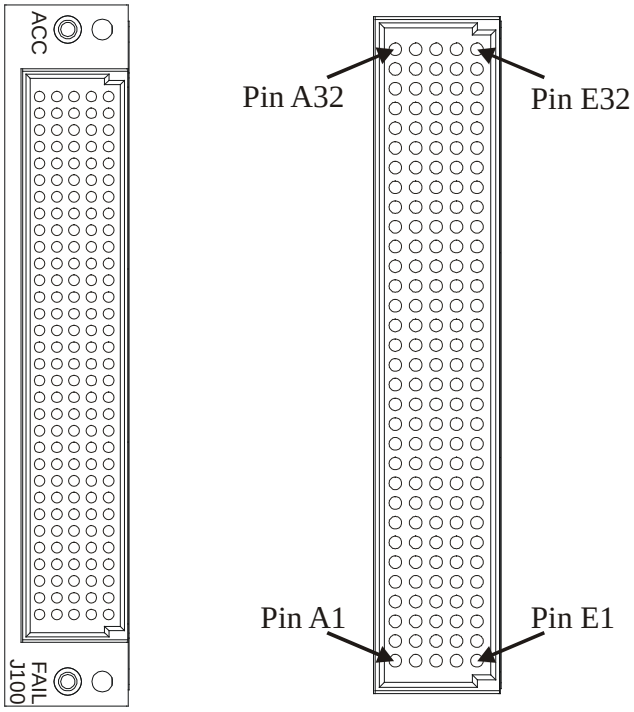
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP4006

SMP4006 – 3 X (4 X 12) MATRIX

The SMP4006 high-density matrix module is designed for applications that require a true non-blocking matrix where the user has the ability to connect any row to any column. The SMP4006 consists of three 4 x 12 2-wire matrices. Up to 4 x 216 two-wire matrix channels can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density or mixed and matched with other SMIP *II* cards for flexibility. All relays have individual relay control and each path allows for 2 A switching. This appendix shows the 160-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP4006 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

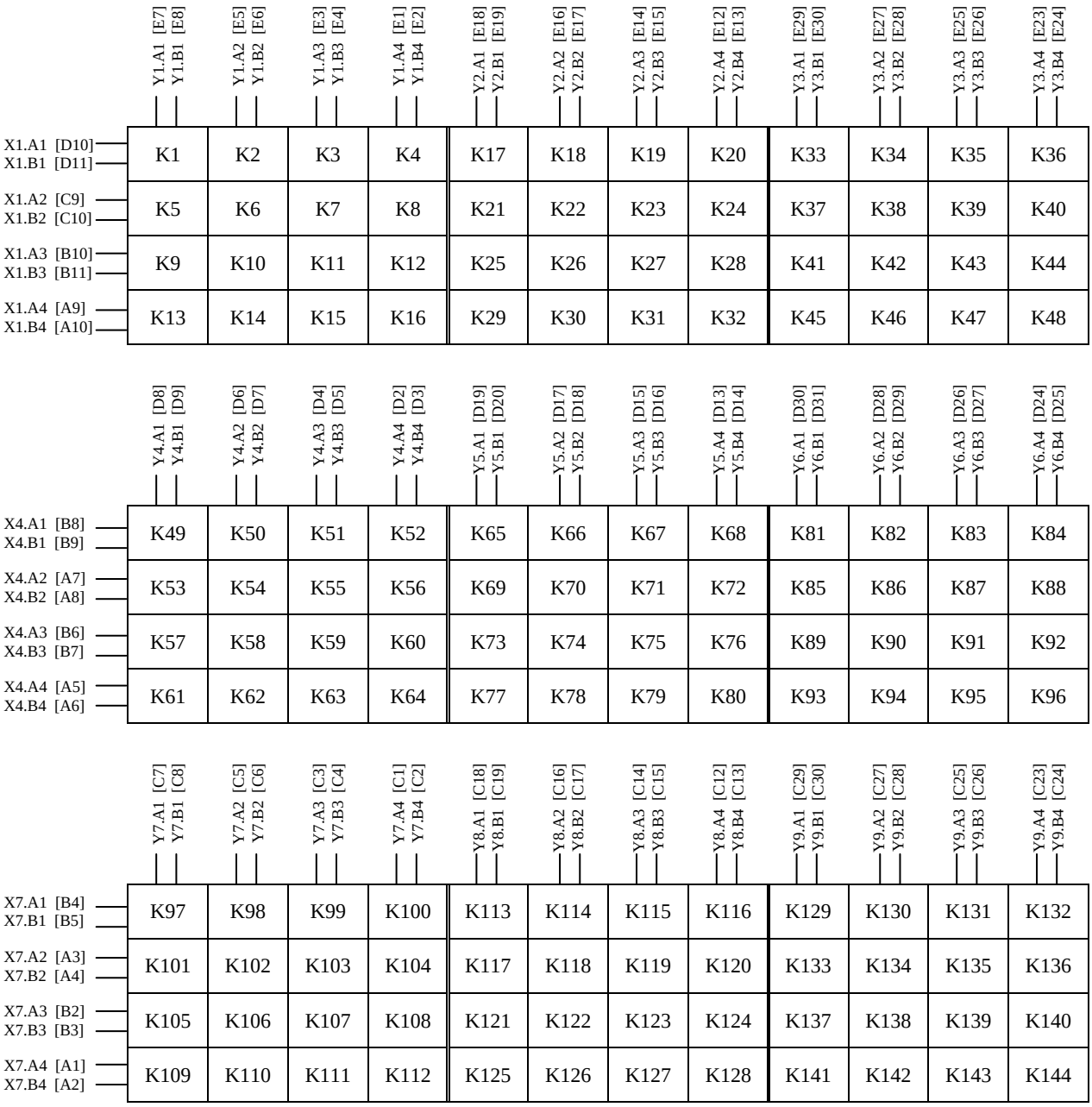
SMP4006 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	X7.A4	1	SHIELD	1	Y7.A4	1	SHIELD	1	Y1.A4
2	X7.B4	2	X7.A3	2	Y7.B4	2	Y4.A4	2	Y1.B4
3	X7.A2	3	X7.B3	3	Y7.A3	3	Y4.B4	3	Y1.A3
4	X7.B2	4	X7.A1	4	Y7.B3	4	Y4.A3	4	Y1.B3
5	X4.A4	5	X7.B1	5	Y7.A2	5	Y4.B3	5	Y1.A2
6	X4.B4	6	X4.A3	6	Y7.B2	6	Y4.A2	6	Y1.B2
7	X4.A2	7	X4.B3	7	Y7.A1	7	Y4.B2	7	Y1.A1
8	X4.B2	8	X4.A1	8	Y7.B1	8	Y4.A1	8	Y1.B1
9	X1.A4	9	X4.B1	9	X1.A2	9	Y4.B1	9	SHIELD
10	X1.B4	10	X1.A3	10	X1.B2	10	X1.A1	10	SHIELD
11	X2.A1	11	X1.B3	11	SHIELD	11	X1.B1	11	SHIELD
12	X2.B1	12	X2.A2	12	Y8.A4	12	SHIELD	12	Y2.A4
13	X2.A3	13	X2.B2	13	Y8.B4	13	Y5.A4	13	Y2.B4
14	X2.B3	14	X2.A4	14	Y8.A3	14	Y5.B4	14	Y2.A3
15	X5.A1	15	X2.B4	15	Y8.B3	15	Y5.A3	15	Y2.B3
16	X5.B1	16	X5.A2	16	Y8.A2	16	Y5.B3	16	Y2.A2
17	X5.A3	17	X5.B2	17	Y8.B2	17	Y5.A2	17	Y2.B2
18	X5.B3	18	X5.A4	18	Y8.A1	18	Y5.B2	18	Y2.A1
19	X8.A1	19	X5.B4	19	Y8.B1	19	Y5.A1	19	Y2.B1
20	X8.B1	20	X8.A2	20	X8.A3	20	Y5.B1	20	SHIELD
21	X3.A1	21	X8.B2	21	X8.B3	21	X8.A4	21	SHIELD
22	X3.B1	22	X3.A2	22	SHIELD	22	X8.B4	22	SHIELD
23	X3.A3	23	X3.B2	23	Y9.A4	23	SHIELD	23	Y3.A4
24	X3.B3	24	X3.A4	24	Y9.B4	24	Y6.A4	24	Y3.B4
25	X6.A1	25	X3.B4	25	Y9.A3	25	Y6.B4	25	Y3.A3
26	X6.B1	26	X6.A2	26	Y9.B3	26	Y6.A3	26	Y3.B3
27	X6.A3	27	X6.B2	27	Y9.A2	27	Y6.B3	27	Y3.A2
28	X6.B3	28	X6.A4	28	Y9.B2	28	Y6.A2	28	Y3.B2
29	X9.A1	29	X6.B4	29	Y9.A1	29	Y6.B2	29	Y3.A1
30	X9.B1	30	X9.A2	30	Y9.B1	30	Y6.A1	30	Y3.B1
31	X9.A3	31	X9.B2	31	X9.A4	31	Y6.B1	31	FP-OPEN[1]
32	X9.B3	32	SHIELD	32	X9.B4	32	SHIELD	32	FP-GND[1]

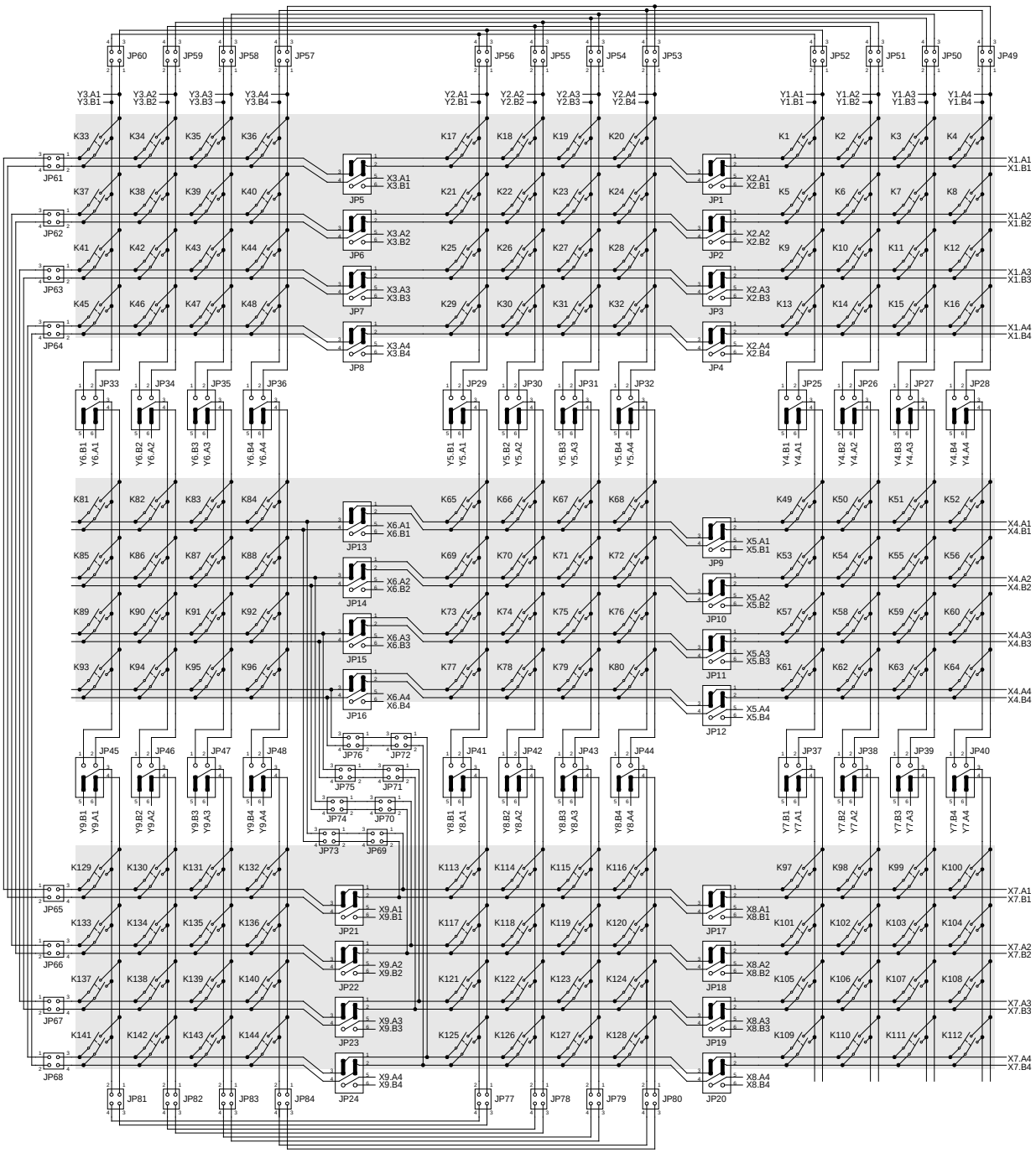
NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4006 FRONT PANEL PIN-OUT CONFIGURATION — TABLE 2



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP4006 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4006 RELAY REGISTER MAP — TABLE 3

Offset (Hex)																
12																
10	K144	K143	K142	K141	K140	K139	K138	K137	K136	K135	K134	K133	K132	K131	K130	K129
E	K128	K127	K126	K125	K124	K123	K122	K121	K120	K119	K118	K117	K116	K115	K114	K113
C	K112	K111	K110	K109	K108	K107	K106	K105	K104	K103	K102	K101	K100	K99	K98	K97
A	K96	K95	K94	K93	K92	K91	K90	K89	K88	K87	K86	K85	K84	K83	K82	K81
8	K80	K79	K78	K77	K76	K75	K74	K73	K72	K71	K70	K69	K68	K67	K66	K65
6	K64	K63	K62	K61	K60	K59	K58	K57	K56	K55	K54	K53	K52	K51	K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4006 Specifications and Accessories

General Specifications	
Model Type	Matrix
Channels	As Configured
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 3 ms
Rated Switch Operations	
Mechanical	1×10^7
Electrical	1×10^6 (Full Load)
Power Specifications	
Maximum Switching Voltage	300 V ac rms, 300 V dc
Maximum Switching Current	2 A / Channel
Maximum Switching Power	60 W dc, 125 VA
DC Performance	
Path Resistance	< 0.5 Ω
Insulation Resistance	$> 1 \times 10^9$ Ω
Maximum Thermal Offset / Channel (HI-LO)	< 7 µV
Minimum Contact Rating	10 mV dc, 10 µA
Capacitance	
Open Channel	< 50 pF
Channel-Mainframe	< 80 pF
High-Low	< 50 pF
AC Performance	
Bandwidth (-3 dB)	> 30 MHz
Insertion Loss	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 1.0 dB
Crosstalk	
100 kHz	< -80 dB
1 MHz	< -70 dB
10 MHz	< -50 dB
Isolation	
100 kHz	< -80 dB
1 MHz	< -60 dB
10 MHz	< -50 dB

Accessories

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

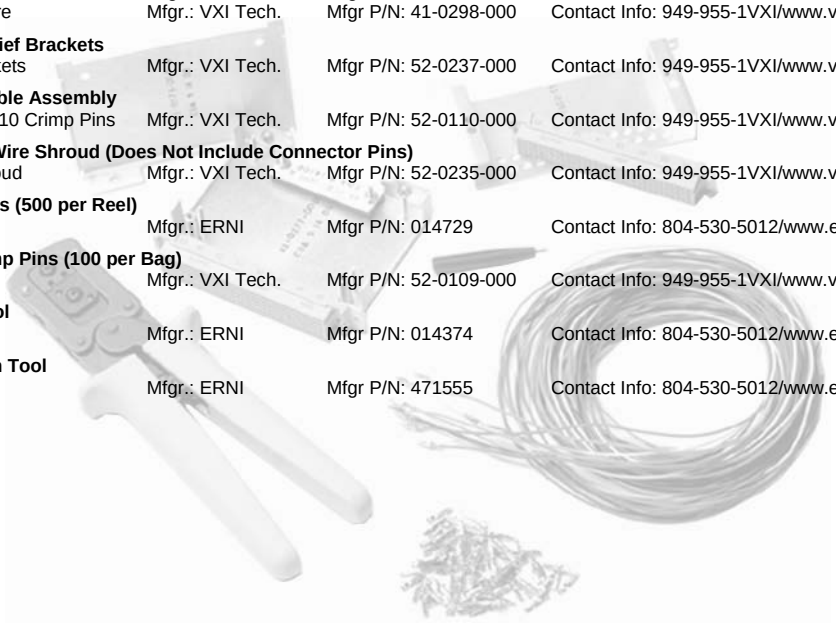
Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com



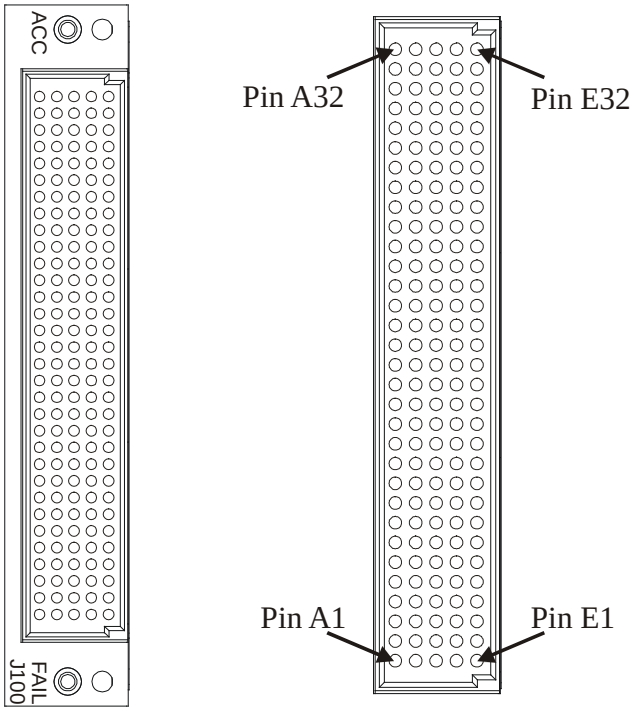
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP4007

SMP4007 – 2 (8 X 8) + 1 (4 X 4) MATRIX

The SMP4007 high-density matrix module is designed for applications that require a true non-blocking matrix where the user has the ability to connect any row to any column. The SMP4007 consists of three 4 x 12 2-wire matrices. Up to 4 x 216 two-wire matrix channels can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density or mixed and matched with other SMIP *II* cards for flexibility. All relays have individual relay control and each path allows for 2 A switching. This appendix shows the 160-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP4007 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

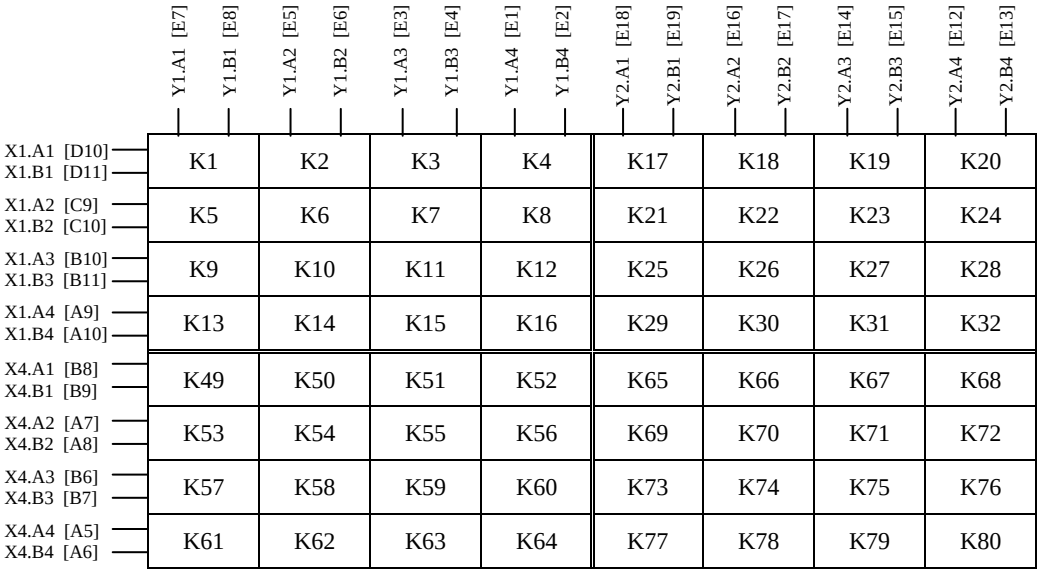
SMP4007 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

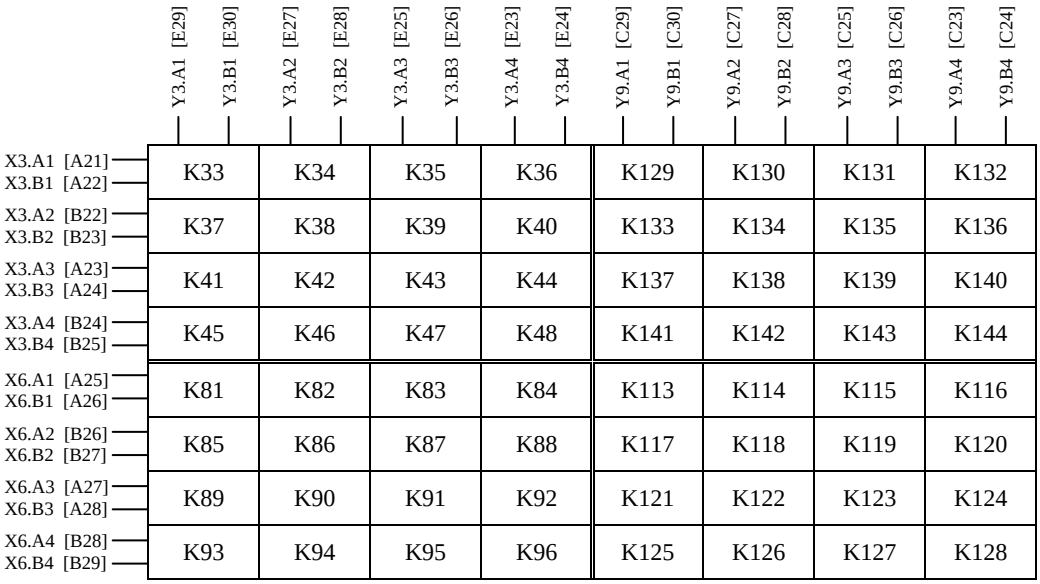
ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	X7.A4	1	SHIELD	1	Y7.A4	1	SHIELD	1	Y1.A4
2	X7.B4	2	X7.A3	2	Y7.B4	2	Y4.A4	2	Y1.B4
3	X7.A2	3	X7.B3	3	Y7.A3	3	Y4.B4	3	Y1.A3
4	X7.B2	4	X7.A1	4	Y7.B3	4	Y4.A3	4	Y1.B3
5	X4.A4	5	X7.B1	5	Y7.A2	5	Y4.B3	5	Y1.A2
6	X4.B4	6	X4.A3	6	Y7.B2	6	Y4.A2	6	Y1.B2
7	X4.A2	7	X4.B3	7	Y7.A1	7	Y4.B2	7	Y1.A1
8	X4.B2	8	X4.A1	8	Y7.B1	8	Y4.A1	8	Y1.B1
9	X1.A4	9	X4.B1	9	X1.A2	9	Y4.B1	9	SHIELD
10	X1.B4	10	X1.A3	10	X1.B2	10	X1.A1	10	SHIELD
11	X2.A1	11	X1.B3	11	SHIELD	11	X1.B1	11	SHIELD
12	X2.B1	12	X2.A2	12	Y8.A4	12	SHIELD	12	Y2.A4
13	X2.A3	13	X2.B2	13	Y8.B4	13	Y5.A4	13	Y2.B4
14	X2.B3	14	X2.A4	14	Y8.A3	14	Y5.B4	14	Y2.A3
15	X5.A1	15	X2.B4	15	Y8.B3	15	Y5.A3	15	Y2.B3
16	X5.B1	16	X5.A2	16	Y8.A2	16	Y5.B3	16	Y2.A2
17	X5.A3	17	X5.B2	17	Y8.B2	17	Y5.A2	17	Y2.B2
18	X5.B3	18	X5.A4	18	Y8.A1	18	Y5.B2	18	Y2.A1
19	X8.A1	19	X5.B4	19	Y8.B1	19	Y5.A1	19	Y2.B1
20	X8.B1	20	X8.A2	20	X8.A3	20	Y5.B1	20	SHIELD
21	X3.A1	21	X8.B2	21	X8.B3	21	X8.A4	21	SHIELD
22	X3.B1	22	X3.A2	22	SHIELD	22	X8.B4	22	SHIELD
23	X3.A3	23	X3.B2	23	Y9.A4	23	SHIELD	23	Y3.A4
24	X3.B3	24	X3.A4	24	Y9.B4	24	Y6.A4	24	Y3.B4
25	X6.A1	25	X3.B4	25	Y9.A3	25	Y6.B4	25	Y3.A3
26	X6.B1	26	X6.A2	26	Y9.B3	26	Y6.A3	26	Y3.B3
27	X6.A3	27	X6.B2	27	Y9.A2	27	Y6.B3	27	Y3.A2
28	X6.B3	28	X6.A4	28	Y9.B2	28	Y6.A2	28	Y3.B2
29	X9.A1	29	X6.B4	29	Y9.A1	29	Y6.B2	29	Y3.A1
30	X9.B1	30	X9.A2	30	Y9.B1	30	Y6.A1	30	Y3.B1
31	X9.A3	31	X9.B2	31	X9.A4	31	Y6.B1	31	FP-OPEN[1]
32	X9.B3	32	SHIELD	32	X9.B4	32	SHIELD	32	FP-GND[1]

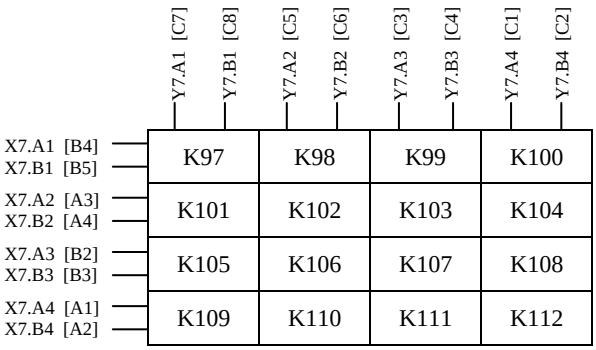
NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

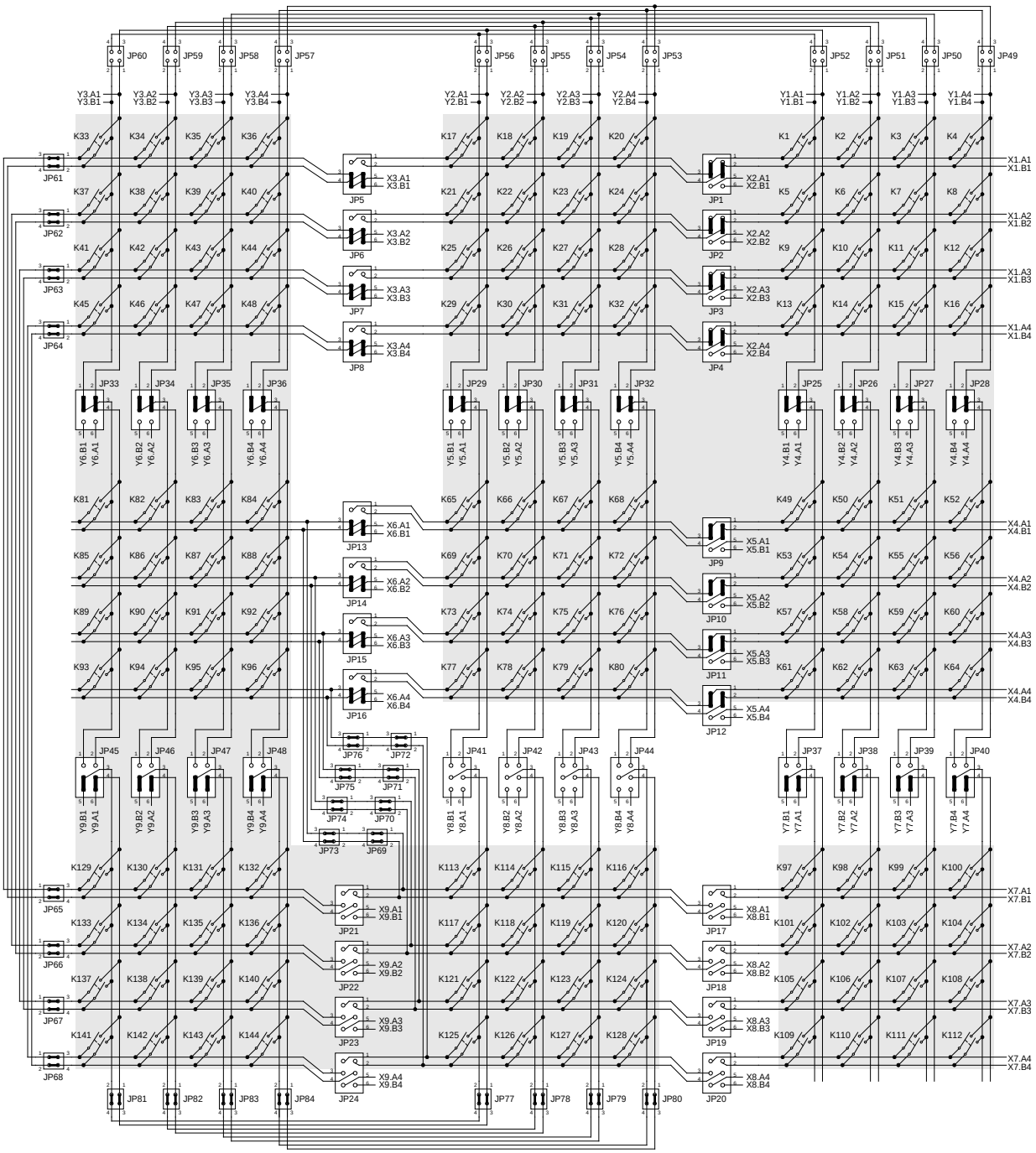
SMP4007 FRONT PANEL PIN-OUT CONFIGURATION — TABLE 2







Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP4007 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4007 RELAY REGISTER MAP — TABLE 3

Offset (Hex)																
12																
10	K144	K143	K142	K141	K140	K139	K138	K137	K136	K135	K134	K133	K132	K131	K130	K129
E	K128	K127	K126	K125	K124	K123	K122	K121	K120	K119	K118	K117	K116	K115	K114	K113
C	K112	K111	K110	K109	K108	K107	K106	K105	K104	K103	K102	K101	K100	K99	K98	K97
A	K96	K95	K94	K93	K92	K91	K90	K89	K88	K87	K86	K85	K84	K83	K82	K81
8	K80	K79	K78	K77	K76	K75	K74	K73	K72	K71	K70	K69	K68	K67	K66	K65
6	K64	K63	K62	K61	K60	K59	K58	K57	K56	K55	K54	K53	K52	K51	K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4007 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	Matrix
CHANNELS	As Configured
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 3 ms
RATED SWITCH OPERATIONS	
Mechanical	1×10^7
Electrical	1×10^6 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	300 V ac rms, 300 V dc
MAXIMUM SWITCHING CURRENT	2 A / Channel
MAXIMUM SWITCHING POWER	60 W dc, 125 VA
DC PERFORMANCE	
PATH RESISTANCE	< 0.5 Ω
INSULATION RESISTANCE	$> 1 \times 10^9$ Ω
MAXIMUM THERMAL OFFSET / CHANNEL (HI-LO)	< 7 µV
MINIMUM CONTACT RATING	10 mV dc, 10 µA
CAPACITANCE	
Open Channel	< 50 pF
Channel-Mainframe	< 80 pF
High-Low	< 50 pF
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 30 MHz
INSERTION LOSS	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 1.0 dB
CROSSTALK	
100 kHz	< -80 dB
1 MHz	< -70 dB
10 MHz	< -50 dB
ISOLATION	
100 kHz	< -80 dB
1 MHz	< -60 dB
10 MHz	< -50 dB

ACCESSORIES

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP4024

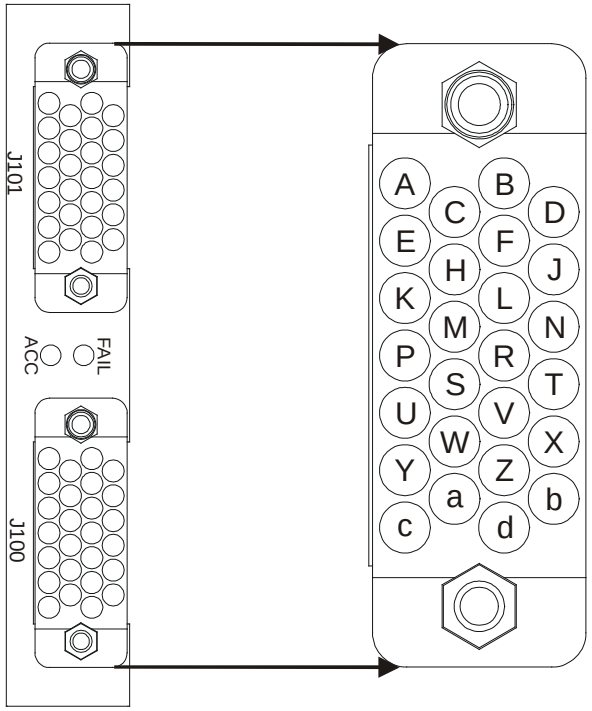
SMP4024 – DUAL 2 X 24 COAXIAL MATRIX

The SMP4024 consists of two individual 2 x 24 coaxial matrices. All relays are driven from the VXIbus +5 V supply line, since VXIbus mainframes always have ample current capacity on this line, as opposed to the +24 or +12 V supply lines. This appendix shows the 26-pin connector, connector pin assignments, schematic, relay register map, and electrical specifications

The SMP4000 series high-density matrix modules are designed for applications that require true non-blocking operation. This provides the ability to connect any input to any output. The SMP4024 is configured with 2 x 12 building blocks that can easily be expanded to meet specific requirements. For example a single module can be expanded into a 2 x 48 matrix or two 2x12 matrices, or a number of other configurations with added SMP4024 modules.

The high density, modular architecture of the SMIP *II* family provides the basis for extremely flexible and easily reconfigurable matrix switch systems.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP4024 CONNECTOR PIN LOCATIONS – FIGURE 1

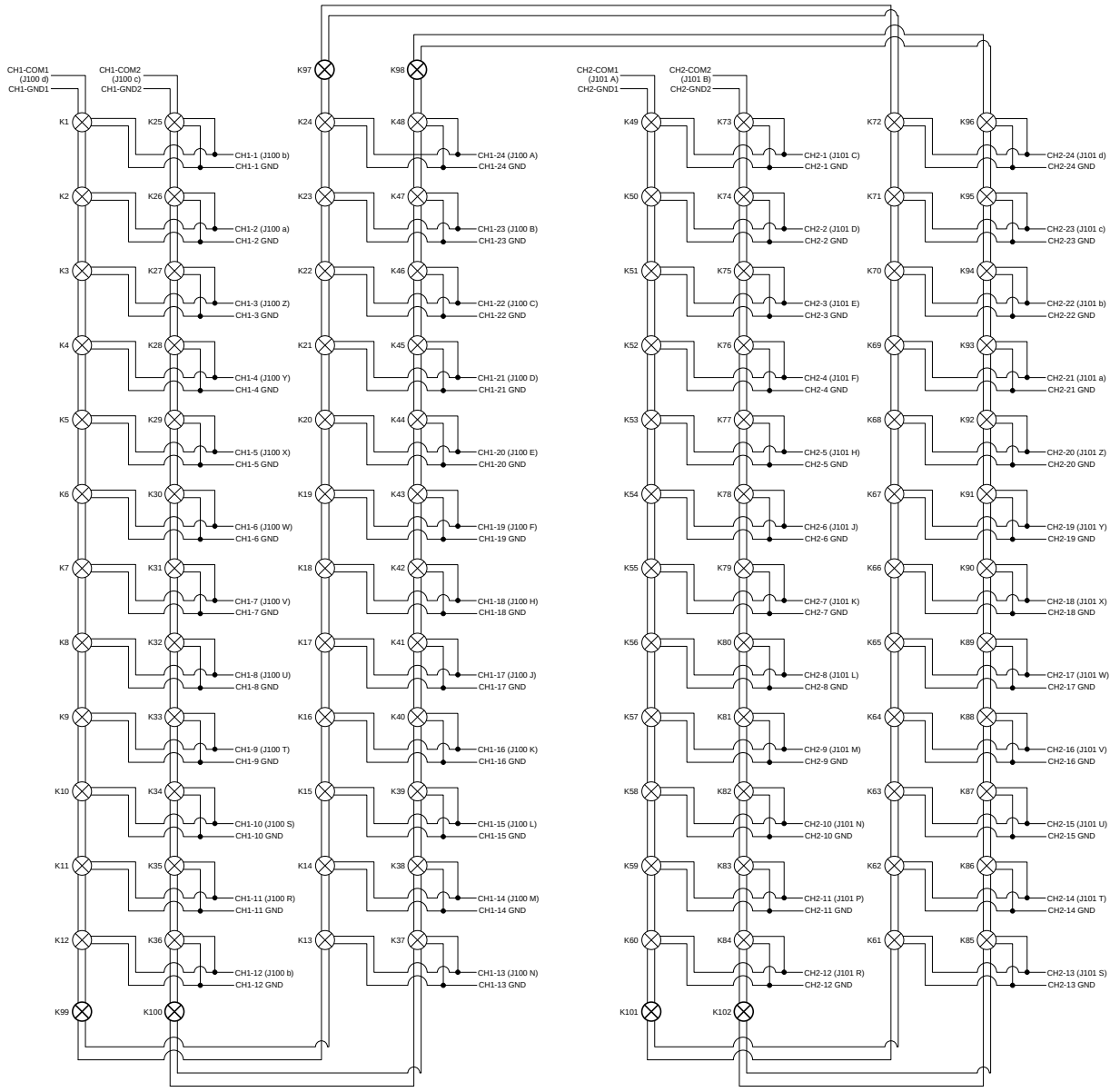
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4024 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

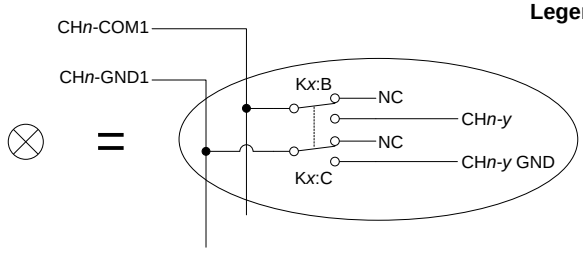
J101		J100	
PIN	**SIGNAL / SHIELD**	**PIN**	**SIGNAL / SHIELD**
A	CH2-COM1 / CH2-GND1	A	CH1-24 / CH1-24 GND
B	CH2-COM2 / CH2-GND2	B	CH1-23 / CH1-23 GND
C	CH2-1 / CH2-1 GND	C	CH1-22 / CH1-22 GND
D	CH2-2 / CH2-2 GND	D	CH1-21 / CH1-21 GND
E	CH2-3 / CH2-3 GND	E	CH1-20 / CH1-20 GND
F	CH2-4 / CH2-4 GND	F	CH1-19 / CH1-19 GND
H	CH2-5 / CH2-5 GND	H	CH1-18 / CH1-18 GND
J	CH2-6 / CH2-6 GND	J	CH1-17 / CH1-17 GND
K	CH2-7 / CH2-7 GND	K	CH1-16 / CH1-16 GND
L	CH2-8 / CH2-8 GND	L	CH1-15 / CH1-15 GND
M	CH2-9 / CH2-9 GND	M	CH1-14 / CH1-14 GND
N	CH2-10 / CH2-10 GND	N	CH1-13 / CH1-13 GND
P	CH2-11 / CH2-11 GND	P	CH1-12 / CH1-12 GND
R	CH2-12 / CH2-12 GND	R	CH1-11 / CH1-11 GND
S	CH2-13 / CH2-13 GND	S	CH1-10 / CH1-10 GND
T	CH2-14 / CH2-14 GND	T	CH1-9 / CH1-9 GND
U	CH2-15 / CH2-15 GND	U	CH1-8 / CH1-8 GND
V	CH2-16 / CH2-16 GND	V	CH1-7 / CH1-7 GND
W	CH2-17 / CH2-17 GND	W	CH1-6 / CH1-6 GND
X	CH2-18 / CH2-18 GND	X	CH1-5 / CH1-5 GND
Y	CH2-19 / CH2-19 GND	Y	CH1-4 / CH1-4 GND
Z	CH2-20 / CH2-20 GND	Z	CH1-3 / CH1-3 GND
a	CH2-21 / CH2-21 GND	a	CH1-2 / CH1-2 GND
b	CH2-22 / CH2-22 GND	b	CH1-1 / CH1-1 GND
c	CH2-23 / CH2-23 GND	c	CH1-COM2 / CH1-GND2
d	CH2-24 / CH2-24 GND	d	CH1-COM1 / CH1-GND1

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

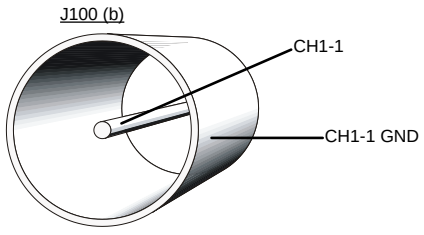


Legend



Where: *x* = switch number (1 through 102)
n = channel number (1 or 2)
y = output signal (1 through 24)

For example, the output signals CH2-12 and CH2-12 GND on Channel 2 is controlled by switches K60 and K84.



Channel 1-1 Connector Signals

SMP4024 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4024 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C											K102	K101	K100	K99	K98	K97
A	K96	K95	K94	K93	K92	K91	K90	K89	K88	K87	K86	K85	K84	K83	K82	K81
8	K80	K79	K78	K77	K76	K75	K74	K73	K72	K71	K70	K69	K68	K67	K66	K65
6	K64	K63	K62	K61	K60	K59	K58	K57	K56	K55	K54	K53	K52	K51	K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4024 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	RF
CHANNELS	Two 2 x 24 Coaxial Matrices
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 4 ms
RATED SWITCH OPERATIONS	
Mechanical	5×10^7
Electrical	1×10^5 (Full Load)
CHARACTERISTIC IMPEDANCE	93 Ω
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	110 V dc, 125 V ac
MAXIMUM SWITCHING CURRENT	1 A
MINIMUM CURRENT RATING	200 mA
MAXIMUM SWITCHING POWER	30 W, 37.5 VA
DC PERFORMANCE	
PATH RESISTANCE	< 1 Ω
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 50 MHz
INSERTION LOSS	
1 MHz	< 0.1 dB
10 MHz	< 0.5 dB
50 MHz	< 3.0 dB
ISOLATION/CROSSTALK	
1 MHz	< -60 dB
10 MHz	< -45 dB
50 MHz	< -40 dB

ACCESSORIES

70-0149-001: 10-Pin/Ferrule Kit (RG178 50 Ω)

Desc: Contact, Coax, Pin (Qty: 10)	Mfgr.: AMP	Mfgr P/N: 226537-2	Contact Info: 800-522-6752/www.amp.com
Desc: Ferrule; Qty: 10	Mfgr.: AMP	Mfgr P/N: 1-332057-0	Contact Info: 800-522-6752/www.amp.com

70-0149-000: 10-Pin/Ferrule Kit (RG316 50 Ω)

Desc: Contact, Coax, Pin (Qty: 10)	Mfgr.: AMP	Mfgr P/N: 226537-1	Contact Info: 800-522-6752/www.amp.com
Desc: Ferrule, Qty: 10	Mfgr.: AMP	Mfgr P/N: 1-332056-0	Contact Info: 800-522-6752/www.amp.com

70-0150-000: 26-Pin Connector & Cable Housing (No Pins) 2 Required

Desc: Connector Housing	Mfgr.: AMP	Mfgr P/N: 201359-1	Contact Info: 800-522-6752/www.amp.com
Desc: Connector Strain Relief, 26-Pin	Mfgr.: AMP	Mfgr P/N: 201845-1	Contact Info: 800-522-6752/www.amp.com

52-0247-036: 50 Ω RF Cable, 36 Inches

Desc: 50 Ω RF Cable, 36 Inches	Mfgr.: VXI Tech	Mfgr P/N: 52-0247-036	Contact Info: 949-955-1VXI/www.vxitech.com

46-0021-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: AMP	Mfgr P/N: 305183	Contact Info: 800-522-6752/www.amp.com

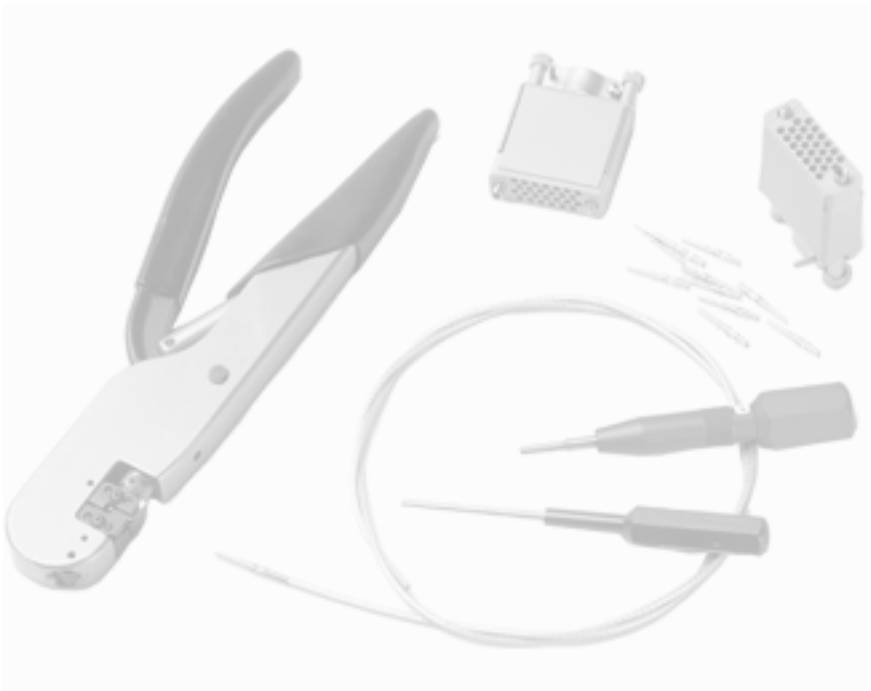
46-0018-001: Crimp Tool, Coax RG174 50 Ω

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656	Contact Info: 800-522-6752/www.amp.com

46-0018-000: Crimp Tool, Coax RG178 50 Ω

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656-2	Contact Info: 800-522-6752/www.amp.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP4028

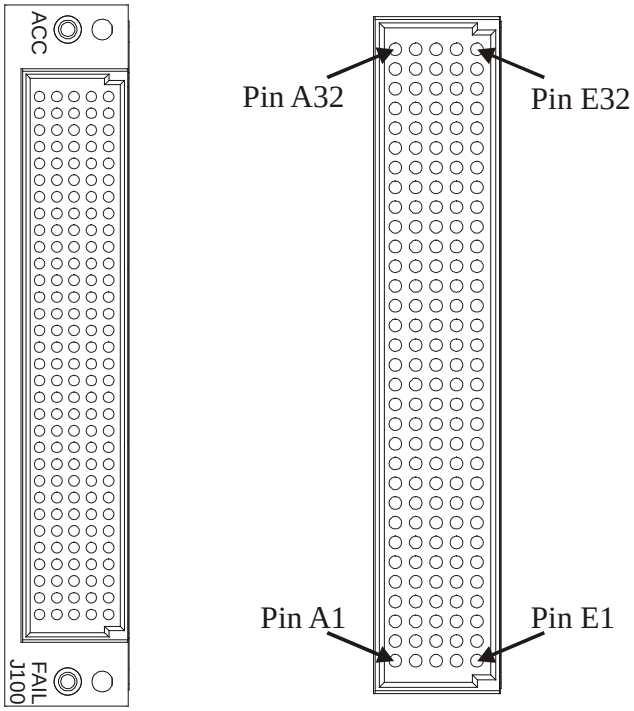
SMP4028– 8 (2 X 8) 1-WIRE MATRICES

The SMP4028 consists of eight individual (2 x 8) 1-wire matrices. All relays are driven from the VXIbus +5 V supply line, since VXIbus mainframes always have ample current capacity on this line, as opposed to the +24 V or +12 V supply lines. This appendix shows the 160-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP4000 series high-density matrix modules are designed for applications that require true non-blocking operation. This provides the ability to connect any input to any output. The SMP4028 is configured with 2 x 8 building blocks that can easily be expanded to meet specific requirements. For example a single module can be expanded into a 2 x 64 matrix, a 16 x 8, or any number of other intermediate configurations.

The high density, modular architecture of the SMIP *II* family provides the basis for extremely flexible and easily reconfigurable matrix switch systems.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP4028 CONNECTOR PIN LOCATIONS – FIGURE 1

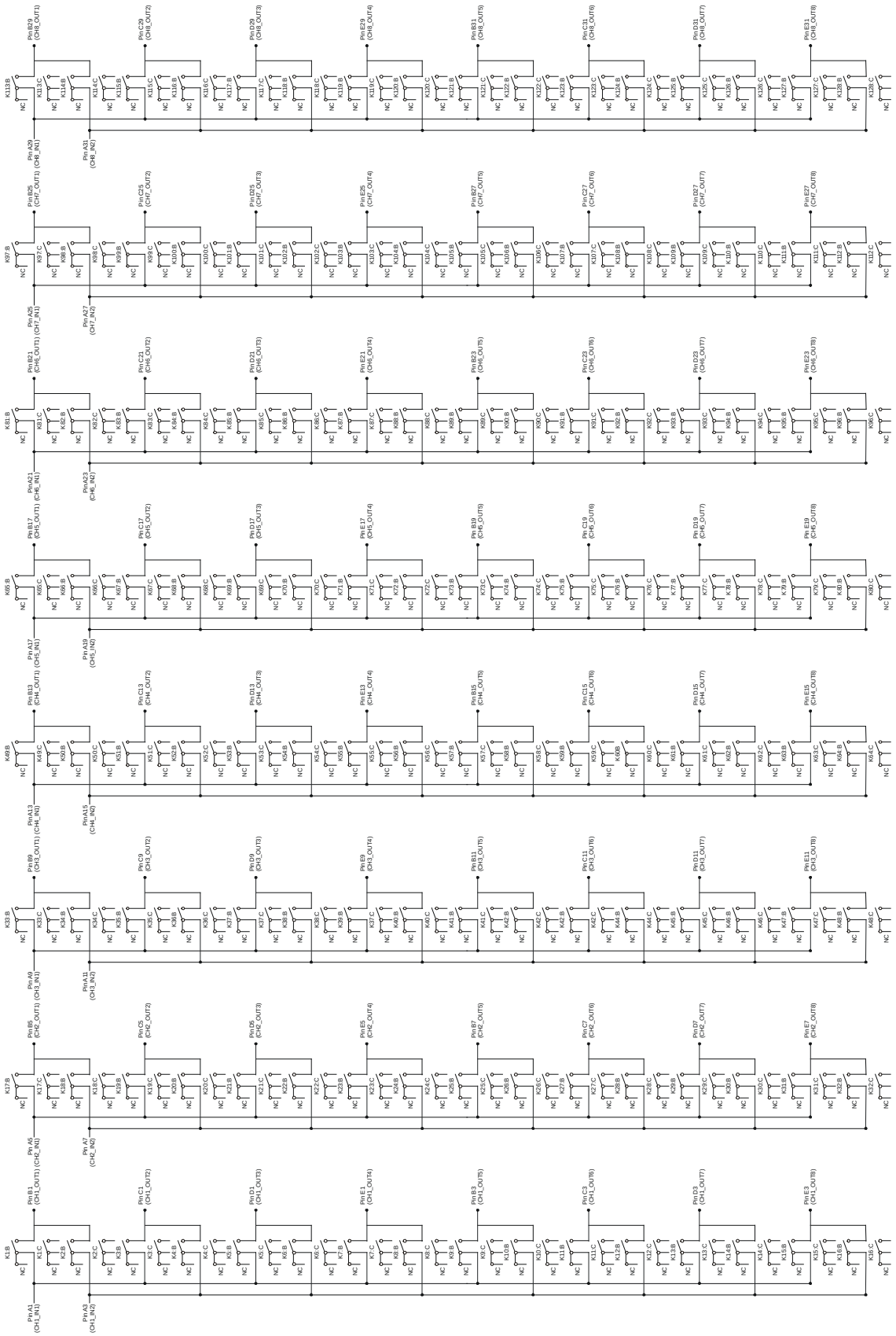
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4028 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	CH1_IN1	1	CH1_OUT1	1	CH1_OUT2	1	CH1_OUT3	1	CH1_OUT4
2	SHIELD1	2	SHIELD1	2	SHIELD1	2	SHIELD1	2	SHIELD1
3	CH1_IN2	3	CH1_OUT5	3	CH1_OUT6	3	CH1_OUT7	3	CH1_OUT8
4	SHIELD1	4	SHIELD1	4	SHIELD1	4	SHIELD1	4	SHIELD1
5	CH2_IN1	5	CH2_OUT1	5	CH2_OUT2	5	CH2_OUT3	5	CH2_OUT4
6	SHIELD2	6	SHIELD2	6	SHIELD2	6	SHIELD2	6	SHIELD2
7	CH2_IN2	7	CH2_OUT5	7	CH2_OUT6	7	CH2_OUT7	7	CH2_OUT8
8	SHIELD2	8	SHIELD2	8	SHIELD2	8	SHIELD2	8	SHIELD2
9	CH3_IN1	9	CH3_OUT1	9	CH3_OUT2	9	CH3_OUT3	9	CH3_OUT4
10	SHIELD3	10	SHIELD3	10	SHIELD3	10	SHIELD3	10	SHIELD3
11	CH3_IN2	11	CH3_OUT5	11	CH3_OUT6	11	CH3_OUT7	11	CH3_OUT8
12	SHIELD3	12	SHIELD3	12	SHIELD3	12	SHIELD3	12	SHIELD3
13	CH4_IN1	13	CH4_OUT1	13	CH4_OUT2	13	CH4_OUT3	13	CH4_OUT4
14	SHIELD4	14	SHIELD4	14	SHIELD4	14	SHIELD4	14	SHIELD4
15	CH4_IN2	15	CH4_OUT5	15	CH4_OUT6	15	CH4_OUT7	15	CH4_OUT8
16	SHIELD4	16	SHIELD4	16	SHIELD4	16	SHIELD4	16	SHIELD4
17	CH5_IN1	17	CH5_OUT1	17	CH5_OUT2	17	CH5_OUT3	17	CH5_OUT4
18	SHIELD5	18	SHIELD5	18	SHIELD5	18	SHIELD5	18	SHIELD5
19	CH5_IN2	19	CH5_OUT5	19	CH5_OUT6	19	CH5_OUT7	19	CH5_OUT8
20	SHIELD5	20	SHIELD5	20	SHIELD5	20	SHIELD5	20	SHIELD5
21	CH6_IN1	21	CH6_OUT1	21	CH6_OUT2	21	CH6_OUT3	21	CH6_OUT4
22	SHIELD6	22	SHIELD6	22	SHIELD6	22	SHIELD6	22	SHIELD6
23	CH6_IN2	23	CH6_OUT5	23	CH6_OUT6	23	CH6_OUT7	23	CH6_OUT8
24	SHIELD6	24	SHIELD6	24	SHIELD6	24	SHIELD6	24	SHIELD6
25	CH7_IN1	25	CH7_OUT1	25	CH7_OUT2	25	CH7_OUT3	25	CH7_OUT4
26	SHIELD7	26	SHIELD7	26	SHIELD7	26	SHIELD7	26	SHIELD7
27	CH7_IN2	27	CH7_OUT5	27	CH7_OUT6	27	CH7_OUT7	27	CH7_OUT8
28	SHIELD7	28	SHIELD7	28	SHIELD7	28	SHIELD7	28	SHIELD7
29	CH8_IN1	29	CH8_OUT1	29	CH8_OUT2	29	CH8_OUT3	29	CH8_OUT4
30	SHIELD8	30	SHIELD8	30	SHIELD8	30	SHIELD8	30	SHIELD8
31	CH8_IN2	31	CH8_OUT5	31	CH8_OUT6	31	CH8_OUT7	31	CH8_OUT8
32	SHIELD8	32	SHIELD8	32	SHIELD8	32	FP-OPEN[1]	32	FP-GND[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP4028 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4028 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E	K128	K127	K126	K125	K124	K123	K122	K121	K120	K119	K118	K117	K116	K115	K114	K113
C	K112	K111	K110	K109	K108	K107	K106	K105	K104	K103	K102	K101	K100	K99	K98	K97
A	K96	K95	K94	K93	K92	K91	K90	K89	K88	K87	K86	K85	K84	K83	K82	K81
8	K80	K79	K78	K77	K76	K75	K74	K73	K72	K71	K70	K69	K68	K67	K66	K65
6	K64	K63	K62	K61	K60	K59	K58	K57	K56	K55	K54	K53	K52	K51	K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4028 Specifications and Accessories

General Specifications	
Model Type	Matrix
Channels	8 (2x8) 1-wire channels
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 3 ms
Rated Switch Operations	
Mechanical	1×10^7
Electrical	1×10^6 (Full Load)
Power Specifications	
Maximum Switching Voltage	300 V ac, 300 V dc
Maximum Switching Current	2 A
Maximum Switching Power	60 W dc, 125 VA
DC Performance	
Path Resistance	< 1 Ω
Insulation Resistance	$> 1 \times 10^9$ Ω
Minimum Contact Rating	10 mV dc, 10 µA
Maximum Thermal Offset / Channel (HI-LO)	< 7 µV
Capacitance	
Open Channel	< 50 pF
Channel-Mainframe	< 80 pF)
High-Low	< 50 pF
AC Performance	
Bandwidth (-3 dB)	> 25 MHz
Insertion Loss	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 1.0 dB
Crosstalk	
100 kHz	< -80 dB
1 MHz	< -70 dB
10 MHz	< -50 dB
Isolation	
100 kHz	< -80 dB
1 MHz	< -70 dB
10 MHz	< -60 dB

Accessories

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

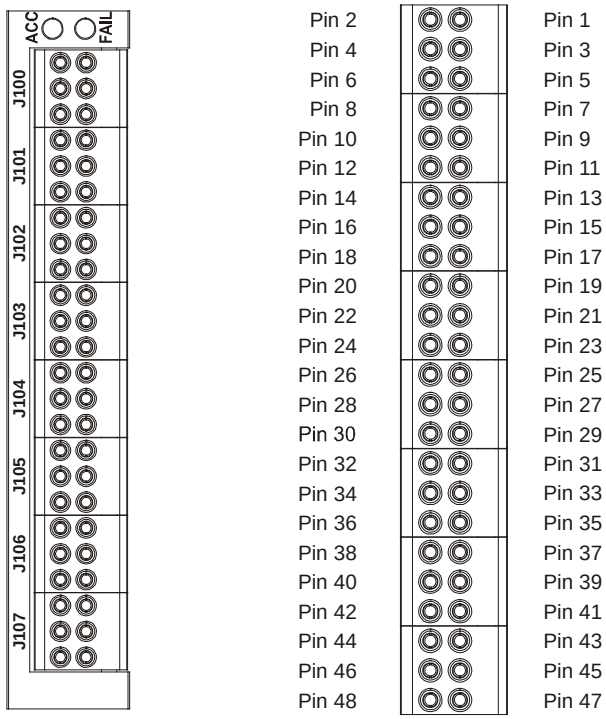
APPENDIX SMP4044

SMP4044 – 8X20 COAXIAL MATRIX

The SMP4044 high-density matrix is designed for applications that require matrix switching in a shielded coaxial environment. This card provides the ability to connect any input to any output. It is ideally suited for signal routing and connection of arbitrary waveform sources, pulse generators, and other stimulus and environment instrumentation. This appendix shows the 48-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

Expandability was a key design goal with the SMP4044. A convenient front panel connector has been incorporated into the module to permit convenient external bussing. The high density, modular architecture of the SMP *II* family provides the basis for extremely flexible and easily reconfigurable matrix switch systems.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP4044 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

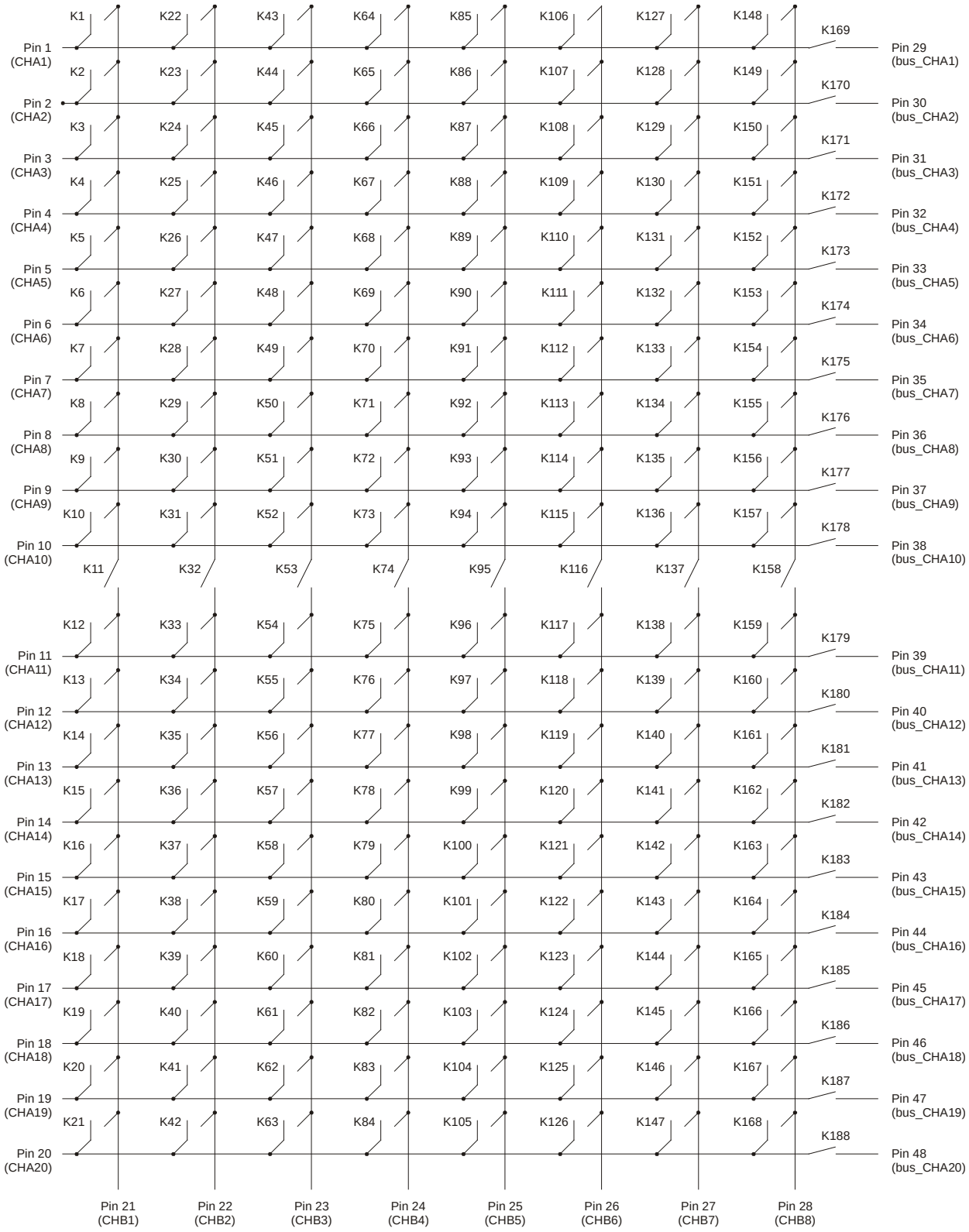
SMP4044 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

PIN	SIGNAL
1	CHA1
2	CHA2
3	CHA3
4	CHA4
5	CHA5
6	CHA6
7	CHA7
8	CHA8
9	CHA9
10	CHA10
11	CHA11
12	CHA12
13	CHA13
14	CHA14
15	CHA15
16	CHA16
17	CHA17
18	CHA18
19	CHA19
20	CHA20

PIN	SIGNAL
21	CHB1
22	CHB2
23	CHB3
24	CHB4
25	CHB5
26	CHB6
27	CHB7
28	CHB8

PIN	SIGNAL
29	bus_CHA1
30	bus_CHA2
31	bus_CHA3
32	bus_CHA4
33	bus_CHA5
34	bus_CHA6
35	bus_CHA7
36	bus_CHA8
37	bus_CHA9
38	bus_CHA10
39	bus_CHA11
40	bus_CHA12
41	bus_CHA13
42	bus_CHA14
43	bus_CHA15
44	bus_CHA16
45	bus_CHA17
46	bus_CHA18
47	bus_CHA19
48	bus_CHA20

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP4044 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4044 RELAY REGISTER MAP — TABLE 3

Offset (Hex)																
16					K188	K187	K186	K185	K184	K183	K182	K181	K180	K179	K178	K177
14	K176	K175	K174	K173	K172	K171	K170	K169	K168	K167	K166	K165	K164	K163	K162	K161
12	K160	K159	K158	K157	K156	K155	K154	K153	K152	K151	K150	K149	K148	K147	K146	K145
10	K144	K143	K142	K141	K140	K139	K138	K137	K136	K135	K134	K133	K132	K131	K130	K129
E	K128	K127	K126	K125	K124	K123	K122	K121	K120	K119	K118	K117	K116	K115	K114	K113
C	K112	K111	K110	K109	K108	K107	K106	K105	K104	K103	K102	K101	K100	K99	K98	K97
A	K96	K95	K94	K93	K92	K91	K90	K89	K88	K87	K86	K85	K84	K83	K82	K81
8	K80	K79	K78	K77	K76	K75	K74	K73	K72	K71	K70	K69	K68	K67	K66	K65
6	K64	K63	K62	K61	K60	K59	K58	K57	K56	K55	K54	K53	K52	K51	K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP4044 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	Matrix
CHANNELS	1 (8x20) 1-wire channels
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 3 ms
RATED SWITCH OPERATIONS	
Mechanical	1×10^7
Electrical	5×10^5 (Full Load)
CHARACTERISTIC IMPEDANCE	50 Ω
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	125 V ac, 125 V dc
MAXIMUM SWITCHING CURRENT	1 A
MAXIMUM SWITCHING POWER	30 W dc, 37 VA
DC PERFORMANCE	
PATH RESISTANCE	< 1.0 Ω
INSULATION RESISTANCE	$> 1 \times 10^9$ Ω
MAXIMUM THERMAL OFFSET / CHANNEL (HI-LO)	< 7 µV
MINIMUM CONTACT RATING	100 mV dc, 100 µA
CAPACITANCE	
Open Channel	< 50 pF
Channel-Mainframe	< 20 pF
High-Low	< 50 pF
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 60 MHz
INSERTION LOSS	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 0.5 dB
CROSSTALK	
100 kHz	< -90 dB
1 MHz	< -70 dB
10 MHz	< -50 dB
ISOLATION	
100 kHz	< -90 dB
1 MHz	< -70 dB
10 MHz	< -50 dB

ACCESSORIES

27-0260-006: Connector, Coaxipack 50 ohm Kit Cable Assemblies, Female, 6 Contacts
Desc: Conn, Coaxipack 50 Ω Kit | Mfgr.: Radiall | Mfgr P/N: R694 252 507 | Contact Info: + 33 1 49 35 35 35/http://www.radiall.com

46-0047-000: Tool, Crimping Tool for Coaxipack2 Female Central Contacts
Desc: Crimp Tool | Mfgr.: Radiall | Mfgr P/N: R282 281 000 | Contact Info: + 33 1 49 35 35 35/http://www.radiall.com

46-0048-000: Tool, Extraction Tool for Female Coaxipack2 Inserts
Desc: Crimp Tool | Mfgr.: Radiall | Mfgr P/N: R282 920 100 | Contact Info: + 33 1 49 35 35 35/http://www.radiall.com

46-0047-001: Tool, Positioner Crimp Tool, Coaxipack2, Female, Central Contacts
Desc: Positioner | Mfgr.: Radiall | Mfgr P/N: R282 967 030 | Contact Info: + 33 1 49 35 35 35/http://www.radiall.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP5001

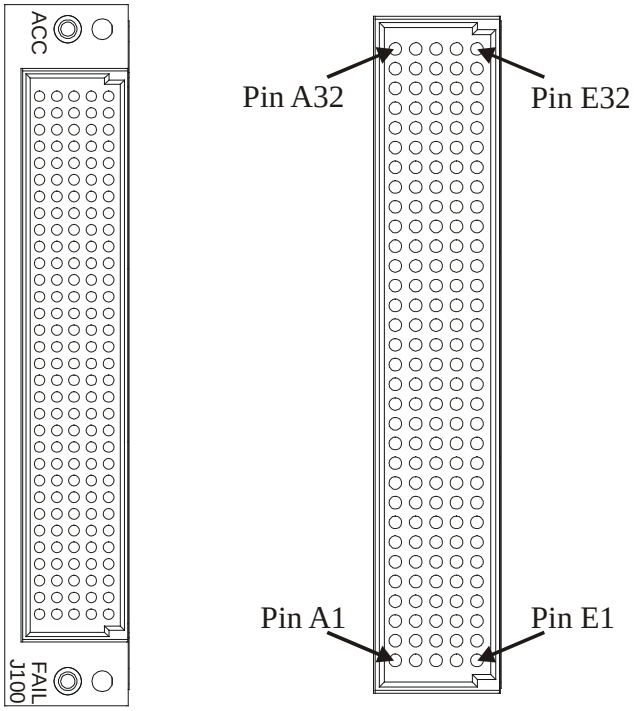
SMP5001 – 80-CHANNEL SPST

The SMP5001 switch module is an 80-channel, 2 amp single-pole, single-throw general purpose relay switch. All relays are independently controllable. Up to 480 individual SPST relays can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density or mixed and matched with other SMIP *II* cards for flexibility. This appendix shows the 160-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP5001 high-density basic switch module is designed for general purpose switching where individual relays can be used to route signals to and from the UUT or combined externally to form user-defined configurations. The latter approach allows the same switch module to be used for testing multiple UUTs by simply changing the configuration within a UUT-specific external adapter.

All relays are driven from the VXIbus +5 V supply line, since VXIbus mainframes always have ample current capability on this supply line, as opposed to the +24 or +12 V supply lines.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



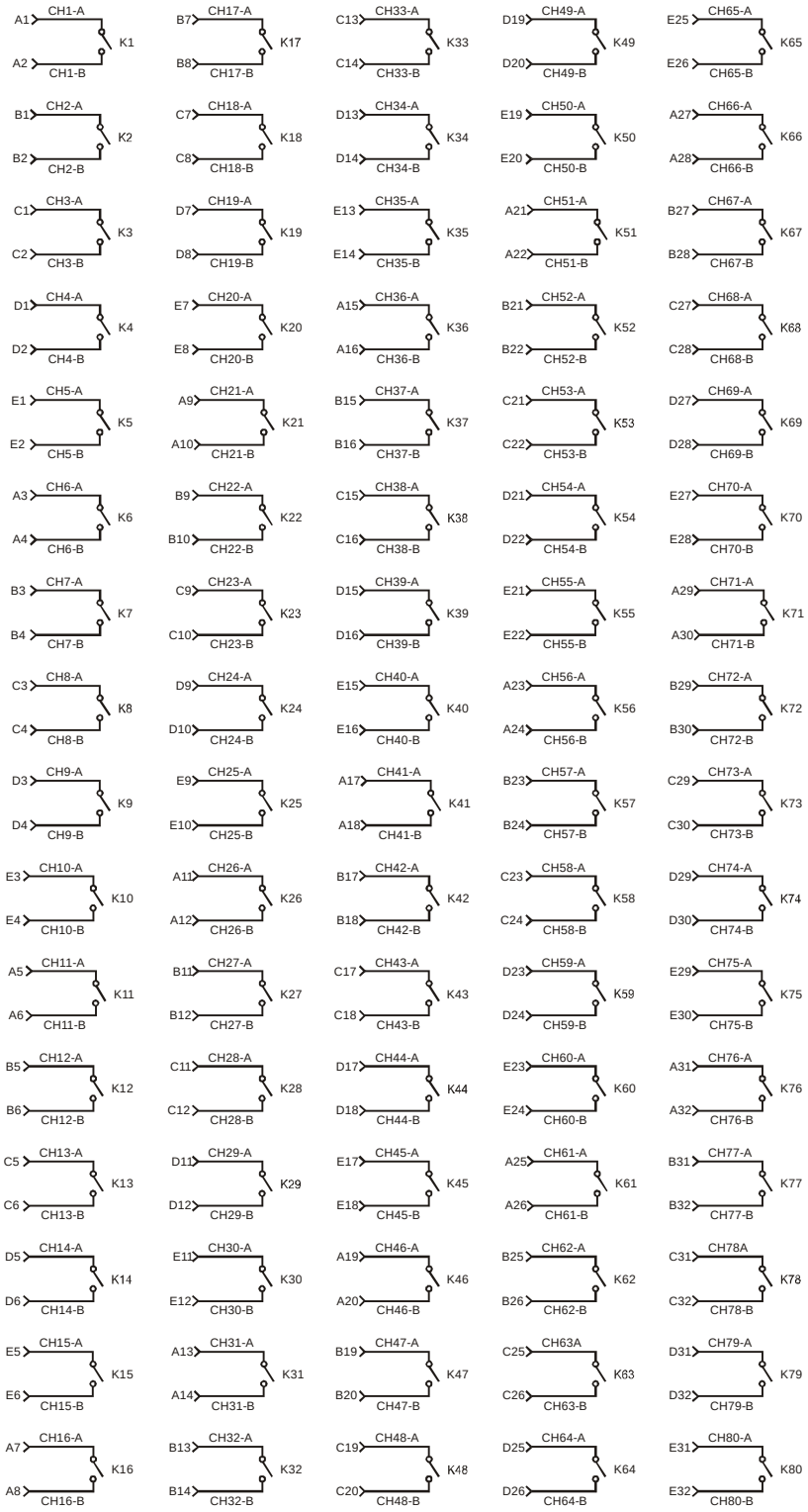
SMP5001 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP5001 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	CH1-A	1	CH2-A	1	CH3-A	1	CH4-A	1	CH5-A
2	CH1-B	2	CH2-B	2	CH3-B	2	CH4-B	2	CH5-B
3	CH6-A	3	CH7-A	3	CH8-A	3	CH9-A	3	CH10-A
4	CH6-B	4	CH7-B	4	CH8-B	4	CH9-B	4	CH10-B
5	CH11-A	5	CH12-A	5	CH13-A	5	CH14-A	5	CH15-A
6	CH11-B	6	CH12-B	6	CH13-B	6	CH14-B	6	CH15-B
7	CH16-A	7	CH17-A	7	CH18-A	7	CH19-A	7	CH20-A
8	CH16-B	8	CH17-B	8	CH18-B	8	CH19-B	8	CH20-B
9	CH21-A	9	CH22-A	9	CH23-A	9	CH24-A	9	CH25-A
10	CH21-B	10	CH22-B	10	CH23-B	10	CH24-B	10	CH25-B
11	CH26-A	11	CH27-A	11	CH28-A	11	CH29-A	11	CH30-A
12	CH26-B	12	CH27-B	12	CH28-B	12	CH29-B	12	CH30-B
13	CH31-A	13	CH32-A	13	CH33-A	13	CH34-A	13	CH35-A
14	CH31-B	14	CH32-B	14	CH33-B	14	CH34-B	14	CH35-B
15	CH36-A	15	CH37-A	15	CH38-A	15	CH39-A	15	CH40-A
16	CH36-B	16	CH37-B	16	CH38-B	16	CH39-B	16	CH40-B
17	CH41-A	17	CH42-A	17	CH43-A	17	CH44-A	17	CH45-A
18	CH41-B	18	CH42-B	18	CH43-B	18	CH44-B	18	CH45-B
19	CH46-A	19	CH47-A	19	CH48-A	19	CH49-A	19	CH50-A
20	CH46-B	20	CH47-B	20	CH48-B	20	CH49-B	20	CH50-B
21	CH51-A	21	CH52-A	21	CH53-A	21	CH54-A	21	CH55-A
22	CH51-B	22	CH52-B	22	CH53-B	22	CH54-B	22	CH55-B
23	CH56-A	23	CH57-A	23	CH58-A	23	CH59-A	23	CH60-A
24	CH56-B	24	CH57-B	24	CH58-B	24	CH59-B	24	CH60-B
25	CH61-A	25	CH62-A	25	CH63-A	25	CH64-A	25	CH65-A
26	CH61-B	26	CH62-B	26	CH63-B	26	CH64-B	26	CH65-B
27	CH66-A	27	CH67-A	27	CH68-A	27	CH69-A	27	CH70-A
28	CH66-B	28	CH67-B	28	CH68-B	28	CH69-B	28	CH70-B
29	CH71-A	29	CH72-A	29	CH73-A	29	CH74-A	29	CH75-A
30	CH71-B	30	CH72-B	30	CH73-B	30	CH74-B	30	CH75-B
31	CH76-A	31	CH77-A	31	CH78-A	31	CH79-A	31	CH80-A
32	CH76-B	32	CH77-B	32	CH78-B	32	CH79-B	32	CH80-B

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP5001 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP5001 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8	K80	K79	K78	K77	K76	K75	K74	K73	K72	K71	K70	K69	K68	K67	K66	K65
6	K64	K63	K62	K61	K60	K59	K58	K57	K56	K55	K54	K53	K52	K51	K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP5001 Specifications and Accessories

General Specifications	
Model Type	General Purpose
Channels	80 SPST
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 3 ms
Rated Switch Operations	
Mechanical	1×10^7
Electrical	1×10^6 (Full Load)
Power Specifications	
Maximum Switching Voltage	300 V ac rms, 300 V dc
Maximum Switching Current	2 A
Maximum Switching Power	60 W dc, 125 VA
DC Performance	
Path Resistance	< 0.3 Ω
Insulation Resistance	$> 1 \times 10^9$ Ω
Maximum Thermal Offset / Channel (HI-LO)	< 7 µV
Minimum Contact Rating	10 mV dc, 10 µA
Capacitance	
Open Channel	< 50 pF
Channel-Mainframe	< 80 pF
High-Low	< 50 pF
AC Performance	
Bandwidth (-3 dB)	> 100 MHz
Insertion Loss	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 1.0 dB
Crosstalk	
100 kHz	< -80 dB
1 MHz	< -60 dB
10 MHz	< -40 dB
Isolation	
100 kHz	< -50 dB
1 MHz	< -45 dB
10 MHz	< -40 dB

Accessories

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP5002

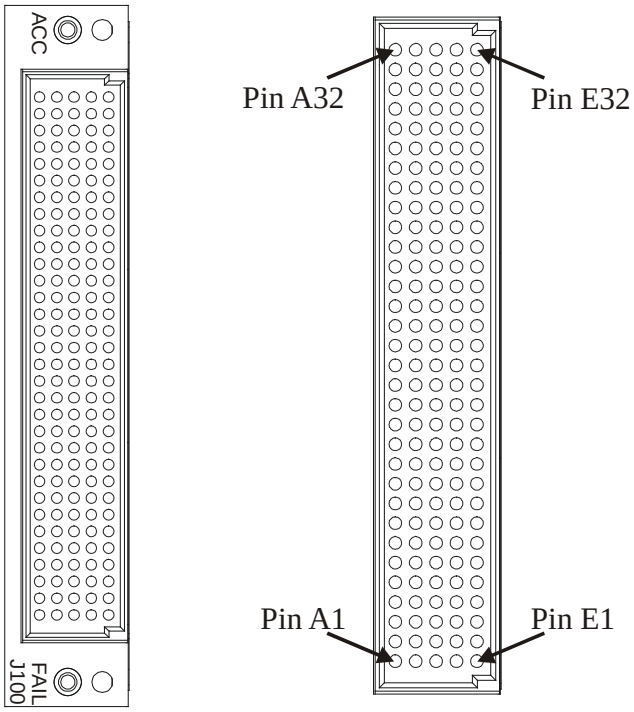
SMP5002 – 50-CHANNEL SPDT

The SMP5002 switch module is a 50-channel, 2 A single-pole, double-throw general purpose relay switch. All relays are independently controllable. Up to 300 individual SPDT relays can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density or mixed and matched with other SMIP *II* cards for flexibility. This appendix shows the 160-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP5002 high-density basic switch module is designed for general purpose switching where individual relays can be used to route signals to and from the UUT or combined externally to form user-defined configurations. The latter approach allows the same switch module to be used for testing multiple UUTs by simply changing the configuration within a UUT-specific external adapter.

All relays are driven from the VXIbus +5 V supply line, since VXIbus mainframes always have ample current capability on this supply line, as opposed to the +24 or +12 V supply lines.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP5002 CONNECTOR PIN LOCATIONS — FIGURE 1

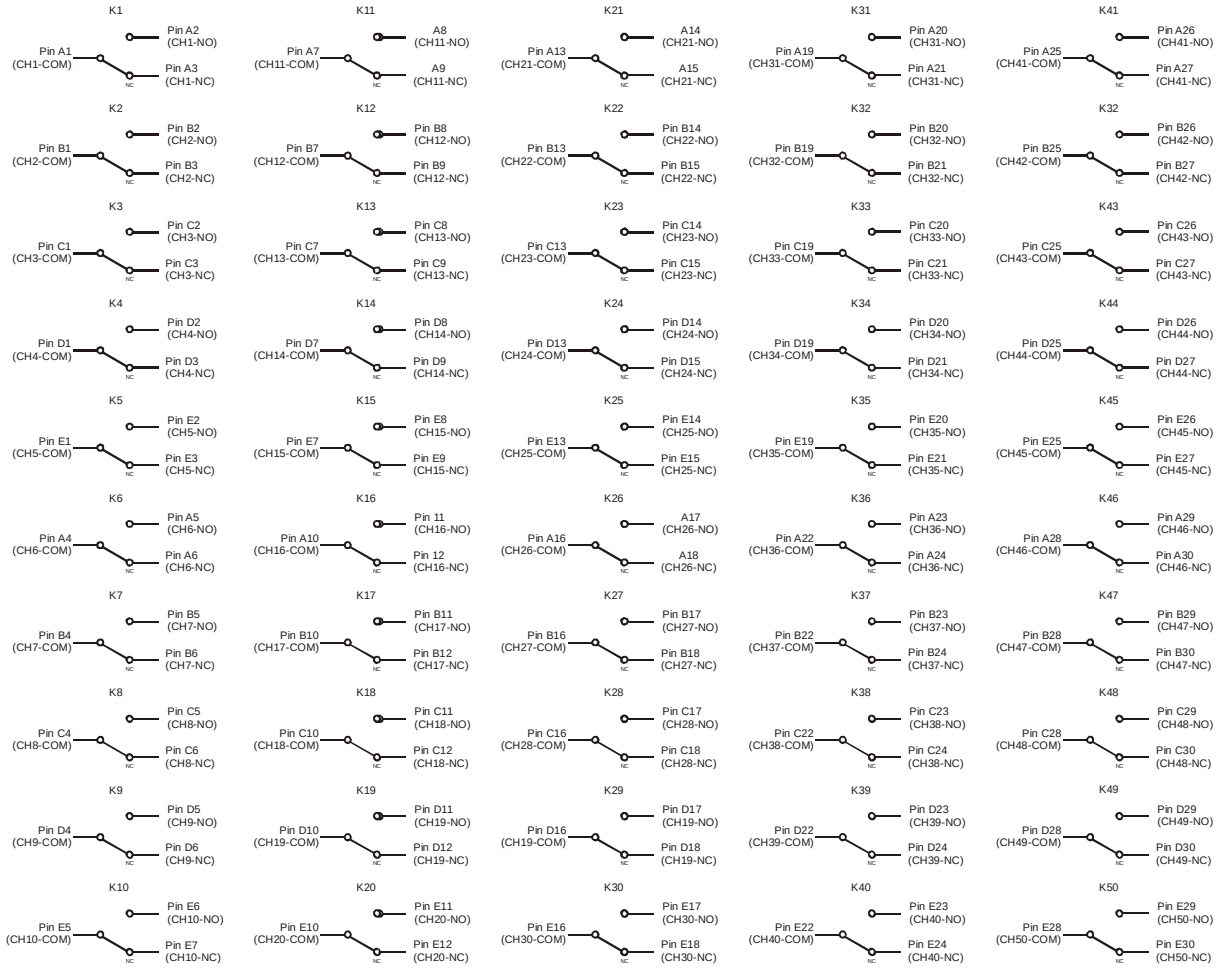
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP5002 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	CH1-COM	1	CH2-COM	1	CH3-COM	1	CH4-COM	1	CH5-COM
2	CH1-NO	2	CH2-NO	2	CH3-NO	2	CH4-NO	2	CH5-NO
3	CH1-NC	3	CH2-NC	3	CH3-NC	3	CH4-NC	3	CH5-NC
4	CH6-COM	4	CH7-COM	4	CH8-COM	4	CH9-COM	4	CH10-COM
5	CH6-NO	5	CH7-NO	5	CH8-NO	5	CH9-NO	5	CH10-NO
6	CH6-NC	6	CH7-NC	6	CH8-NC	6	CH9-NC	6	CH10-NC
7	CH11-COM	7	CH12-COM	7	CH13-COM	7	CH14-COM	7	CH15-COM
8	CH11-NO	8	CH12-NO	8	CH13-NO	8	CH14-NO	8	CH15-NO
9	CH11-NC	9	CH12-NC	9	CH13-NC	9	CH14-NC	9	CH15-NC
10	CH16-COM	10	CH17-COM	10	CH18-COM	10	CH19-COM	10	CH20-COM
11	CH16-NO	11	CH17-NO	11	CH18-NO	11	CH19-NO	11	CH20-NO
12	CH16-NC	12	CH17-NC	12	CH18-NC	12	CH19-NC	12	CH20-NC
13	CH21-COM	13	CH22-COM	13	CH23-COM	13	CH24-COM	13	CH25-COM
14	CH21-NO	14	CH22-NO	14	CH23-NO	14	CH24-NO	14	CH25-NO
15	CH21-NC	15	CH22-NC	15	CH23-NC	15	CH24-NC	15	CH25-NC
16	CH26-COM	16	CH27-COM	16	CH28-COM	16	CH29-COM	16	CH30-COM
17	CH26-NO	17	CH27-NO	17	CH28-NO	17	CH29-NO	17	CH30-NO
18	CH26-NC	18	CH27-NC	18	CH28-NC	18	CH29-NC	18	CH30-NC
19	CH31-COM	19	CH32-COM	19	CH33-COM	19	CH34-COM	19	CH35-COM
20	CH31-NO	20	CH32-NO	20	CH33-NO	20	CH34-NO	20	CH35-NO
21	CH31-NC	21	CH32-NC	21	CH33-NC	21	CH34-NC	21	CH35-NC
22	CH36-COM	22	CH37-COM	22	CH38-COM	22	CH39-COM	22	CH40-COM
23	CH36-NO	23	CH37-NO	23	CH38-NO	23	CH39-NO	23	CH40-NO
24	CH36-NC	24	CH37-NC	24	CH38-NC	24	CH39-NC	24	CH40-NC
25	CH41-COM	25	CH42-COM	25	CH43-COM	25	CH44-COM	25	CH45-COM
26	CH41-NO	26	CH42-NO	26	CH43-NO	26	CH44-NO	26	CH45-NO
27	CH41-NC	27	CH42-NC	27	CH43-NC	27	CH44-NC	27	CH45-NC
28	CH46-COM	28	CH47-COM	28	CH48-COM	28	CH49-COM	28	CH50-COM
29	CH46-NO	29	CH47-NO	29	CH48-NO	29	CH49-NO	29	CH50-NO
30	CH46-NC	30	CH47-NC	30	CH48-NC	30	CH49-NC	30	CH50-NC
31	SHIELD	31	SHIELD	31	SHIELD	31	SHIELD	31	FP-OPEN[1]
32	SHIELD	32	SHIELD	32	SHIELD	32	SHIELD	32	FP-GND[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP5002 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP5002 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6															K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP5002 Specifications and Accessories

General Specifications	
Model Type	General Purpose
Channels	50 SPDT
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 3 ms
Rated Switch Operations	
Mechanical	1×10^7
Electrical	1×10^6 (Full Load)
Power Specifications	
Maximum Switching Voltage	300 V ac rms, 300 V dc
Maximum Switching Current	2 A
Maximum Switching Power	60 W dc, 125 VA
DC Performance	
Path Resistance	< 0.3 Ω
Insulation Resistance	$> 1 \times 10^9$ Ω
Maximum Thermal Offset / Channel (HI-LO)	< 7 µV
Minimum Contact Rating	10 mV dc, 10 µA
Capacitance	
Open Channel	< 50 pF
Channel-Mainframe	< 80 pF
High-Low	< 50 pF
AC Performance	
Bandwidth (-3 dB)	> 100 MHz
Insertion Loss	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 1.0 dB
Crosstalk	
100 kHz	< -80 dB
1 MHz	< -60 dB
10 MHz	< -40 dB
Isolation	
100 kHz	< -50 dB
1 MHz	< -45 dB
10 MHz	< -40 dB

Accessories

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP5003

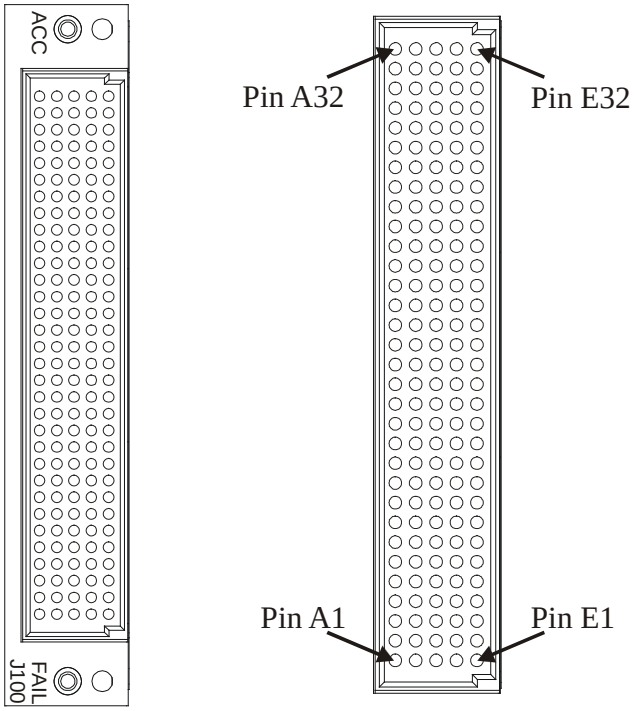
SMP5003 – 26-CHANNEL SP4T

The SMP5003 switch module is a 26-channel, 2 A single-pole, quadruple-throw general purpose relay switch. All relays are independently controllable. Up to 156 SP4T relays can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density or mixed and matched with other SMIP *II* cards for flexibility. This appendix shows the 160-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP5003 high-density basic switch module is designed for general purpose switching where individual relays can be used to route signals to and from the UUT or combined externally to form user-defined configurations. The latter approach allows the same switch module to be used for testing multiple UUTs by simply changing the configuration within a UUT-specific external adapter.

All relays are driven from the VXIbus +5 V supply line, since VXIbus mainframes always have ample current capability on this supply line, as opposed to the +24 V or +12 V supply lines.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP5003 CONNECTOR PIN LOCATIONS — FIGURE 1

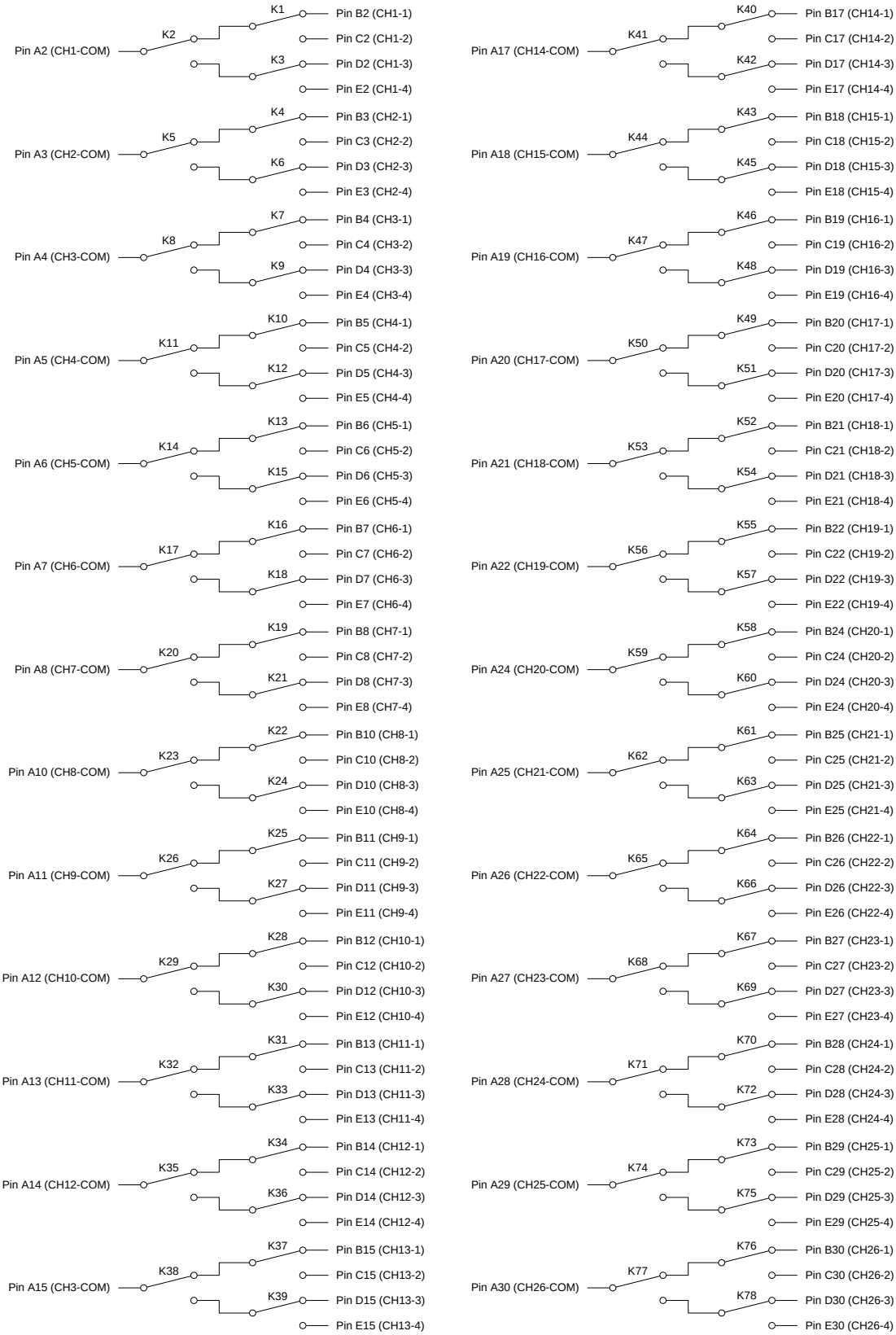
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP5003 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

ROW A	SIGNAL	ROW B	SIGNAL	ROW C	SIGNAL	ROW D	SIGNAL	ROW E	SIGNAL
1	SHIELD	1	SHIELD	1	SHIELD	1	SHIELD	1	SHIELD
2	CH1-COM	2	CH1-1	2	CH1-2	2	CH1-3	2	CH1-4
3	CH2-COM	3	CH2-1	3	CH2-2	3	CH2-3	3	CH2-4
4	CH3-COM	4	CH3-1	4	CH2-2	4	CH3-3	4	CH3-4
5	CH4-COM	5	CH4-1	5	CH4-2	5	CH4-3	5	CH4-4
6	CH5-COM	6	CH5-1	6	CH5-2	6	CH5-3	6	CH5-4
7	CH6-COM	7	CH6-1	7	CH6-2	7	CH6-3	7	CH6-4
8	CH7-COM	8	CH7-1	8	CH7-2	8	CH7-3	8	CH7-4
9	SHIELD	9	SHIELD	9	SHIELD	9	SHIELD	9	SHIELD
10	CH8-COM	10	CH8-1	10	CH8-2	10	CH8-3	10	CH8-4
11	CH9-COM	11	CH9-1	11	CH9-2	11	CH9-3	11	CH9-4
12	CH10-COM	12	CH10-1	12	CH10-2	12	CH10-3	12	CH10-4
13	CH11-COM	13	CH11-1	13	CH11-2	13	CH11-3	13	CH11-4
14	CH12-COM	14	CH12-1	14	CH12-2	14	CH12-3	14	CH12-4
15	CH13-COM	15	CH13-1	15	CH13-2	15	CH13-3	15	CH13-4
16	SHIELD	16	SHIELD	16	SHIELD	16	SHIELD	16	SHIELD
17	CH14-COM	17	CH14-1	17	CH14-2	17	CH14-3	17	CH14-4
18	CH15-COM	18	CH15-1	18	CH15-2	18	CH15-3	18	CH15-4
19	CH16-COM	19	CH16-1	19	CH16-2	19	CH16-3	19	CH16-4
20	CH17-COM	20	CH17-1	20	CH17-2	20	CH17-3	20	CH17-4
21	CH18-COM	21	CH18-1	21	CH18-2	21	CH18-3	21	CH18-4
22	CH19-COM	22	CH19-1	22	CH19-2	22	CH19-3	22	CH19-4
23	SHIELD	23	SHIELD	23	SHIELD	23	SHIELD	23	SHIELD
24	CH20-COM	24	CH20-1	24	CH20-2	24	CH20-3	24	CH20-4
25	CH21-COM	25	CH21-1	25	CH21-2	25	CH21-3	25	CH21-4
26	CH22-COM	26	CH22-1	26	CH22-2	26	CH22-3	26	CH22-4
27	CH23-COM	27	CH23-1	27	CH23-2	27	CH23-3	27	CH23-4
28	CH24-COM	28	CH24-1	28	CH24-2	28	CH24-3	28	CH24-4
29	CH25-COM	29	CH25-1	29	CH25-2	29	CH25-3	29	CH25-4
30	CH26-COM	30	CH26-1	30	CH26-2	30	CH26-3	30	CH26-4
31	SHIELD	31	SHIELD	31	SHIELD	31	SHIELD	31	FP-OPEN[1]
32	SHIELD	32	SHIELD	32	SHIELD	32	SHIELD	32	FP-GND[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP5003 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP5003 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8			K78	K77	K76	K75	K74	K73	K72	K71	K70	K69	K68	K67	K66	K65
6	K64	K63	K62	K61	K60	K59	K58	K57	K56	K55	K54	K53	K52	K51	K50	K49
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP5003 Specifications and Accessories

General Specifications	
Model Type	General Purpose
Channels	26 SP4T
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 3 ms
Rated Switch Operations	
Mechanical	1×10^7
Electrical	1×10^6 (Full Load)
Power Specifications	
Maximum Switching Voltage	300 V ac rms, 300 V dc
Maximum Switching Current	2 A
Maximum Switching Power	60 W dc, 125 VA
DC Performance	
Path Resistance	< 0.3 Ω
Insulation Resistance	$> 1 \times 10^9$ Ω
Maximum Thermal Offset / Channel (HI-LO)	< 7 µV
Minimum Contact Rating	10 mV dc, 10 µA
Capacitance	
Open Channel	< 50 pF
Channel-Mainframe	< 80 pF
High-Low	< 50 pF
AC Performance	
Bandwidth (-3 dB)	> 100 MHz
Insertion Loss	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 1.0 dB
Crosstalk	
100 kHz	< -80 dB
1 MHz	< -60 dB
10 MHz	< -40 dB
Isolation	
100 kHz	< -50 dB
1 MHz	< -45 dB
10 MHz	< -40 dB

Accessories

52-0236-000: Connector Kit (Includes 160 Pin Connector & Retaining Hardware)

Desc: Connector Kit	Mfgr.: VXI Tech.	Mfgr P/N: 52-0236-000	Contact Info: 949-955-1VXI/www.vxitech.com
Desc: Connector	Mfgr.: ERNI	Mfgr P/N: 024070	Contact Info: 804-530-5012/www.ernicomponents.com
Desc: Retaining Hardware	Mfgr.: VXI Tech.	Mfgr P/N: 41-0298-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0237-000: Strain Relief Brackets

Desc: Strain Relief Brackets	Mfgr.: VXI Tech.	Mfgr P/N: 52-0237-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0110-000: 10-Pin Cable Assembly

Desc: 6 ft 24 GA Teflon, 10 Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0110-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0235-000: Floating Wire Shroud (Does Not Include Connector Pins)

Desc: Floating Wire Shroud	Mfgr.: VXI Tech.	Mfgr P/N: 52-0235-000	Contact Info: 949-955-1VXI/www.vxitech.com

52-0109-001: Crimp Pins (500 per Reel)

Desc: Crimp Pins	Mfgr.: ERNI	Mfgr P/N: 014729	Contact Info: 804-530-5012/www.ernicomponents.com

52-0109-000: Lose Crimp Pins (100 per Bag)

Desc: Lose Crimp Pins	Mfgr.: VXI Tech.	Mfgr P/N: 52-0109-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0010-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: ERNI	Mfgr P/N: 014374	Contact Info: 804-530-5012/www.ernicomponents.com

46-0011-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: ERNI	Mfgr P/N: 471555	Contact Info: 804-530-5012/www.ernicomponents.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP5004

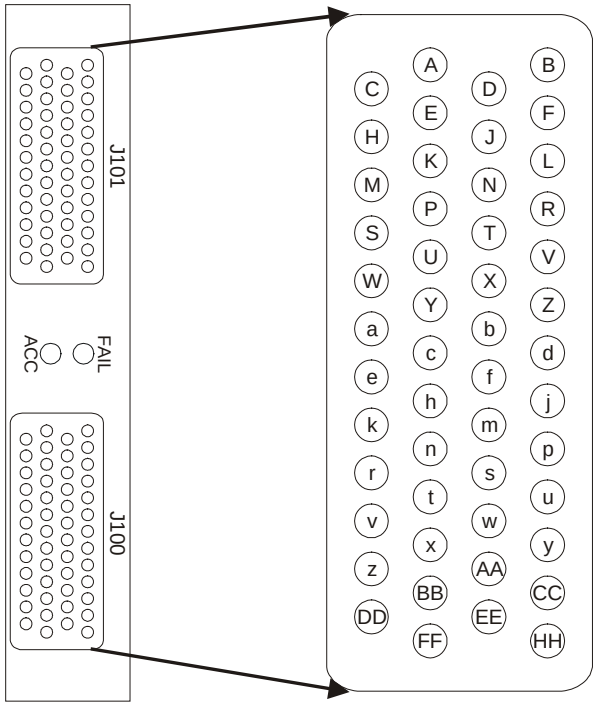
SMP5004 – 30-CHANNEL SPDT

The SMP5004 switch module is a 30-channel, 5 A single-pole, double-throw general purpose relay switch. All relays are independently controllable. This appendix shows the 50-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP5004 high-density 5 A switch module is designed for switching applications such as process control, appliance pass/fail testing, and on/off control. Up to 180 individual SPDT relays can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density or mixed and matched with other SMIP *II* cards for flexibility.

All relays are driven from the VXIbus +5 V supply line, since VXIbus mainframes always have ample current capability on this supply line, as opposed to the +24 V or +12 V supply lines. Since these modules typically switch power to the UUT or interface, a fail-safe interrupt input line is provided on the front panel that can open all relays automatically if a safety condition occurs. This approach instantly removes all power to the UUT or interface.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP5004 CONNECTOR PIN LOCATIONS — FIGURE 1

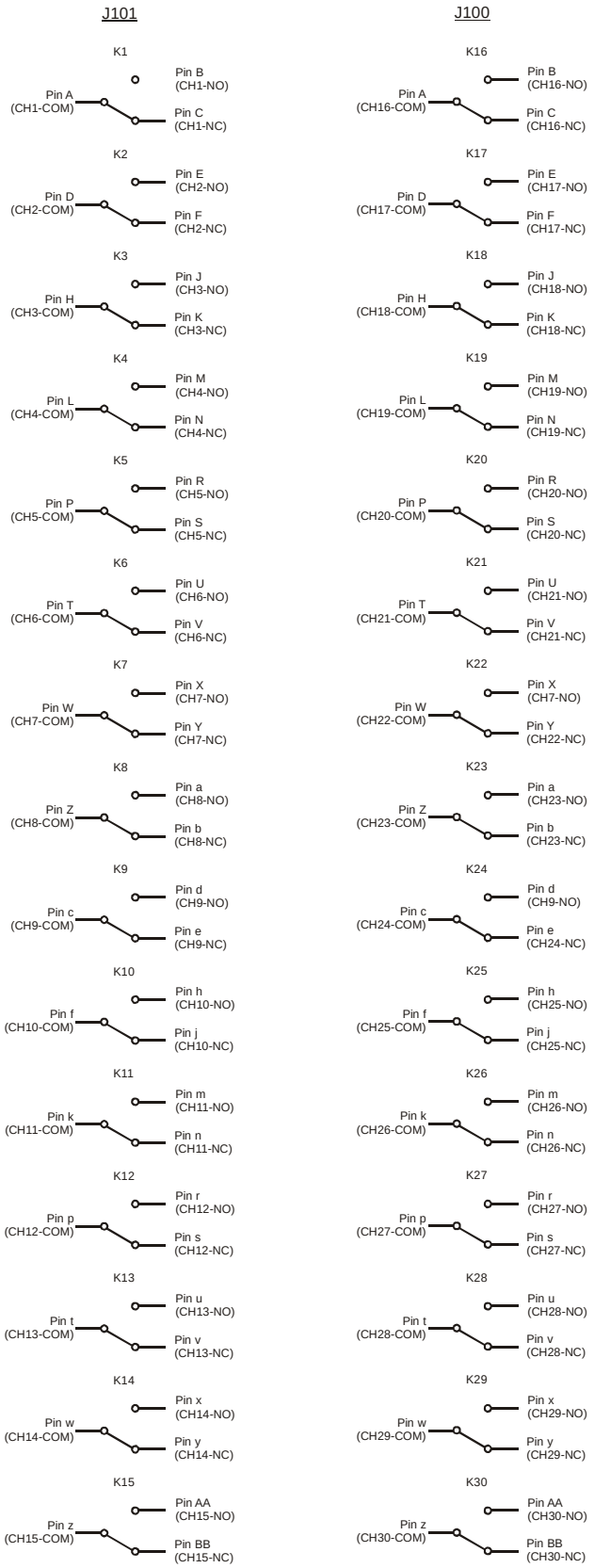
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP5004 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J101				J100			
PIN	**SIGNAL**	**PIN**	**SIGNAL**	**PIN**	**SIGNAL**	**PIN**	**SIGNAL**
A	CH1-COM	d	CH9-NO	A	CH16-COM	d	CH24-NO
B	CH1-NO	e	CH9-NC	B	CH16-NO	e	CH24-NC
C	CH1-NC	f	CH10-COM	C	CH16-NC	f	CH25-COM
D	CH2-COM	h	CH10-NO	D	CH17-COM	h	CH25-NO
E	CH2-NO	j	CH10-NC	E	CH17-NO	j	CH25-NC
F	CH2-NC	k	CH11-COM	F	CH17-NC	k	CH26-COM
H	CH3-COM	m	CH11-NO	H	CH18-COM	m	CH26-NO
J	CH3-NO	n	CH11-NC	J	CH18-NO	n	CH26-NC
K	CH3-NC	p	CH12-COM	K	CH18-NC	p	CH27-COM
L	CH4-COM	r	CH12-NO	L	CH19-COM	r	CH27-NO
M	CH4-NO	s	CH12-NC	M	CH19-NO	s	CH27-NC
N	CH4-NC	t	CH13-COM	N	CH19-NC	t	CH28-COM
P	CH5-COM	u	CH13-NO	P	CH20-COM	u	CH28-NO
R	CH5-NO	v	CH13-NC	R	CH20-NO	v	CH28-NC
S	CH5-NC	w	CH14-COM	S	CH20-NC	w	CH29-COM
T	CH6-COM	x	CH14-NO	T	CH21-COM	x	CH29-NO
U	CH6-NO	y	CH14-NC	U	CH21-NO	y	CH29-NC
V	CH6-NC	z	CH15-COM	V	CH21-NC	z	CH30-COM
W	CH7-COM	AA	CH15-NO	W	CH22-COM	AA	CH30-NO
X	CH7-NO	BB	CH15-NC	X	CH22-NO	BB	CH30-NC
Y	CH7-NC	CC	UNUSED	Y	CH22-NC	CC	UNUSED
Z	CH8-COM	DD	UNUSED	Z	CH23-COM	DD	FP-OPEN[1]
a	CH8-NO	EE	UNUSED	a	CH23-NO	EE	FP-GND[1]
b	CH8-NC	FF	SHEILD	b	CH23-NC	FF	SHEILD
c	CH9-COM	HH	SHEILD	c	CH24-COM	HH	SHEILD

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP5004 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP5004 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2			K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP5004 Specifications and Accessories

General Specifications	
Model Type	General Purpose
Channels	30 SPDT
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	10 ms maximum
Rated Switch Operations	
Mechanical	1×10^7
Electrical	1×10^5 (Full Load)
Power Specifications	
Maximum Switching Voltage	250 V ac rms, 30 V dc
Maximum Switching Current	5 A
Maximum Switching Power	150 W dc, 1250 VA per Channel 18 kW per Switch Module
DC Performance	
Path Resistance	< 0.5 Ω
Insulation Resistance	$> 1 \times 10^9$ Ω
Maximum Thermal Offset / Channel (HI-LO)	< 7 µV
Minimum Contact Rating	10 mA, 5 V dc
Capacitance	
Open Channel	< 50 pF
Channel-Mainframe	< 80 pF
AC Performance	
Bandwidth (-3 dB)	> 50 MHz
Insertion Loss	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 1.0 dB
Crosstalk	
100 kHz	< -80 dB
1 MHz	< -60 dB
10 MHz	< -40 dB
Isolation	
100 kHz	< -50 dB
1 MHz	< -45 dB
10 MHz	< -40 dB

Accessories

52-0195-000: Conn. Kit (Including Connectors, Backshells and 104 Pins)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: SGMC50M0E100J0	Contact Info: 800-641-4054/www.positronic.com
Desc: Crimp Pins	Mfgr.: Positronics	Mfgr P/N: MS422N	Contact Info: 800-641-4054/www.positronic.com

52-0196-000: 50-Pin Connector & Backshell (No Pins) 2 Required

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: SGMC50M0E100J0	Contact Info: 800-641-4054/www.positronic.com

46-0037-000: Insertion Tool

Desc: Insertion Tool	Mfgr.: Positronics	Mfgr P/N: 9099-1	Contact Info: 800-641-4054/www.positronic.com

46-0024-000: Crinp Tool

Desc: Crimp Tool	Mfgr.: Positronics	Mfgr P/N: 9507	Contact Info: 800-641-4054/www.positronic.com

46-0025-000: Turret Head Positioner

Desc: Turret Head Positioner	Mfgr.: Positronics	Mfgr P/N: 9502-12	Contact Info: 800-641-4054/www.positronic.com

46-0036-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: Positronics	Mfgr P/N: 9081-1	Contact Info: 800-641-4054/www.positronic.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP5005

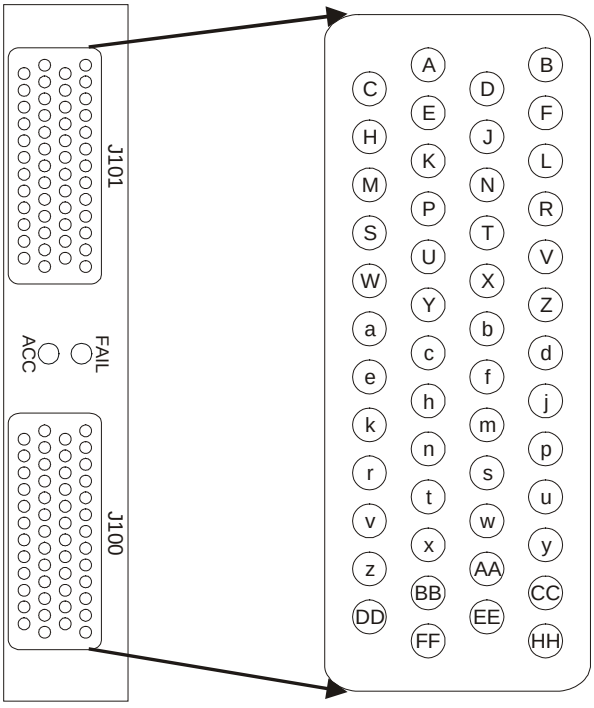
SMP5005 – 48-CHANNEL SPST

The SMP5005 switch module is a 48-channel, 5 A single-pole, single-throw general purpose relay switch. All relays are independently controllable. This appendix shows the 50-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP5005 high-density 5 A switch module is designed for switching applications such as process control, appliance pass/fail testing, and on/off control. Up to 288 individual SPST relays can be accommodated in a double-slot VXIbus card (SMP1200) for maximum density or mixed and matched with other SMIP *II* cards for flexibility.

All relays are driven from the VXIbus +5 V supply line, since VXIbus mainframes always have ample current capability on this supply line, as opposed to the +24 V or +12 V supply lines. Since these modules typically switch power to the UUT or interface, a fail-safe interrupt input line is provided on the front panel that can open all relays automatically if a safety condition occurs. This approach instantly removes all power to the UUT or interface.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP5005 CONNECTOR PIN LOCATIONS — FIGURE 1

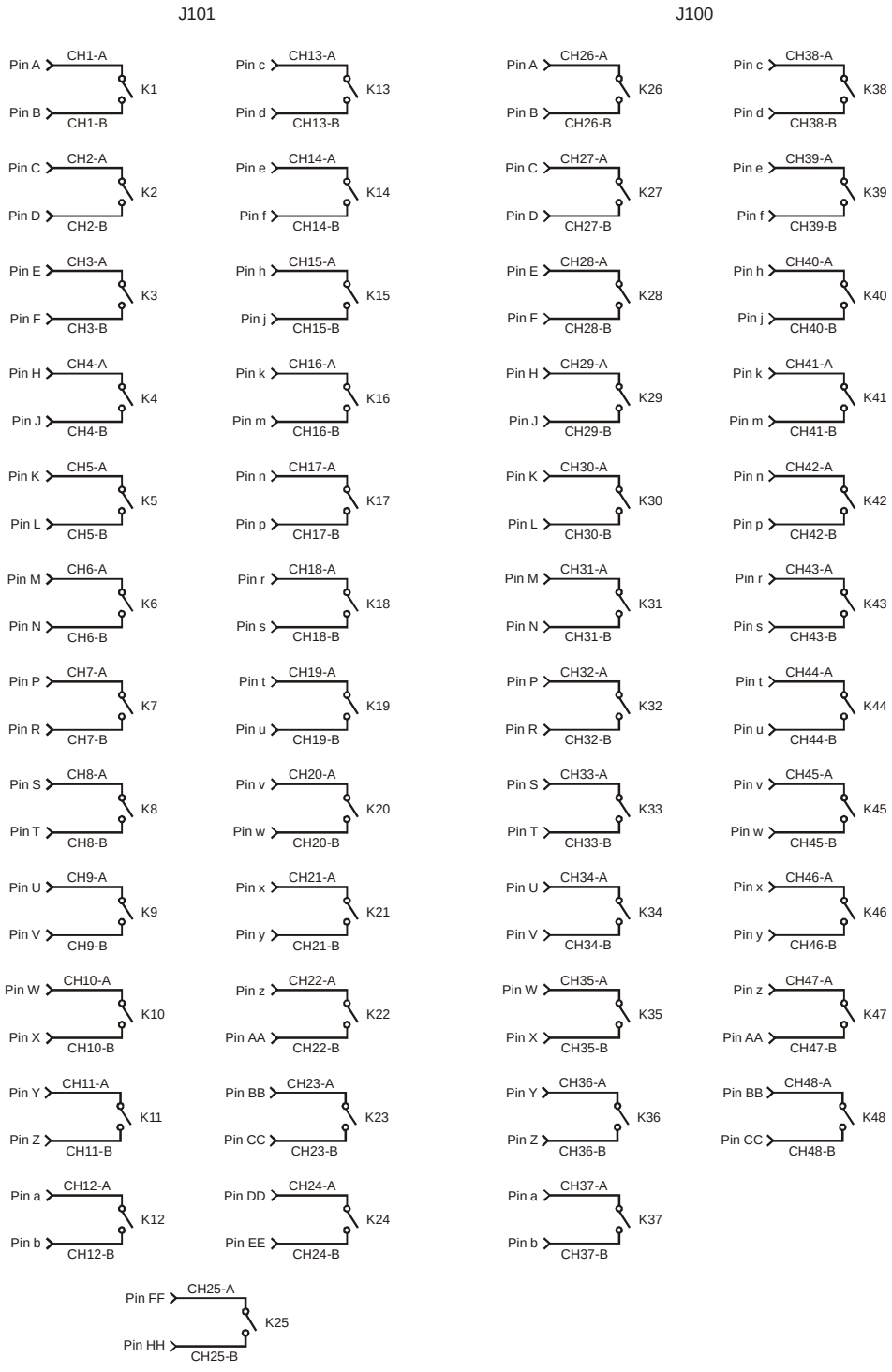
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP5005 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J101				J100			
PIN	**SIGNAL**	**PIN**	**SIGNAL**	**PIN**	**SIGNAL**	**PIN**	**SIGNAL**
A	CH1-A	d	CH13-B	A	CH26-A	d	CH38-B
B	CH1-B	e	CH14-A	B	CH26-B	e	CH39-A
C	CH2-A	f	CH14-B	C	CH27-A	f	CH39-B
D	CH2-B	h	CH15-A	D	CH27-B	h	CH40-A
E	CH3-A	j	CH15-B	E	CH28-A	j	CH40-B
F	CH3-B	k	CH16-A	F	CH28-B	k	CH41-A
H	CH4-A	m	CH16-B	H	CH29-A	m	CH41-B
J	CH4-B	n	CH17-A	J	CH29-B	n	CH42-A
K	CH5-A	p	CH17-B	K	CH30-A	p	CH42-B
L	CH5-B	r	CH18-A	L	CH30-B	r	CH43-A
M	CH6-A	s	CH18-B	M	CH31-A	s	CH43-B
N	CH6-B	t	CH19-A	N	CH31-B	t	CH44-A
P	CH7-A	u	CH19-B	P	CH32-A	u	CH44-B
R	CH7-B	v	CH20-A	R	CH32-B	v	CH45-A
S	CH8-A	w	CH20-B	S	CH33-A	w	CH45-B
T	CH8-B	x	CH21-A	T	CH33-B	x	CH46-A
U	CH9-A	y	CH21-B	U	CH34-A	y	CH46-B
V	CH9-B	z	CH22-A	V	CH34-B	z	CH47-A
W	CH10-A	AA	CH22-B	W	CH35-A	AA	CH47-B
X	CH10-B	BB	CH23-A	X	CH35-B	BB	CH48-A
Y	CH11-A	CC	CH23-B	Y	CH36-A	CC	CH48-B
Z	CH11-B	DD	CH24-A	Z	CH36-B	DD	FP-OPEN[1]
a	CH12-A	EE	CH24-B	a	CH37-A	EE	FP-GND[1]
b	CH12-B	FF	CH25-A	b	CH37-B	FF	SHEILD
c	CH13-A	HH	CH25-B	c	CH38-A	HH	SHEILD

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP5005 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP5005 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4	K48	K47	K46	K45	K44	K43	K42	K41	K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP5005 Specifications and Accessories

General Specifications	
Model Type	General Purpose
Channels	48 SPST
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	10 ms maximum
Rated Switch Operations	
Mechanical	1×10^7
Electrical	1×10^5 (Full Load)
Power Specifications	
Maximum Switching Voltage	250 V ac rms, 30 V dc
Maximum Switching Current	5 A
Maximum Switching Power	150 W dc, 1250 VA per Channel 18 kW per Switch Module
DC Performance	
Path Resistance	< 0.5 Ω
Insulation Resistance	$> 1 \times 10^9$ Ω
Maximum Thermal Offset / Channel (HI-LO)	< 7 µV
Minimum Contact Rating	10 mA, 5 V dc
Capacitance	
Open Channel	< 50 pF
Channel-Mainframe	< 80 pF
AC Performance	
Bandwidth (-3 dB)	> 50 MHz
Insertion Loss	
100 kHz	< 0.1 dB
1 MHz	< 0.2 dB
10 MHz	< 1.0 dB
Crosstalk	
100 kHz	< -80 dB
1 MHz	< -60 dB
10 MHz	< -40 dB
Isolation	
100 kHz	< -50 dB
1 MHz	< -45 dB
10 MHz	< -40 dB

Accessories

52-0195-000: Conn. Kit (Including Connectors, Backshells and 104 Pins)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: SGMC50M0E100J0	Contact Info: 800-641-4054/www.positronic.com
Desc: Crimp Pins	Mfgr.: Positronics	Mfgr P/N: MS422N	Contact Info: 800-641-4054/www.positronic.com

52-0196-000: 50-Pin Connector & Backshell (No Pins) 2 Required

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: SGMC50M0E100J0	Contact Info: 800-641-4054/www.positronic.com

46-0037-000: Insertion Tool

Desc: Insertion Tool	Mfgr.: Positronics	Mfgr P/N: 9099-1	Contact Info: 800-641-4054/www.positronic.com

46-0024-000: Crinp Tool

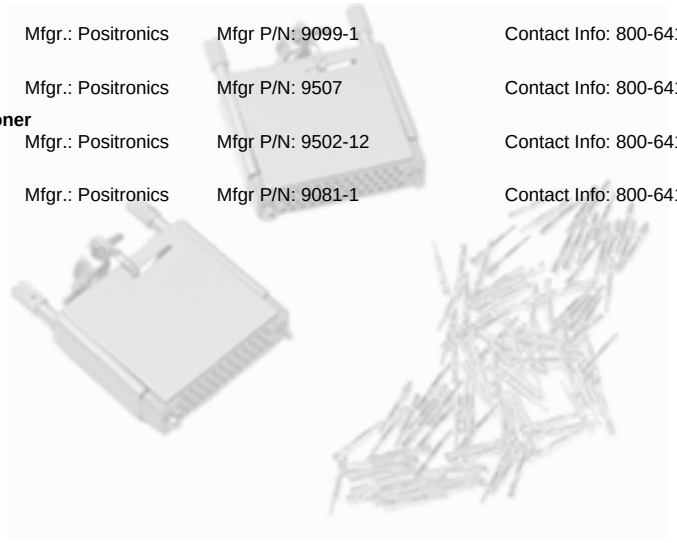
Desc: Crimp Tool	Mfgr.: Positronics	Mfgr P/N: 9507	Contact Info: 800-641-4054/www.positronic.com

46-0025-000: Turret Head Positioner

Desc: Turret Head Positioner	Mfgr.: Positronics	Mfgr P/N: 9502-12	Contact Info: 800-641-4054/www.positronic.com

46-0036-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: Positronics	Mfgr P/N: 9081-1	Contact Info: 800-641-4054/www.positronic.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

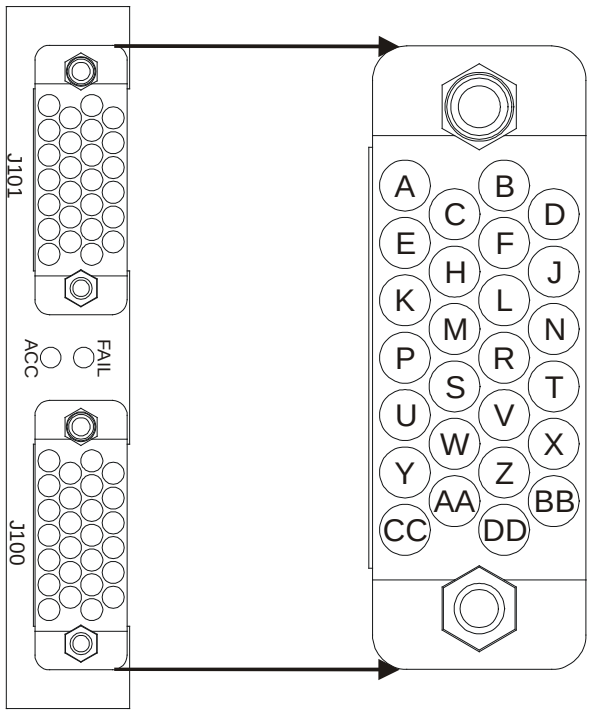
APPENDIX SMP6001

SMP6001 – 10 1 X 4 COAXIAL TREES > 900 MHZ

The SMP6001 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems. This appendix shows the 26-pin connector, connector pin assignments, schematic, relay register map, and electrical specifications.

The SMP6001 is a high density 1 x 4 coaxial tree module designed for general purpose RF switching. All relays are independently controllable. Excellent crosstalk and isolation is maintained by the SMP6001 by using RF relays along with short, low-loss coaxial runs from the connector directly to the relays. SMP6001 modules are configured to avoid any unterminated stub effects.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP6001 CONNECTOR PIN LOCATIONS — FIGURE 1

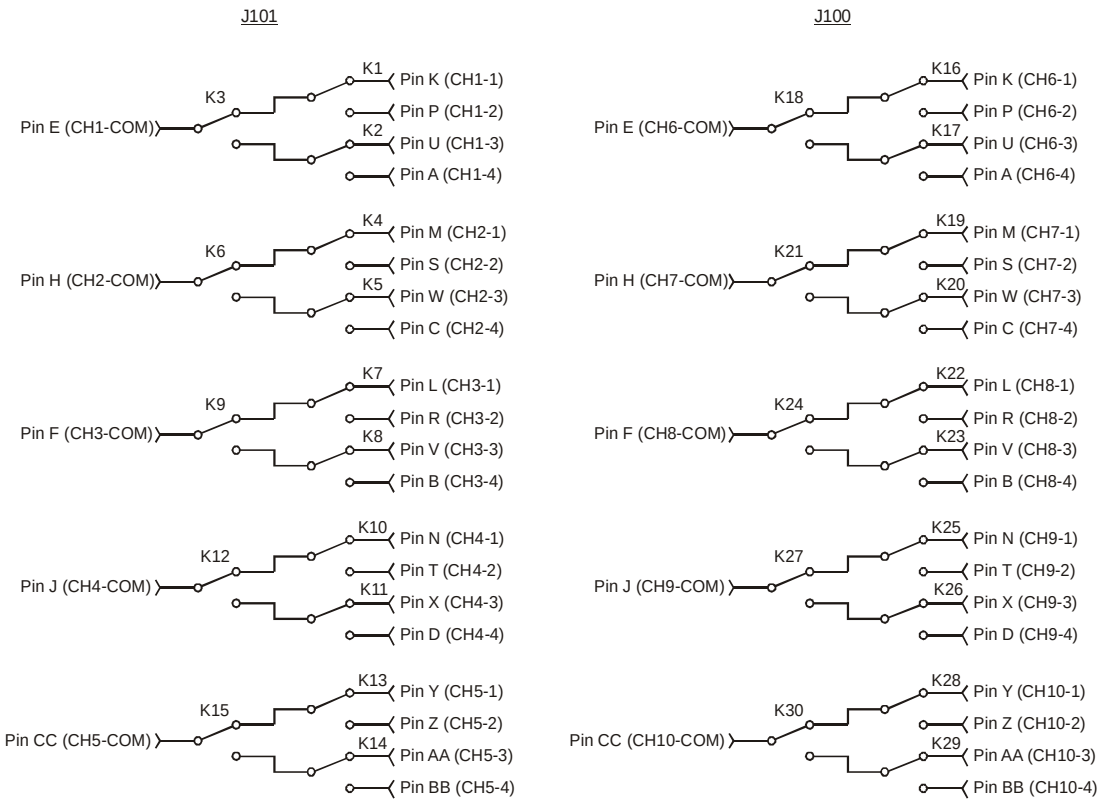
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6001 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J101		J100	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
A	CH1-4	A	CH6-4
B	CH3-4	B	CH8-4
C	CH2-4	C	CH7-4
D	CH4-4	D	CH9-4
E	CH1-COM	E	CH6-COM
F	CH3-COM	F	CH8-COM
H	CH2-COM	H	CH7-COM
J	CH4-COM	J	CH9-COM
K	CH1-1	K	CH6-1
L	CH3-1	L	CH8-1
M	CH2-1	M	CH7-1
N	CH4-1	N	CH9-1
P	CH1-2	P	CH6-2
R	CH3-2	R	CH8-2
S	CH2-2	S	CH7-2
T	CH4-2	T	CH9-2
U	CH1-3	U	CH6-3
V	CH3-3	V	CH8-3
W	CH2-3	W	CH7-3
X	CH4-3	X	CH9-3
Y	CH5-1	Y	CH10-1
Z	CH5-2	Z	CH10-2
AA	CH5-3	AA	CH10-3
BB	CH5-4	BB	CH10-4
CC	CH5-COM	CC	CH10-COM
DD	UNUSED	DD	FP-OPEN[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP6001 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6001 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2			K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6001 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	RF
CHANNELS	Ten 1 x 4 Coaxial Trees
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 5 ms
RATED SWITCH OPERATIONS	
Mechanical	5×10^6
Electrical	1×10^5 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	100 V ac
MAXIMUM SWITCHING CURRENT	0.5 A
MAXIMUM SWITCHING POWER	10 W
DC PERFORMANCE	
PATH RESISTANCE	< 1 Ω
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 900 MHz
INSERTION LOSS	
100 MHz	< 0.2 dB
500 MHz	< 0.5 dB
CROSSTALK	
10 MHz	< -70 dB
100 MHz	< -65 dB
500 MHz	< -60 dB
ISOLATION	
10 MHz	< -80 dB
100 MHz	< -70 dB
500 MHz	< -65 dB
VSWR	
100 MHz	< 1.2:1
900 MHz	< 1.5:1

ACCESSORIES

70-0189-000: 26-Pin Connector Kit w/ Strain Relief

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: GMCT26M0E100J0	Contact Info: 800-641-4054/www.positronic.com

70-0234-000: 26-Pin Connector Kit w/ VTI Backshell (Two Required)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: GMCT26M0E100J0	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: VXI Tech.	Mfgr P/N: 41-0341-000	Contact Info: 949-955-1VXI/www.vxitech.com

NOTE This backshell can accommodate a fully populated connector.

27-0116-026: 26-Pin Connector and Backshell, No Pins (Two Required)

Desc: 26-Pin Conn. & Backshell	Mfgr.: Positronics	Mfgr P/N: GMCT26M0E100J0	Contact Info: 800-641-4054/www.positronic.com

NOTE This backshell can accommodate a maximum of 19 cables without cable dressing.

52-0127-360: Single Coax Cable w/ RF Pin, 3 ft

Desc: Single Coax Cable w/ RF Pin	Mfgr.: VXI Tech	Mfgr P/N: 52-0127-360	Contact Info: 949-955-1VXI/www.vxitech.com

27-0116-000: RF Pin

Desc: RF Pin	Mfgr.: Positronics	Mfgr P/N: MCS226N	Contact Info: 800-641-4054/www.positronic.com

46-0014-000: Insertion Tool

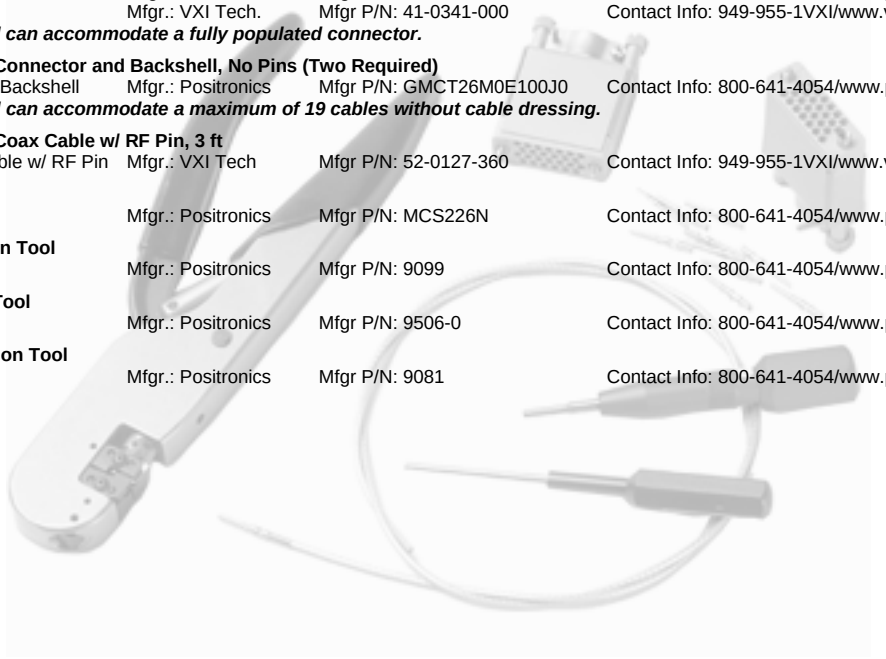
Desc: Insertion Tool	Mfgr.: Positronics	Mfgr P/N: 9099	Contact Info: 800-641-4054/www.positronic.com

46-0013-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: Positronics	Mfgr P/N: 9506-0	Contact Info: 800-641-4054/www.positronic.com

46-0015-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: Positronics	Mfgr P/N: 9081	Contact Info: 800-641-4054/www.positronic.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

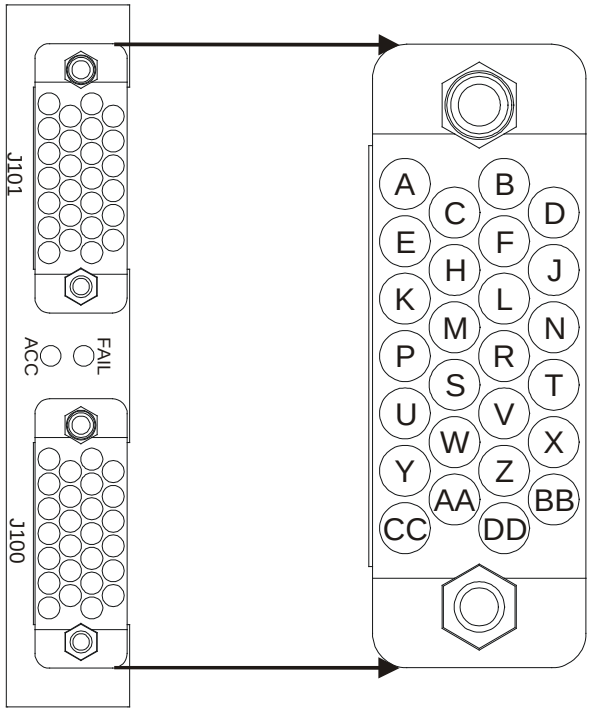
APPENDIX SMP6002

SMP6002 – 17-CHANNEL RF SPDT

The SMP6002 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems. This appendix shows the 26-pin connector, connector pin assignments, schematic, relay register map, and electrical specifications.

The SMP6002 is a high-density coaxial switch designed for general purpose RF switching. All relays are independently controllable. Excellent crosstalk and isolation is maintained by the SMP6002 by using RF relays along with short, low-loss coaxial runs from the connector directly to the relays. SMP6002 modules are configured to avoid any unterminated stub effects.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP6002 CONNECTOR PIN LOCATIONS — FIGURE 1

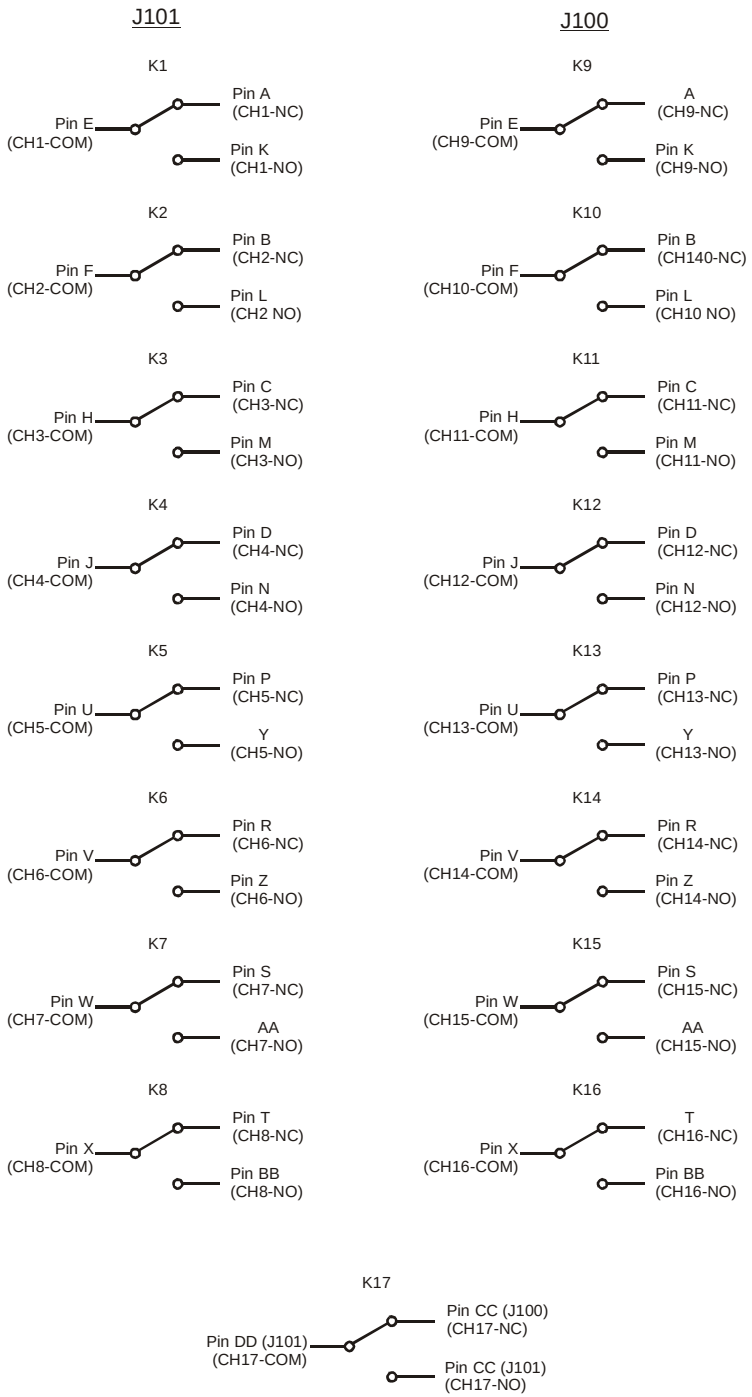
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6002 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J101		J100	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
A	CH1-NC	A	CH9-NC
B	CH2-NC	B	CH10-NC
C	CH3-NC	C	CH11-NC
D	CH4-NC	D	CH12-NC
E	CH1-COM	E	CH9-COM
F	CH2-COM	F	CH10-COM
H	CH3-COM	H	CH11-COM
J	CH4-COM	J	CH12-COM
K	CH1-NO	K	CH9-NO
L	CH2-NO	L	CH10-NO
M	CH3-NO	M	CH11-NO
N	CH4-NO	N	CH12-NO
P	CH5-NC	P	CH13-NC
R	CH6-NC	R	CH14-NC
S	CH7-NC	S	CH15-NC
T	CH8-NC	T	CH16-NC
U	CH5-COM	U	CH13-COM
V	CH6-COM	V	CH14-COM
W	CH7-COM	W	CH15-COM
X	CH8-COM	X	CH16-COM
Y	CH5-NO	Y	CH13-NO
Z	CH6-NO	Z	CH14-NO
AA	CH7-NO	AA	CH15-NO
BB	CH8-NO	BB	CH16-NO
CC	CH17-NO	CC	CH17-NC
DD	CH17-COM	DD	FP-OPEN[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP6002 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6002 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2																K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6002 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	RF
CHANNELS	Seventeen 1 x 2 Coaxial Switches
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 5 ms
RATED SWITCH OPERATIONS	
Mechanical	5×10^6
Electrical	1×10^5 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	100 V ac
MAXIMUM SWITCHING CURRENT	0.5 A
MAXIMUM SWITCHING POWER	10 W
DC PERFORMANCE	
PATH RESISTANCE	< 1 Ω
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 900 MHz
INSERTION LOSS	
100 MHz	< 0.2 dB
500 MHz	< 0.5 dB
CROSSTALK	
10 MHz	< -70 dB
100 MHz	< -65 dB
500 MHz	< -60 dB
ISOLATION	
10 MHz	< -80 dB
100 MHz	< -70 dB
500 MHz	< -65 dB
VSWR	
100 MHz	< 1.2:1
900 MHz	< 1.5:1

ACCESSORIES

70-0189-000: 26-Pin Connector Kit w/ Strain Relief

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: GMCT26M0E100J0	Contact Info: 800-641-4054/www.positronic.com

70-0234-000: 26-Pin Connector Kit w/ VTI Backshell (Two Required)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: GMCT26M0E100J0	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: VXI Tech.	Mfgr P/N: 41-0341-000	Contact Info: 949-955-1VXI/www.vxitech.com

NOTE This backshell can accommodate a fully populated connector.

27-0116-026: 26-Pin Connector and Backshell, No Pins (Two Required)

Desc: 26-Pin Conn. & Backshell	Mfgr.: Positronics	Mfgr P/N: GMCT26M0E100J0	Contact Info: 800-641-4054/www.positronic.com

NOTE This backshell can accommodate a maximum of 19 cables without cable dressing.

52-0127-360: Single Coax Cable w/ RF Pin, 3 ft

Desc: Single Coax Cable w/ RF Pin	Mfgr.: VXI Tech	Mfgr P/N: 52-0127-360	Contact Info: 949-955-1VXI/www.vxitech.com

27-0116-000: RF Pin

Desc: RF Pin	Mfgr.: Positronics	Mfgr P/N: MCS226N	Contact Info: 800-641-4054/www.positronic.com

46-0014-000: Insertion Tool

Desc: Insertion Tool	Mfgr.: Positronics	Mfgr P/N: 9099	Contact Info: 800-641-4054/www.positronic.com

46-0013-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: Positronics	Mfgr P/N: 9506-0	Contact Info: 800-641-4054/www.positronic.com

46-0015-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: Positronics	Mfgr P/N: 9081	Contact Info: 800-641-4054/www.positronic.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

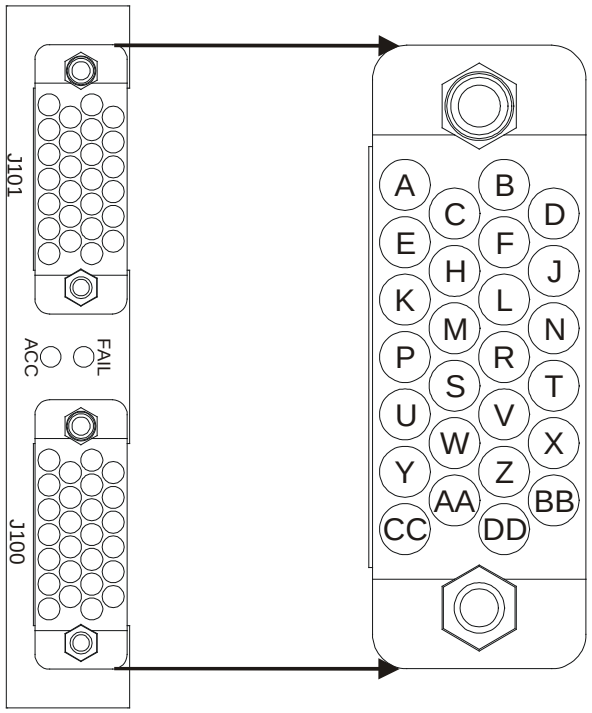
APPENDIX SMP6004

SMP6004 – 3-CHANNEL 1 X 8 AND 3-CHANNEL 1 X 2 COAXIAL STARS

The SMP6004 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems. This appendix shows the 26-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP6004 is a RF switch module designed as a star configuration. A star switch allows any channel to be connected to any other channel. All relays are independently controllable. This configuration approach also allows for the creation of simple matrices (i.e. 4 x 1 x 4). For applications that require an unswitched signal sources to be terminated into 50 Ω, optional ½ watt 50 Ω terminations can be provided. SMP6004 modules are configured to avoid bandwidth RF relays.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP6004 CONNECTOR PIN LOCATIONS — FIGURE 1

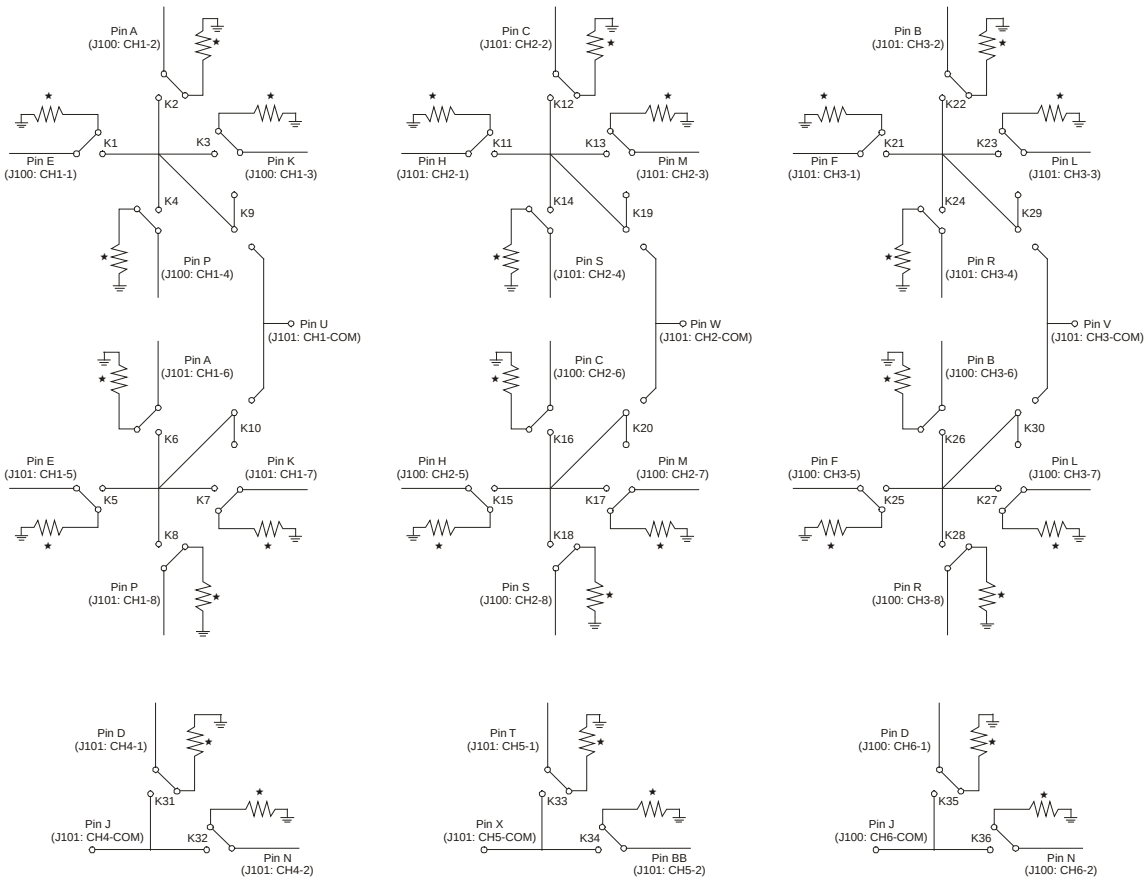
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6004 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J101		J100	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
A	CH1-6	A	CH1-2
B	CH3-2	B	CH3-6
C	CH2-2	C	CH2-6
D	CH4-1	D	CH6-1
E	CH1-5	E	CH1-1
F	CH3-1	F	CH3-5
H	CH2-1	H	CH2-5
J	CH4-COM	J	CH6-COM
K	CH1-7	K	CH1-3
L	CH3-3	L	CH3-7
M	CH2-3	M	CH2-7
N	CH4-2	N	CH6-2
P	CH1-8	P	CH1-4
R	CH3-4	R	CH3-8
S	CH2-4	S	CH2-8
T	CH5-1	T	UNUSED
U	CH1-COM	U	UNUSED
V	CH3-COM	V	UNUSED
W	CH2-COM	W	UNUSED
X	CH5-COM	X	UNUSED
Y	UNUSED	Y	UNUSED
Z	UNUSED	Z	UNUSED
AA	UNUSED	AA	UNUSED
BB	CH5-2	BB	UNUSED
CC	UNUSED	CC	UNUSED
DD	UNUSED	DD	FP-OPEN[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



★ Optional 50 Ω Termination

SMP6004 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6004 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4													K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6004 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	RF
CHANNELS	Three 1 x 8 and Three 1 x 2 Coaxial Stars
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 5 ms
RATED SWITCH OPERATIONS	
Mechanical	5×10^6
Electrical	1×10^5 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	100 V ac
MAXIMUM SWITCHING CURRENT	0.5 A
MAXIMUM SWITCHING POWER	10 W (1/2 W into 50 Ω Terminations)
DC PERFORMANCE	
PATH RESISTANCE	< 1 Ω
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 500 MHz
INSERTION LOSS	
100 MHz	< 0.2 dB
500 MHz	< 0.5 dB
CROSSTALK	
10 MHz	< -70 dB
100 MHz	< -65 dB
500 MHz	< -60 dB
ISOLATION	
10 MHz	< -80 dB
100 MHz	< -70 dB
500 MHz	< -65 dB
VSWR	
100 MHz	< 1.2:1
500 MHz	< 1.5:1

ACCESSORIES

70-0189-000: 26-Pin Connector Kit w/ Strain Relief

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: GMCT26M0E100J0	Contact Info: 800-641-4054/www.positronic.com

70-0234-000: 26-Pin Connector Kit w/ VTI Backshell (Two Required)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: GMCT26M0E100J0	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: VXI Tech.	Mfgr P/N: 41-0341-000	Contact Info: 949-955-1VXI/www.vxitech.com

NOTE This backshell can accommodate a fully populated connector.

27-0116-026: 26-Pin Connector and Backshell, No Pins (Two Required)

Desc: 26-Pin Conn. & Backshell	Mfgr.: Positronics	Mfgr P/N: GMCT26M0E100J0	Contact Info: 800-641-4054/www.positronic.com

NOTE This backshell can accommodate a maximum of 19 cables without cable dressing.

52-0127-360: Single Coax Cable w/ RF Pin, 3 ft

Desc: Single Coax Cable w/ RF Pin	Mfgr.: VXI Tech	Mfgr P/N: 52-0127-360	Contact Info: 949-955-1VXI/www.vxitech.com

27-0116-000: RF Pin

Desc: RF Pin	Mfgr.: Positronics	Mfgr P/N: MCS226N	Contact Info: 800-641-4054/www.positronic.com

46-0014-000: Insertion Tool

Desc: Insertion Tool	Mfgr.: Positronics	Mfgr P/N: 9099	Contact Info: 800-641-4054/www.positronic.com

46-0013-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: Positronics	Mfgr P/N: 9506-0	Contact Info: 800-641-4054/www.positronic.com

46-0015-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: Positronics	Mfgr P/N: 9081	Contact Info: 800-641-4054/www.positronic.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

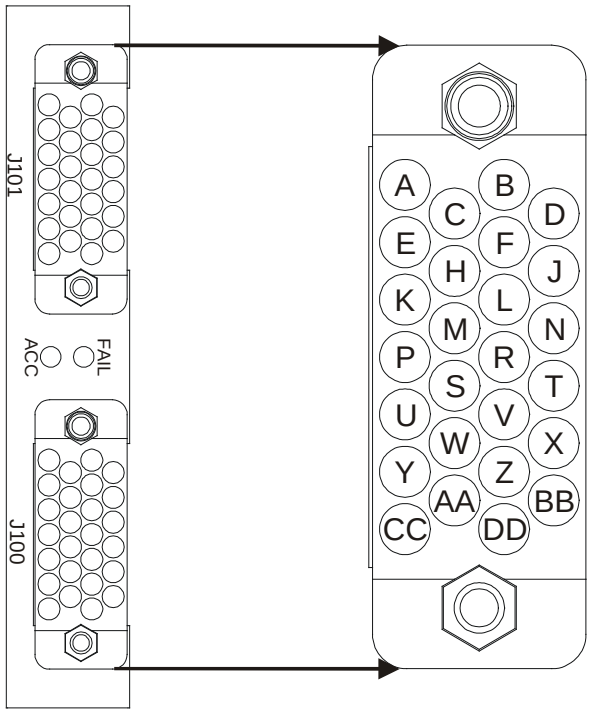
APPENDIX SMP6005

SMP6005 – 8-CHANNEL (1 X 4) COAXIAL STARS

The SMP6005 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems. This appendix shows the 26-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP6005 is a RF switch module designed as a star configuration. A star switch allows any channel to be connected to any other channel. All relays are independently controllable. This configuration approach also allows for the creation of simple matrices (i.e. 4 x 1 x 4). For applications that require unswitched signal sources to be terminated into 50 Ω, optional ½ watt 50 Ω terminations can be provided. SMP6005 modules are configured to avoid bandwidth RF relays.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP6005 CONNECTOR PIN LOCATIONS — FIGURE 1

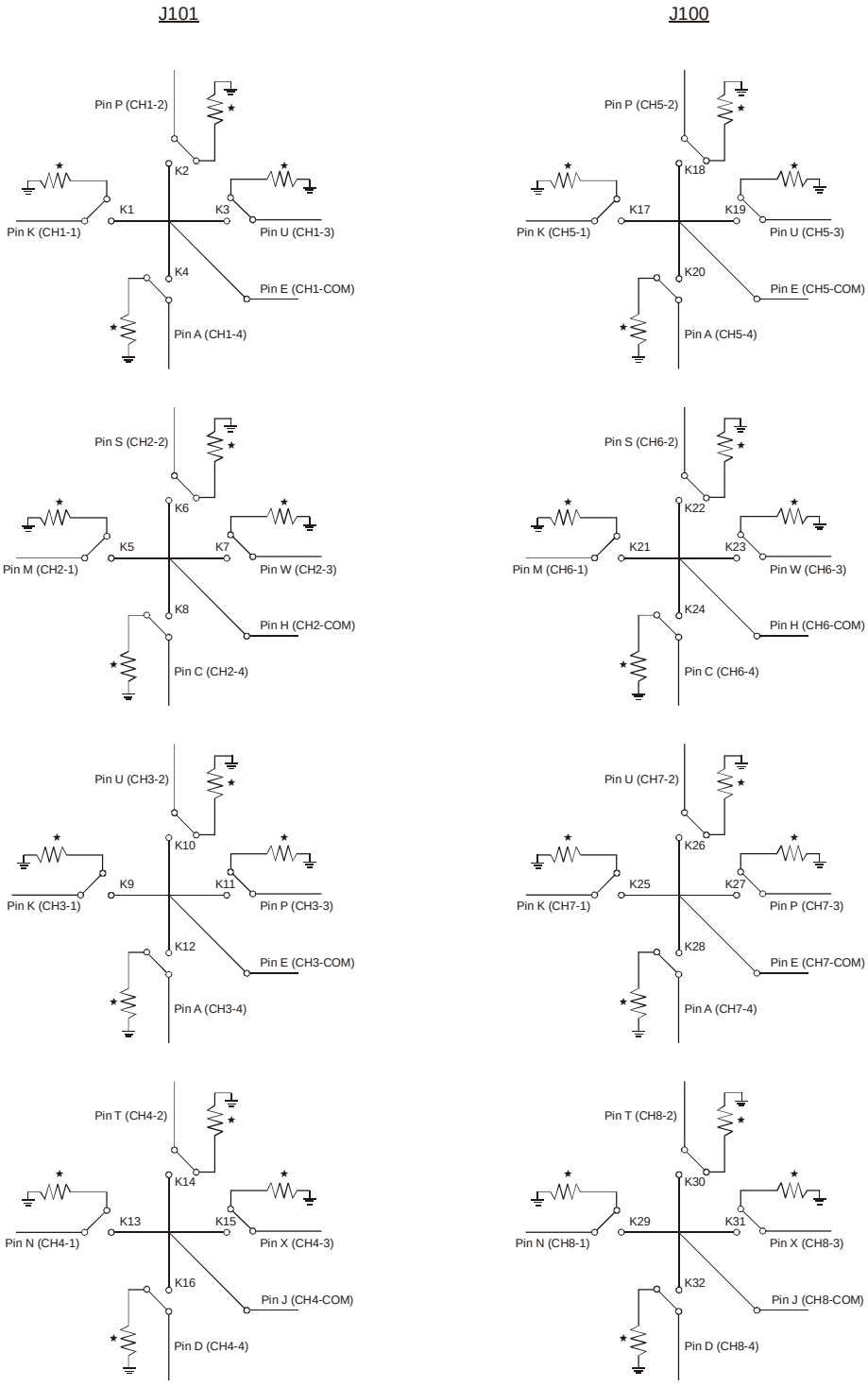
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6005 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J101		J100	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
A	CH1-4	A	CH5-4
B	CH3-4	B	CH7-4
C	CH2-4	C	CH6-4
D	CH4-4	D	CH8-4
E	CH1-COM	E	CH5-COM
F	CH3-COM	F	CH7-COM
H	CH2-COM	H	CH6-COM
J	CH4-COM	J	CH8-COM
K	CH1-1	K	CH5-1
L	CH3-1	L	CH7-1
M	CH2-1	M	CH6-1
N	CH4-1	N	CH8-1
P	CH1-2	P	CH5-2
R	CH3-2	R	CH7-2
S	CH2-2	S	CH6-2
T	CH4-2	T	CH8-2
U	CH1-3	U	CH5-3
V	CH3-3	V	CH7-3
W	CH2-3	W	CH6-3
X	CH4-3	X	CH8-3
Y	UNUSED	Y	UNUSED
Z	UNUSED	Z	UNUSED
AA	UNUSED	AA	UNUSED
BB	UNUSED	BB	UNUSED
CC	UNUSED	CC	UNUSED
DD	UNUSED	DD	FP-OPEN[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



★ Optional 50 Ω Terminations

SMP6005 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6005 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6005 Specifications and Accessories

General Specifications	
Model Type	RF
Channels	Eight 1 x 4 Coaxial Stars
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 5 ms
Rated Switch Operations	
Mechanical	5×10^6
Electrical	1×10^5 (Full Load)
Power Specifications	
Maximum Switching Voltage	100 V ac
Maximum Switching Current	0.5 A
Maximum Switching Power	10 W (1/2 W into 50 Ω Terminations)
DC Performance	
Path Resistance	< 1 Ω
AC Performance	
Bandwidth (-3 dB)	> 500 MHz
Insertion Loss	
100 MHz	< 0.2 dB
500 MHz	< 0.5 dB
Crosstalk	
10 MHz	< -70 dB
100 MHz	< -65 dB
500 MHz	< -60 dB
Isolation	
10 MHz	< -80 dB
100 MHz	< -70 dB
500 MHz	< -65 dB
VSWR	
100 MHz	< 1.2:1
500 MHz	< 1.5:1

Accessories

70-0189-000: 26-Pin Connector Kit w/ Strain Relief

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: GMCT26M0E100J0	Contact Info: 800-641-4054/www.positronic.com

70-0234-000: 26-Pin Connector Kit w/ VTI Backshell (Two Required)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: GMCT26M0E100J0	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: VXI Tech.	Mfgr P/N: 41-0341-000	Contact Info: 949-955-1VXI/www.vxitech.com

NOTE This backshell can accommodate a fully populated connector.

27-0116-026: 26-Pin Connector and Backshell, No Pins (Two Required)

Desc: 26-Pin Conn. & Backshell	Mfgr.: Positronics	Mfgr P/N: GMCT26M0E100J0	Contact Info: 800-641-4054/www.positronic.com

NOTE This backshell can accommodate a maximum of 19 cables without cable dressing.

52-0127-360: Single Coax Cable w/ RF Pin, 3 ft

Desc: Single Coax Cable w/ RF Pin	Mfgr.: VXI Tech	Mfgr P/N: 52-0127-360	Contact Info: 949-955-1VXI/www.vxitech.com

27-0116-000: RF Pin

Desc: RF Pin	Mfgr.: Positronics	Mfgr P/N: MCS226N	Contact Info: 800-641-4054/www.positronic.com

46-0014-000: Insertion Tool

Desc: Insertion Tool	Mfgr.: Positronics	Mfgr P/N: 9099	Contact Info: 800-641-4054/www.positronic.com

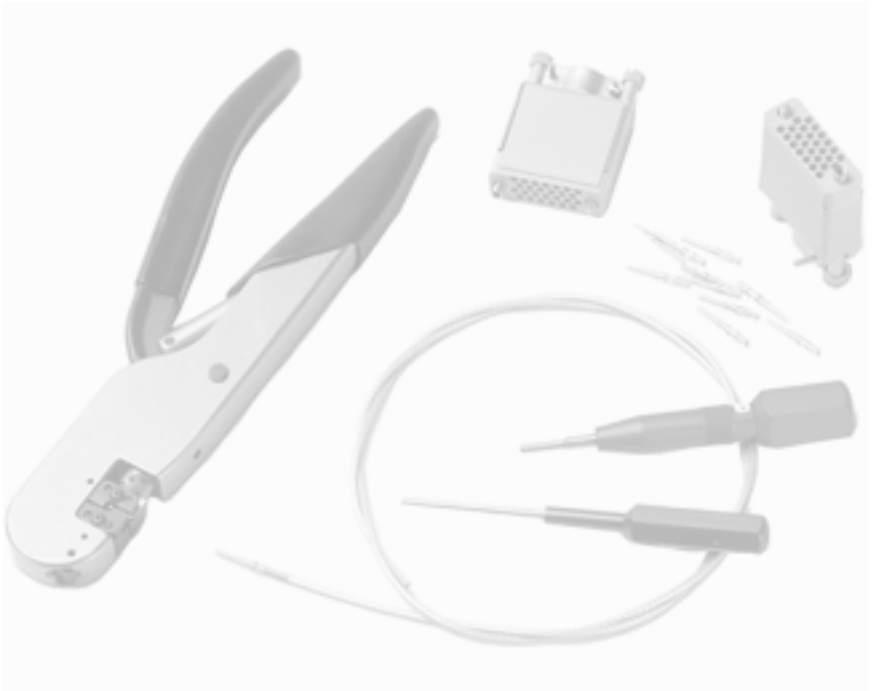
46-0013-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: Positronics	Mfgr P/N: 9506-0	Contact Info: 800-641-4054/www.positronic.com

46-0015-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: Positronics	Mfgr P/N: 9081	Contact Info: 800-641-4054/www.positronic.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP6006

SMP6006 – (2) 250 MHZ HIGH-VOLTAGE 1X16 COAXIAL STARS

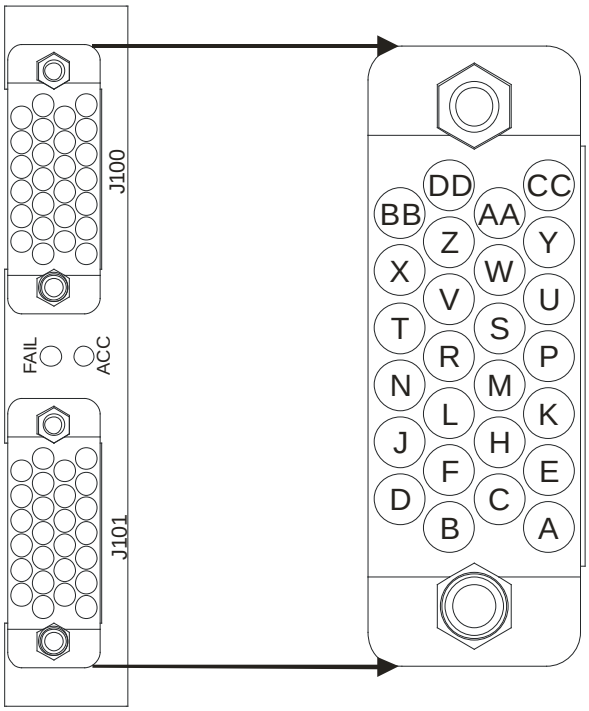
The SMP6006 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems. This appendix shows the 26-pin connector, connector pin assignments, schematic, relay register map, and electrical specifications.

The SMP6006 is an RF switch module designed in a star configuration. A star switch allows any channel to be connected to any other channel. This configuration approach also allows for the creation of simple matrices (i.e., 8 x 1 x 8).

Additionally, for applications that require the switching of high voltage probes or transient power supply signals, the SMP6006 provides the capability of switching up to 500 V and up to 250 MHz.

The SMP6006 is part of the SMIP*II* family and can be mixed and matched with other SMIP*II* modules to configure high-density switching systems.

NOTE	This module is for use in the double-wide SMP1200 only. This module contains ***position-sensitive, mercury switches***. This module must be installed in an upright position and this position must be maintained in order for these switches to function properly. An arrow on the PCB illustrates proper board orientation.



SMP6006 CONNECTOR PIN LOCATIONS — FIGURE 1

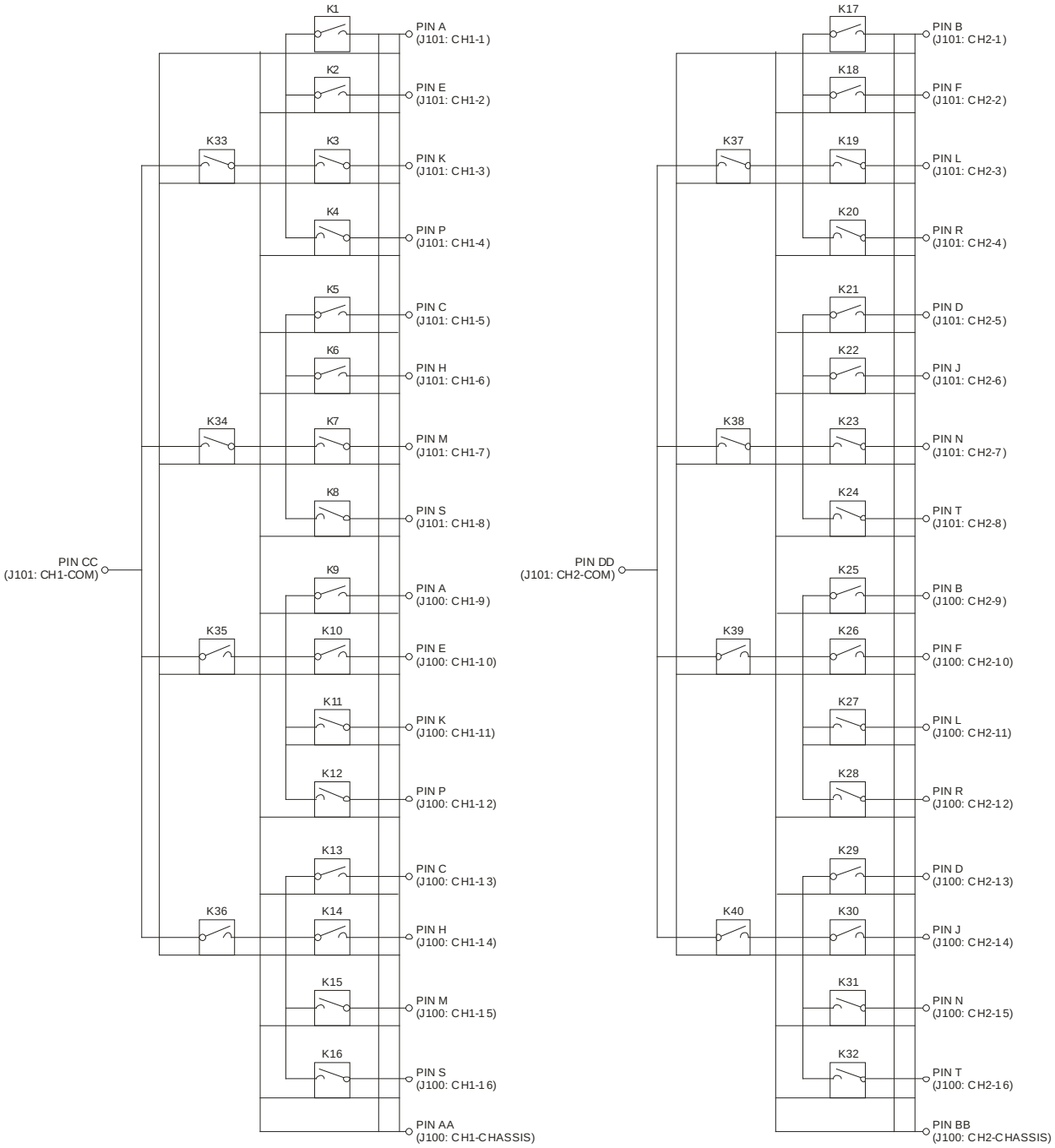
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6006 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J101		J100	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
A	CH1-1	A	CH1-9
B	CH2-1	B	CH2-9
C	CH1-5	C	CH1-13
D	CH2-5	D	CH2-13
E	CH1-2	E	CH1-10
F	CH2-2	F	CH2-10
H	CH1-6	H	CH1-14
J	CH2-6	J	CH2-14
K	CH1-3	K	CH1-11
L	CH2-3	L	CH2-11
M	CH1-7	M	CH1-15
N	CH2-7	N	CH2-15
P	CH1-4	P	CH1-12
R	CH2-4	R	CH2-12
S	CH1-8	S	CH1-16
T	CH2-8	T	CH2-16
U	NOT USED	U	NOT USED
V	NOT USED	V	NOT USED
W	NOT USED	W	NOT USED
X	NOT USED	X	NOT USED
Y	NOT USED	Y	NOT USED
Z	NOT USED	Z	NOT USED
AA	NOT USED	AA	CH1-CHASSIS
BB	NOT USED	BB	CH2-CHASSIS
CC	CH1-COM	CC	NOT USED
DD	CH2-COM	DD	FP-OPEN[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP6006 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6006 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4									K40	K39	K38	K37	K36	K35	K34	K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6006 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	RF Mux
CHANNELS	2 (1 x 16)
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 1 ms
RATED SWITCH OPERATIONS	
1 V, 10 mA	100 x 10^6
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	500 V ac
MAXIMUM SWITCHING CURRENT	0.5 A
MAXIMUM CARRYING CURRENT	2.0 A
MAXIMUM SWITCHING POWER	10 W
DC PERFORMANCE	
PATH RESISTANCE	< 0.5 Ω
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 250 MHz
INSERTION LOSS	
100 MHz	< 1.0 dB
250 MHz	< 3.0 dB
CROSSTALK	
100 MHz	< -45 dB
250 MHz	< -35 dB
ISOLATION	
100 MHz	< -40 dB
250 MHz	< -30 dB
VSWR	
100 MHz	< 1.2:1
250 MHz	< 1.5:1

ACCESSORIES

70-0189-000: 26-Pin Connector Kit w/ Strain Relief

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: GMCT26M0E100J0	Contact Info: 800-641-4054/www.positronic.com

70-0234-000: 26-Pin Connector Kit w/ VTI Backshell (Two Required)

Desc: Connector	Mfgr.: Positronics	Mfgr P/N: GMCT26M0E100J0	Contact Info: 800-641-4054/www.positronic.com
Desc: Backshell	Mfgr.: VXI Tech.	Mfgr P/N: 41-0341-000	Contact Info: 949-955-1VXI/www.vxitech.com

NOTE This backshell can accommodate a fully populated connector.

27-0116-026: 26-Pin Connector and Backshell, No Pins (Two Required)

Desc: 26-Pin Conn. & Backshell	Mfgr.: Positronics	Mfgr P/N: GMCT26M0E100J0	Contact Info: 800-641-4054/www.positronic.com

NOTE This backshell can accommodate a maximum of 19 cables without cable dressing.

52-0127-360: Single Coax Cable w/ RF Pin, 3 ft

Desc: Single Coax Cable w/ RF Pin	Mfgr.: VXI Tech	Mfgr P/N: 52-0127-360	Contact Info: 949-955-1VXI/www.vxitech.com

27-0116-000: RF Pin

Desc: RF Pin	Mfgr.: Positronics	Mfgr P/N: MCS226N	Contact Info: 800-641-4054/www.positronic.com

46-0014-000: Insertion Tool

Desc: Insertion Tool	Mfgr.: Positronics	Mfgr P/N: 9099	Contact Info: 800-641-4054/www.positronic.com

46-0013-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: Positronics	Mfgr P/N: 9506-0	Contact Info: 800-641-4054/www.positronic.com

46-0015-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: Positronics	Mfgr P/N: 9081	Contact Info: 800-641-4054/www.positronic.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

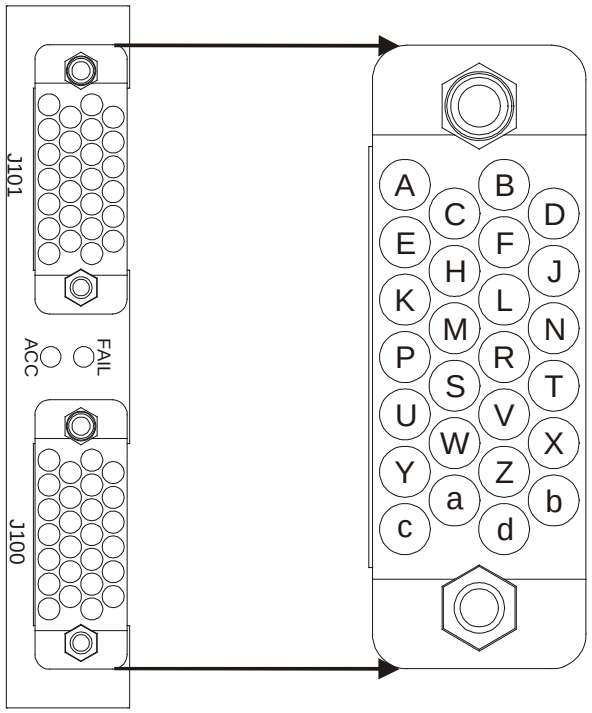
APPENDIX SMP6101

SMP6101 – 10 (1 X 4) COAXIAL TREES > 1.3 GHZ

The SMP6101 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems. This appendix shows the 26-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP6101 is a high-density RF switch module designed for high-fidelity RF switching applications up to 1.3 GHz. Excellent crosstalk and isolation is maintained by using RF relays with bandwidths in excess of 2.0 GHz, along with short low-loss coaxial runs from connector directly to relays. All modules are also configured to avoid any unterminated stub effects, improving overall signal integrity, and allowing for high frequency matrix designs and larger multiplexer configurations while maintaining bandwidth and VSWR.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP6101 CONNECTOR PIN LOCATIONS — FIGURE 1

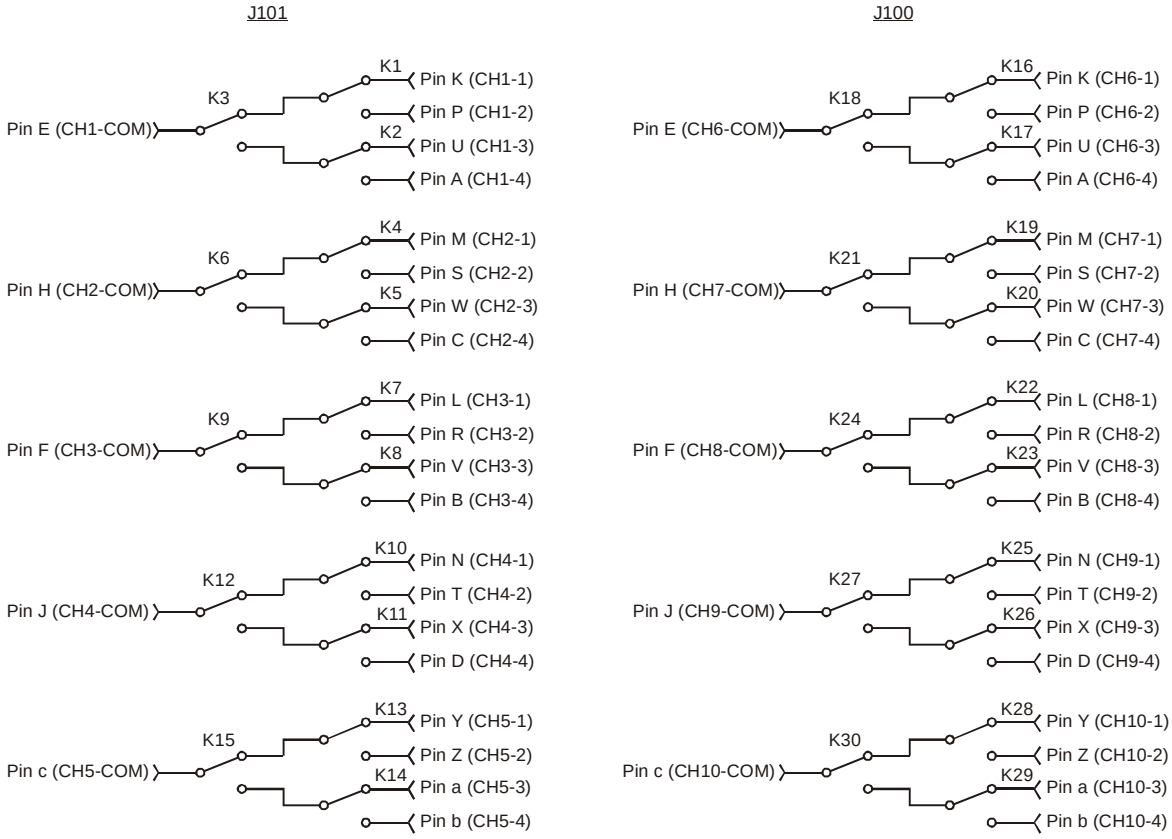
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6101 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J101		J100	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
A	CH1-4	A	CH6-4
B	CH3-4	B	CH8-4
C	CH2-4	C	CH7-4
D	CH4-4	D	CH9-4
E	CH1-COM	E	CH6-COM
F	CH3-COM	F	CH8-COM
H	CH2-COM	H	CH7-COM
J	CH4-COM	J	CH9-COM
K	CH1-1	K	CH6-1
L	CH3-1	L	CH8-1
M	CH2-1	M	CH7-1
N	CH4-1	N	CH9-1
P	CH1-2	P	CH6-2
R	CH3-2	R	CH8-2
S	CH2-2	S	CH7-2
T	CH4-2	T	CH9-2
U	CH1-3	U	CH6-3
V	CH3-3	V	CH8-3
W	CH2-3	W	CH7-3
X	CH4-3	X	CH9-3
Y	CH5-1	Y	CH10-1
Z	CH5-2	Z	CH10-2
a	CH5-3	a	CH10-3
b	CH5-4	b	CH10-4
c	CH5-COM	c	CH10-COM
d	UNUSED	d	FP-OPEN[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP6101 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6101 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2			K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6101 Specifications and Accessories

General Specifications	
Model Type	RF
Channels	Ten 1 x 4 Coaxial Trees
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 5 ms
Rated Switch Operations	
Mechanical	5×10^6
Electrical	1×10^5 (Full Load)
Power Specifications	
Maximum Switching Voltage	100 V ac
Maximum Switching Current	0.5 A
Maximum Switching Power	10 W
DC Performance	
Path Resistance	< 1 Ω
AC Performance	
Bandwidth (-3 dB)	> 1.3 GHz
Insertion Loss	
100 MHz	< 0.2 dB
500 MHz	< 0.5 dB
1 GHz	< 2.0 dB
Crosstalk	
10 MHz	< -70 dB
100 MHz	< -65 dB
500 MHz	< -60 dB
1.3 GHz	< -55 dB
Isolation	
10 MHz	< -80 dB
100 MHz	< -70 dB
500 MHz	< -65 dB
1.3 GHz	< -55 dB
VSWR	
100 MHz	< 1.2:1
1.3 GHz	< 1.5:1

Accessories

70-0149-001: 10-Pin/Ferrule Kit (RG178 50 Ω)

Desc: Contact, Coax, Pin (Qty: 10)	Mfgr.: AMP	Mfgr P/N: 226537-2	Contact Info: 800-522-6752/www.amp.com
Desc: Ferrule; Qty: 10	Mfgr.: AMP	Mfgr P/N: 1-332057-0	Contact Info: 800-522-6752/www.amp.com

70-0149-000: 10-Pin/Ferrule Kit (RG316 50 Ω)

Desc: Contact, Coax, Pin (Qty: 10)	Mfgr.: AMP	Mfgr P/N: 226537-1	Contact Info: 800-522-6752/www.amp.com
Desc: Ferrule, Qty: 10	Mfgr.: AMP	Mfgr P/N: 1-332056-0	Contact Info: 800-522-6752/www.amp.com

70-0150-000: 26-Pin Connector & Cable Housing (No Pins) 2 Required

Desc: Connector Housing	Mfgr.: AMP	Mfgr P/N: 201359-1	Contact Info: 800-522-6752/www.amp.com
Desc: Connector Strain Relief, 26-Pin	Mfgr.: AMP	Mfgr P/N: 201845-1	Contact Info: 800-522-6752/www.amp.com

52-0247-036: 50 Ω RF Cable, 36 Inches

Desc: 50 Ω RF Cable, 36 Inches	Mfgr.: VXI Tech	Mfgr P/N: 52-0247-036	Contact Info: 949-955-1VXI/www.vxitech.com

46-0021-000: Extraction Tool

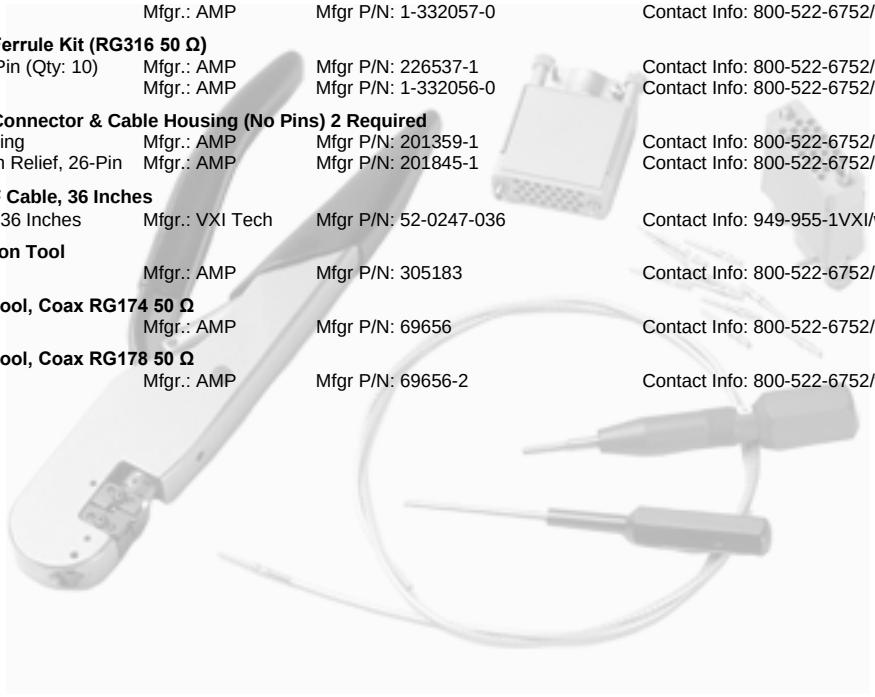
Desc: Extraction Tool	Mfgr.: AMP	Mfgr P/N: 305183	Contact Info: 800-522-6752/www.amp.com

46-0018-001: Crimp Tool, Coax RG174 50 Ω

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656	Contact Info: 800-522-6752/www.amp.com

46-0018-000: Crimp Tool, Coax RG178 50 Ω

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656-2	Contact Info: 800-522-6752/www.amp.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

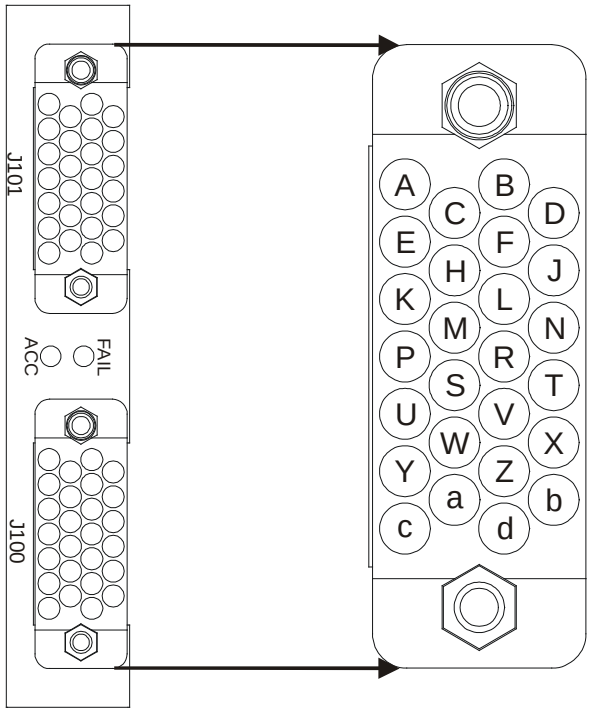
APPENDIX SMP6102

SMP6102 – 17 (1 X 2) COAXIAL SWITCHES > 1.3 GHZ

The SMP6102 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems. This appendix shows the 26-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP6102 is a high-density RF switch module designed for high-fidelity RF switching applications up to 1.3 GHz. Excellent crosstalk and isolation is maintained by using RF relays with bandwidths in excess of 2.0 GHz, along with short low-loss coaxial runs from connector directly to relays. All modules are also configured to avoid any unterminated stub effects, improving overall signal integrity, and allowing for high frequency matrix designs and larger multiplexer configurations while maintaining bandwidth and VSWR.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP6102 CONNECTOR PIN LOCATIONS — FIGURE 1

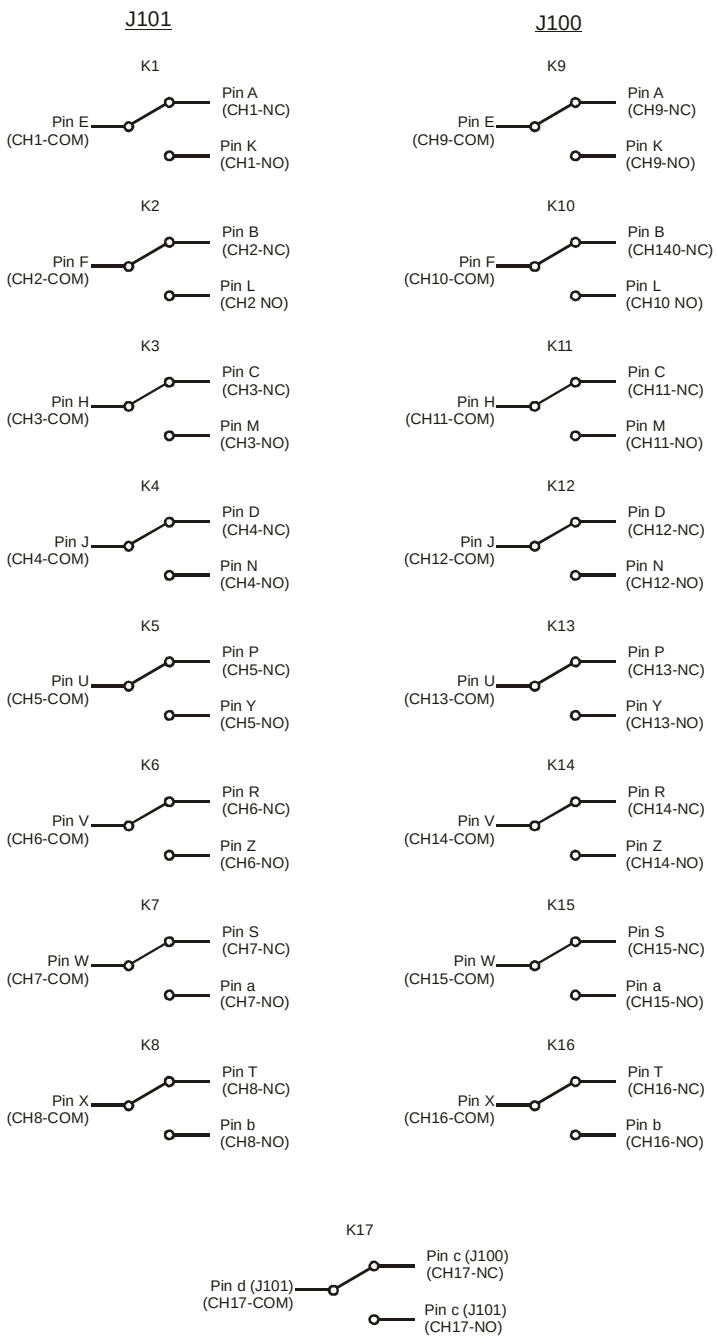
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6102 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J101		J100	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
A	CH1-NC	A	CH9-NC
B	CH2-NC	B	CH10-NC
C	CH3-NC	C	CH11-NC
D	CH4-NC	D	CH12-NC
E	CH1-COM	E	CH9-COM
F	CH2-COM	F	CH10-COM
H	CH3-COM	H	CH11-COM
J	CH4-COM	J	CH12-COM
K	CH1-NO	K	CH9-NO
L	CH2-NO	L	CH10-NO
M	CH3-NO	M	CH11-NO
N	CH4-NO	N	CH12-NO
P	CH5-NC	P	CH13-NC
R	CH6-NC	R	CH14-NC
S	CH7-NC	S	CH15-NC
T	CH8-NC	T	CH16-NC
U	CH5-COM	U	CH13-COM
V	CH6-COM	V	CH14-COM
W	CH7-COM	W	CH15-COM
X	CH8-COM	X	CH16-COM
Y	CH5-NO	Y	CH13-NO
Z	CH6-NO	Z	CH14-NO
a	CH7-NO	a	CH15-NO
b	CH8-NO	b	CH16-NO
c	CH17-NO	c	CH17-NC
d	CH17-COM	d	FP-OPEN[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP6102 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6102 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2																K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6102 Specifications and Accessories

General Specifications	
Model Type	RF
Channels	Seventeen 1 x 2 Coaxial Switches
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 5 ms
Rated Switch Operations	
Mechanical	5 x 10^6
Electrical	1 x 10^5 (Full Load)
Power Specifications	
Maximum Switching Voltage	100 V ac
Maximum Switching Current	0.5 A
Maximum Switching Power	10 W
DC Performance	
Path Resistance	< 1 Ω
AC Performance	
Bandwidth (-3 dB)	> 1.3 GHz
Insertion Loss	
100 MHz	< 0.2 dB
500 MHz	< 0.5 dB
1 GHz	< 2.0 dB
Crosstalk	
10 MHz	< -70 dB
100 MHz	< -65 dB
500 MHz	< -60 dB
1.3 GHz	< -55 dB
Isolation	
10 MHz	< -80 dB
100 MHz	< -70 dB
500 MHz	< -65 dB
1.3 GHz	< -55 dB
VSWR	
100 MHz	< 1.2:1
1.3 GHz	< 1.5:1

Accessories

70-0149-001: 10-Pin/Ferrule Kit (RG178 50 Ω)

Desc: Contact, Coax, Pin (Qty: 10)	Mfgr.: AMP	Mfgr P/N: 226537-2	Contact Info: 800-522-6752/www.amp.com
Desc: Ferrule; Qty: 10	Mfgr.: AMP	Mfgr P/N: 1-332057-0	Contact Info: 800-522-6752/www.amp.com

70-0149-000: 10-Pin/Ferrule Kit (RG316 50 Ω)

Desc: Contact, Coax, Pin (Qty: 10)	Mfgr.: AMP	Mfgr P/N: 226537-1	Contact Info: 800-522-6752/www.amp.com
Desc: Ferrule, Qty: 10	Mfgr.: AMP	Mfgr P/N: 1-332056-0	Contact Info: 800-522-6752/www.amp.com

70-0150-000: 26-Pin Connector & Cable Housing (No Pins) 2 Required

Desc: Connector Housing	Mfgr.: AMP	Mfgr P/N: 201359-1	Contact Info: 800-522-6752/www.amp.com
Desc: Connector Strain Relief, 26-Pin	Mfgr.: AMP	Mfgr P/N: 201845-1	Contact Info: 800-522-6752/www.amp.com

52-0247-036: 50 Ω RF Cable, 36 Inches

Desc: 50 Ω RF Cable, 36 Inches	Mfgr.: VXI Tech	Mfgr P/N: 52-0247-036	Contact Info: 949-955-1VXI/www.vxitech.com

46-0021-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: AMP	Mfgr P/N: 305183	Contact Info: 800-522-6752/www.amp.com

46-0018-001: Crimp Tool, Coax RG174 50 Ω

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656	Contact Info: 800-522-6752/www.amp.com

46-0018-000: Crimp Tool, Coax RG178 50 Ω

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656-2	Contact Info: 800-522-6752/www.amp.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

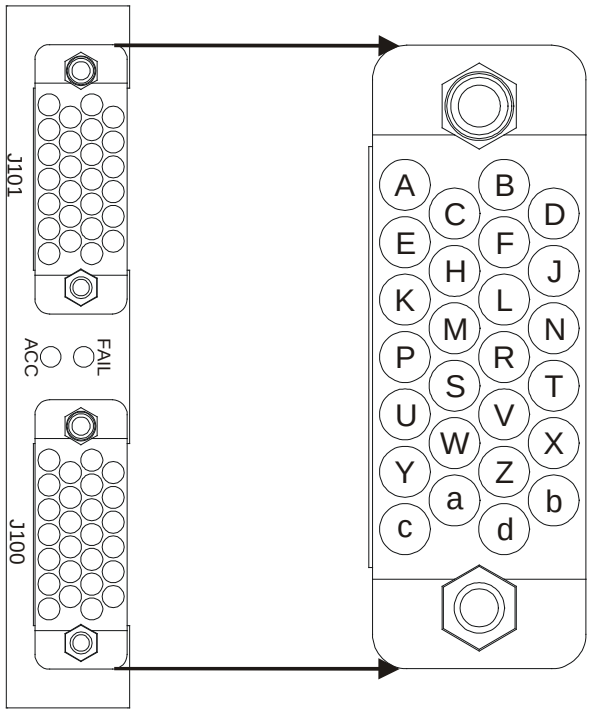
APPENDIX SMP6103

SMP6103 – (1 X 31) 750 MHZ MULTIPLEXER

The SMP6103 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems. This appendix shows the 26-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP6103 is a very high-density coaxial tree, and is designed for high-fidelity RF switching applications up to 750 MHz. Excellent crosstalk and isolation is maintained by using RF relays with bandwidths in excess of 2.0 GHz, along with short low-loss coaxial runs from the connector directly to the relays. All modules are also configured to avoid any unterminated stub effects, improving overall signal integrity, and allowing for larger high frequency large multiplexer configurations while maintaining bandwidth and VSWR.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP6103CONNECTOR PIN LOCATIONS — FIGURE 1

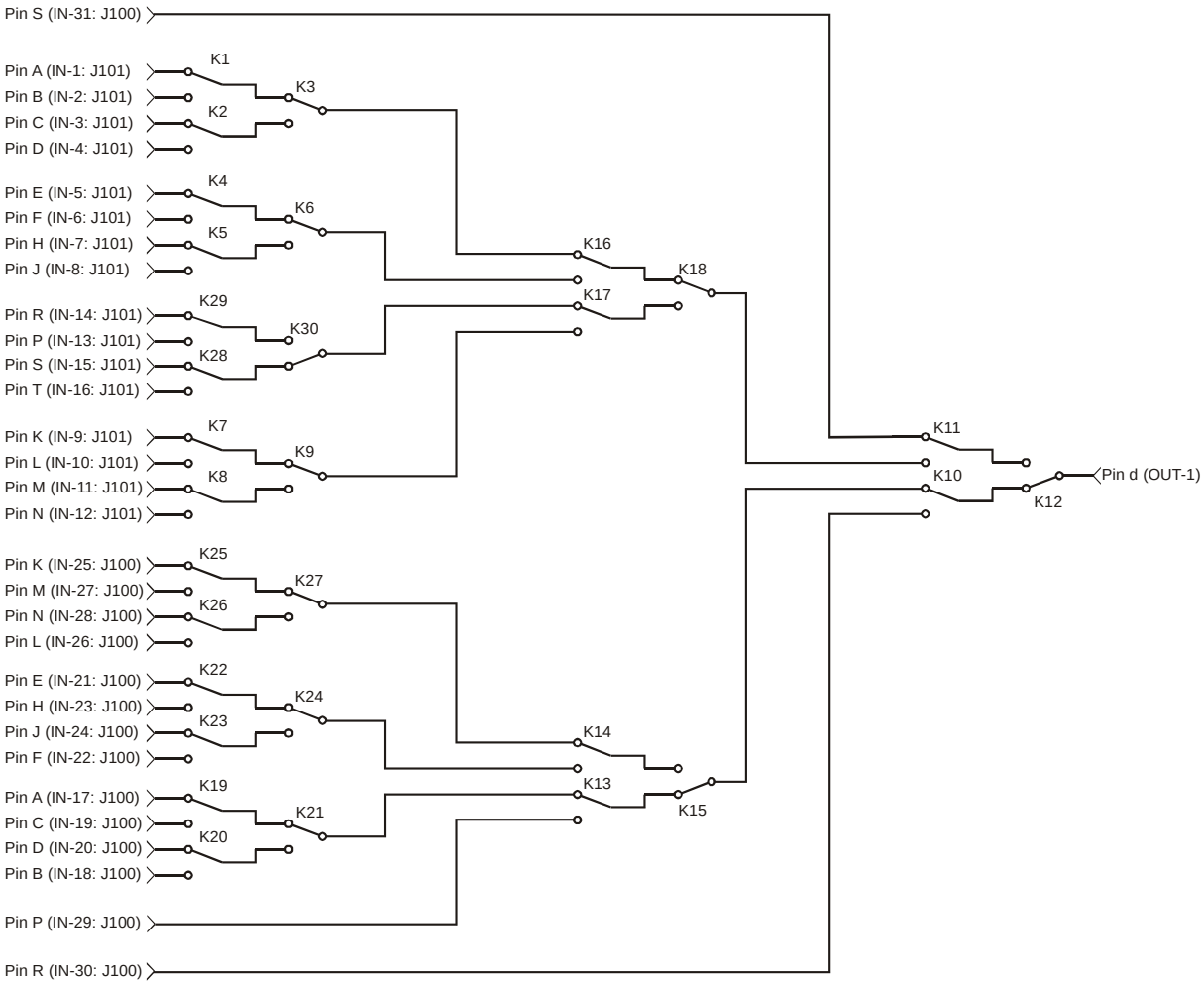
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6103 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J101		J100	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
A	IN-1	A	IN-17
B	IN-2	B	IN-18
C	IN-3	C	IN-19
D	IN-4	D	IN-20
E	IN-5	E	IN-21
F	IN-6	F	IN-22
H	IN-7	H	IN-23
J	IN-8	J	IN-24
K	IN-9	K	IN-25
L	IN-10	L	IN-26
M	IN-11	M	IN-27
N	IN-12	N	IN-28
P	IN-13	P	IN-29
R	IN-14	R	IN-30
S	IN-15	S	IN-31
T	IN-16	T	NOT USED
U	NOT USED	U	NOT USED
V	NOT USED	V	NOT USED
W	NOT USED	W	NOT USED
X	NOT USED	X	NOT USED
Y	NOT USED	Y	NOT USED
Z	NOT USED	Z	NOT USED
a	NOT USED	a	NOT USED
b	NOT USED	b	NOT USED
c	NOT USED	c	NOT USED
d	OUT-1	d	FP-OPEN[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP6103 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6103 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2						K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6103 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	RF Multiplexer
CHANNELS	(1x31) Coaxial Mux
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 5 ms
RATED SWITCH OPERATIONS	
MECHANICAL	5×10^6
ELECTRICAL	1×10^5 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	100 V ac
MAXIMUM SWITCHING CURRENT	0.5 A
MAXIMUM SWITCHING POWER	10 W
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 750 MHz
INSERTION LOSS	
100 MHz	< 2.0 dB
500 MHz	< 2.5 dB
CROSSTALK	
10 MHz	< -70 dB
100 MHz	< -65 dB
500 MHz	< -60 dB
ISOLATION	
10 MHz	< -90 dB
100 MHz	< -70 dB
500 MHz	< -50 dB
VSWR	
100 MHz	< 1.1:1
500 MHz	< 1.8:1
750 MHz	< 2.0:1

ACCESSORIES

70-0150-000: 26-Pin Connector & Cable Housing (No Pins) – Two Required

Desc: Connector Housing	Mfgr.: AMP	Mfgr P/N: 201359-1	Contact Info: 800-522-6752/www.amp.com
Desc: Connector, Strain Relief, 26-Pin	Mfgr.: AMP	Mfgr P/N: 201845-1	Contact Info: 800-522-6752/www.amp.com

52-0248-036: 75 Ω RF Cable, 36 Inches

Desc: 75 Ω RF Cable, 36 Inches	Mfgr.: VXI Tech	Mfgr P/N: 52-0248-036	Contact Info: 949-955-1VXI/www.vxitech.com

70-0149-000: 10-Pin/Ferrule Kit (RG179 75 Ω)

Desc: 10-Pin/Ferrule Kit (RG179 75 Ω)	Mfgr.: VXI Tech	Mfgr P/N: 70-0149-000	Contact Info: 949-955-1VXI/www.vxitech.com

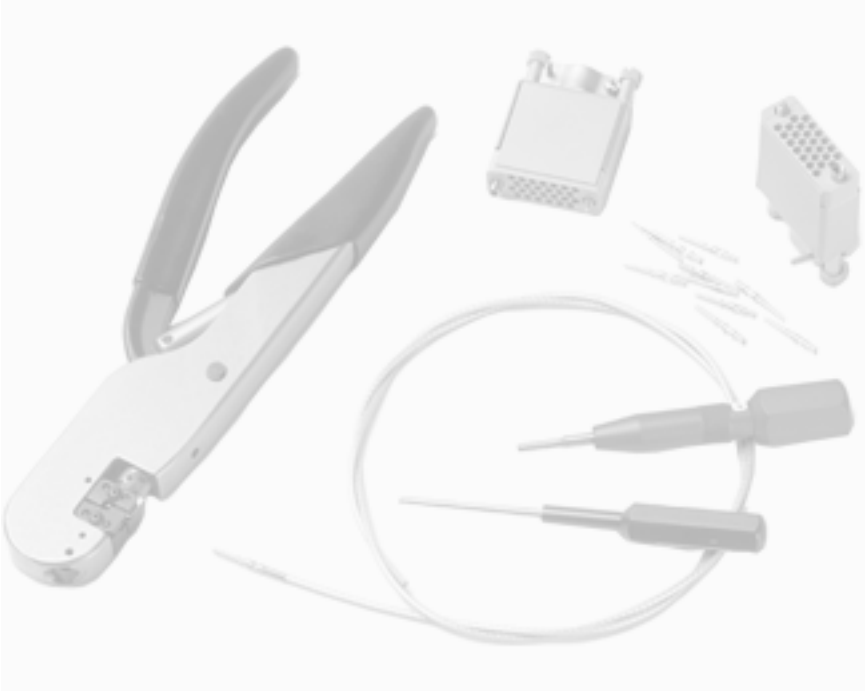
46-0018-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656-1	Contact Info: 800-522-6752/www.amp.com

46-0021-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: AMP	Mfgr P/N: 305183	Contact Info: 800-522-6752/www.amp.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

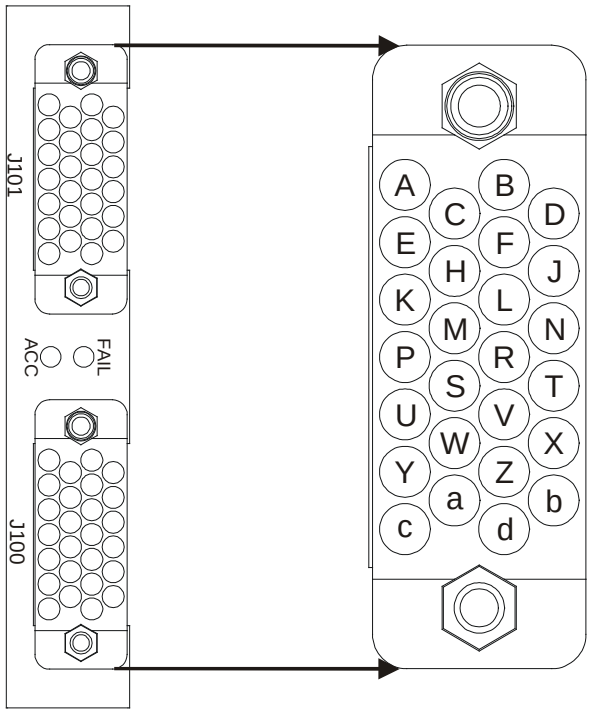
APPENDIX SMP6122

SMP6122 – 6 (2 X 2) COAXIAL SWITCH MATRICES

The SMP6122 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems. This appendix shows the 26-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP6122 is a high density RF switch module designed for high-fidelity RF switching applications up to 1.3 GHz. Excellent crosstalk and isolation is maintained by using RF relays with bandwidths in excess of 2.0 GHz, along with short low-loss coaxial runs from the connector directly to the relays. All modules are also configured to avoid any unterminated sub effects, improving overall signal integrity, and allowing for high frequency matrix designs and larger multiplexer configurations while maintaining bandwidth and VSWR.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP6122 CONNECTOR PIN LOCATIONS — FIGURE 1

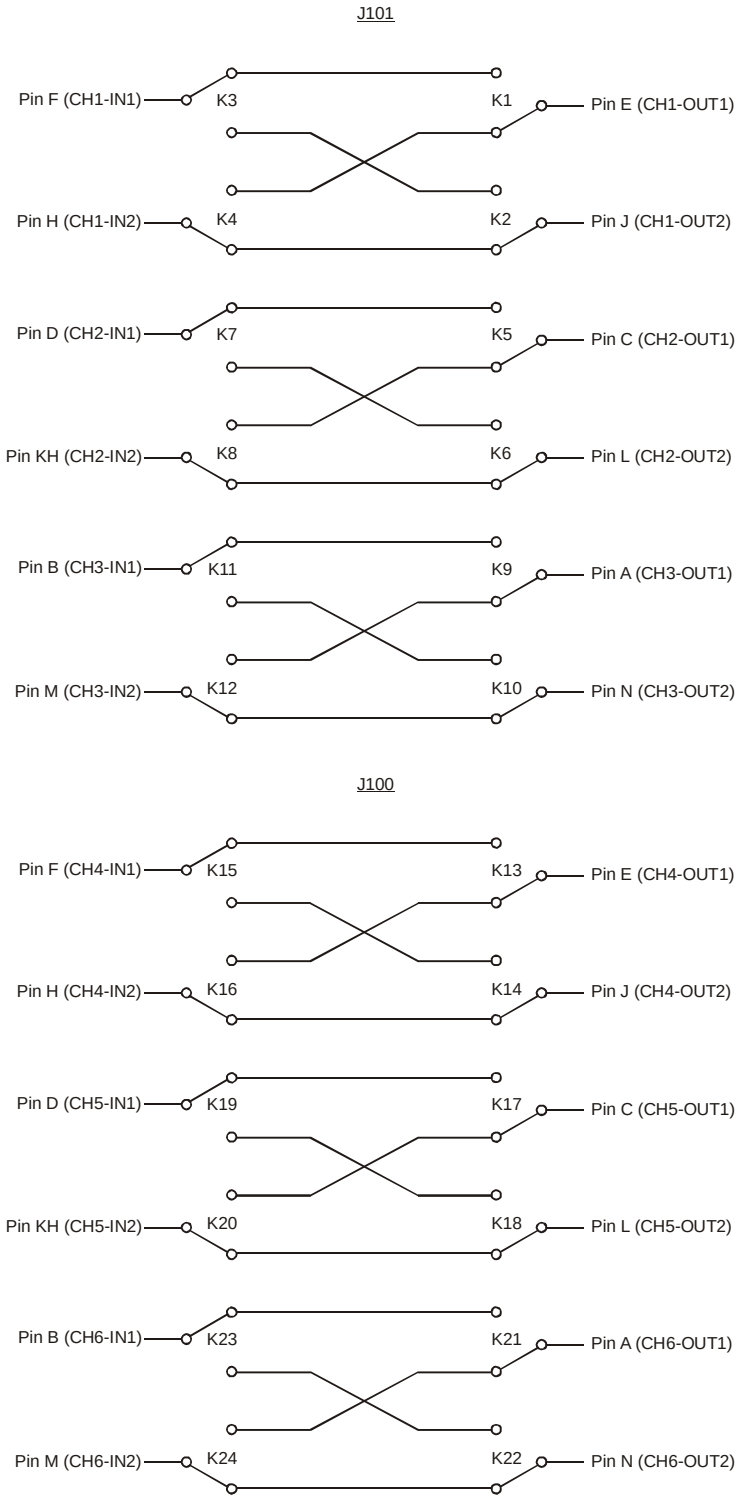
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6122 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J101		J100	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
A	CH3-OUT1	A	CH6-OUT1
B	CH3-IN1	B	CH6-IN1
C	CH2-OUT1	C	CH5-OUT1
D	CH2-IN1	D	CH5-IN1
E	CH1-OUT1	E	CH4-OUT1
F	CH1-IN1	F	CH4-IN1
H	CH1-IN2	H	CH4-IN2
J	CH1-OUT2	J	CH4-OUT2
K	CH2-IN2	K	CH5-IN2
L	CH2-OUT2	L	CH5-OUT2
M	CH3-IN2	M	CH6-IN2
N	CH3-OUT2	N	CH6-OUT2
P	UNUSED	P	UNUSED
R	UNUSED	R	UNUSED
S	UNUSED	S	UNUSED
T	UNUSED	T	UNUSED
U	UNUSED	U	UNUSED
V	UNUSED	V	UNUSED
W	UNUSED	W	UNUSED
X	UNUSED	X	UNUSED
Y	UNUSED	Y	UNUSED
Z	UNUSED	Z	UNUSED
a	UNUSED	a	UNUSED
b	UNUSED	b	UNUSED
c	UNUSED	c	UNUSED
d	UNUSED	d	FP-OPEN[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP6122 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6122 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2									K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6122 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	RF
CHANNELS	Six 2 x 2 Matrices
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 5 ms
RATED SWITCH OPERATIONS	
Mechanical	5×10^6
Electrical	1×10^5 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	100 V ac
MAXIMUM SWITCHING CURRENT	0.5 A
MAXIMUM SWITCHING POWER	10 W
DC PERFORMANCE	
PATH RESISTANCE	< 1 Ω
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 1.0 GHz
INSERTION LOSS	
100 MHz	< 0.4 dB
500 MHz	< 1.0 dB
1 GHz	< 3.0 dB
CROSSTALK	
10 MHz	< -70 dB
100 MHz	< -65 dB
500 MHz	< -60 dB
1.3 GHz	< -55 dB
ISOLATION	
10 MHz	< -80 dB
100 MHz	< -70 dB
500 MHz	< -65 dB
1.3 GHz	< -55 dB
VSWR	
100 MHz	< 1.2:1
1.3 GHz	< 1.5:1

ACCESSORIES

70-0149-001: 10-Pin/Ferrule Kit (RG178 50 Ω)

Desc: Contact, Coax, Pin (Qty: 10)	Mfgr.: AMP	Mfgr P/N: 226537-2	Contact Info: 800-522-6752/www.amp.com
Desc: Ferrule; Qty: 10	Mfgr.: AMP	Mfgr P/N: 1-332057-0	Contact Info: 800-522-6752/www.amp.com

70-0149-000: 10-Pin/Ferrule Kit (RG316 50 Ω)

Desc: Contact, Coax, Pin (Qty: 10)	Mfgr.: AMP	Mfgr P/N: 226537-1	Contact Info: 800-522-6752/www.amp.com
Desc: Ferrule, Qty: 10	Mfgr.: AMP	Mfgr P/N: 1-332056-0	Contact Info: 800-522-6752/www.amp.com

70-0150-000: 26-Pin Connector & Cable Housing (No Pins) 2 Required

Desc: Connector Housing	Mfgr.: AMP	Mfgr P/N: 201359-1	Contact Info: 800-522-6752/www.amp.com
Desc: Connector Strain Relief, 26-Pin	Mfgr.: AMP	Mfgr P/N: 201845-1	Contact Info: 800-522-6752/www.amp.com

52-0247-036: 50 Ω RF Cable, 36 Inches

Desc: 50 Ω RF Cable, 36 Inches	Mfgr.: VXI Tech	Mfgr P/N: 52-0247-036	Contact Info: 949-955-1VXI/www.vxitech.com

46-0021-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: AMP	Mfgr P/N: 305183	Contact Info: 800-522-6752/www.amp.com

46-0018-001: Crimp Tool, Coax RG174 50 Ω

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656	Contact Info: 800-522-6752/www.amp.com

46-0018-000: Crimp Tool, Coax RG178 50 Ω

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656-2	Contact Info: 800-522-6752/www.amp.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

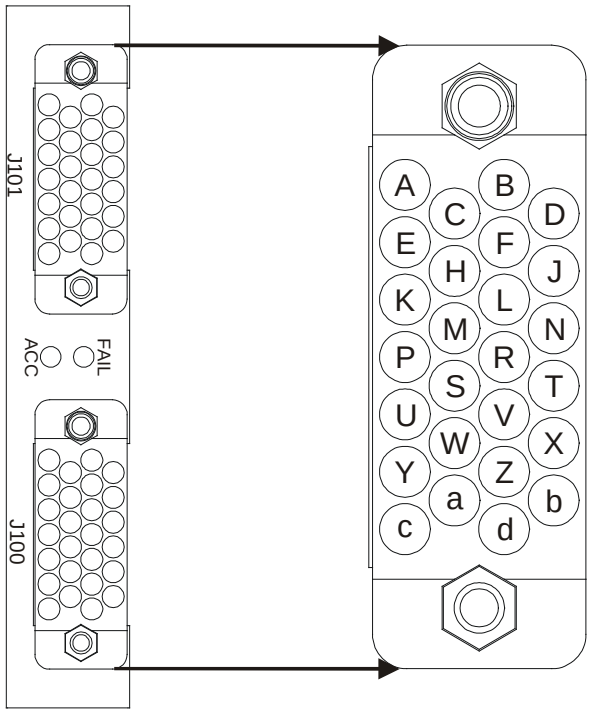
APPENDIX SMP6144

SMP6144 – 1 (4 X 4) COAXIAL SWITCH MATRIX

The SMP6144 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems. This appendix shows the 26-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP6144 is a high density RF switch module designed for high-fidelity RF switching applications up to 1.3 GHz. Excellent crosstalk and isolation is maintained by using RF relays with bandwidths in excess of 2.0 GHz, along with short low-loss coaxial runs from the connector directly to the relays. All modules are also configured to avoid any unterminated sub effects, improving overall signal integrity, and allowing for high frequency matrix designs and larger multiplexer configurations while maintaining bandwidth and VSWR.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP6144 CONNECTOR PIN LOCATIONS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6144 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J101		J100	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
A	IN-1	A	OUT-1
B	IN-2	B	OUT-2
C	IN-3	C	OUT-3
D	IN-4	D	OUT-4
E	UNUSED	E	UNUSED
F	UNUSED	F	UNUSED
H	UNUSED	H	UNUSED
J	UNUSED	J	UNUSED
K	UNUSED	K	UNUSED
L	UNUSED	L	UNUSED
M	UNUSED	M	UNUSED
N	UNUSED	N	UNUSED
P	UNUSED	P	UNUSED
R	UNUSED	R	UNUSED
S	UNUSED	S	UNUSED
T	UNUSED	T	UNUSED
U	UNUSED	U	UNUSED
V	UNUSED	V	UNUSED
W	UNUSED	W	UNUSED
X	UNUSED	X	UNUSED
Y	UNUSED	Y	UNUSED
Z	UNUSED	Z	UNUSED
a	UNUSED	a	UNUSED
b	UNUSED	b	UNUSED
c	UNUSED	c	UNUSED
d	UNUSED	d	FP-OPEN[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

J101 / J100	Pin A (IN-1)	Pin B (IN-2)	Pin C (IN-3)	Pin D (IN-4)
Pin A (OUT-1)	K14, K15	K5, K6	K9, K13	K10, K15
Pin B (OUT-2)	K3, K18	K17, K18	K8, K9	K12, K16
Pin C (OUT-3)	K1, K19	K4, K21	K20, K21	K11, K12
Pin D (OUT-4)	K2, K3	K6, K22	K7, K24	K23, K24

NOTE	Listed relays need to be closed to complete the circuit. Any combination of relays other than those listed above are invalid. A single input cannot be connected to more than one output (i.e. the circuitry utilizes a blocking matrix.)

SMP6144 RELAY MATRIX — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6144 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2									K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6144 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	RF
CHANNELS	One 4 x 4 Matrix
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 5 ms
RATED SWITCH OPERATIONS	
Mechanical	5×10^6
Electrical	1×10^5 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	100 V ac
MAXIMUM SWITCHING CURRENT	0.5 A
MAXIMUM SWITCHING POWER	10 W
DC PERFORMANCE	
PATH RESISTANCE	< 1 Ω
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 1.0 GHz
INSERTION LOSS	
100 MHz	< 0.4 dB
500 MHz	< 1.0 dB
1 GHz	< 3.0 dB
CROSSTALK	
10 MHz	< -70 dB
100 MHz	< -65 dB
500 MHz	< -60 dB
1.3 GHz	< -55 dB
ISOLATION	
10 MHz	< -80 dB
100 MHz	< -70 dB
500 MHz	< -65 dB
1.3 GHz	< -55 dB
VSWR	
100 MHz	< 1.2:1
1.3 GHz	< 1.5:1

ACCESSORIES

70-0149-001: 10-Pin/Ferrule Kit (RG178 50 Ω)

Desc: Contact, Coax, Pin (Qty: 10)	Mfgr.: AMP	Mfgr P/N: 226537-2	Contact Info: 800-522-6752/www.amp.com
Desc: Ferrule; Qty: 10	Mfgr.: AMP	Mfgr P/N: 1-332057-0	Contact Info: 800-522-6752/www.amp.com

70-0149-000: 10-Pin/Ferrule Kit (RG316 50 Ω)

Desc: Contact, Coax, Pin (Qty: 10)	Mfgr.: AMP	Mfgr P/N: 226537-1	Contact Info: 800-522-6752/www.amp.com
Desc: Ferrule, Qty: 10	Mfgr.: AMP	Mfgr P/N: 1-332056-0	Contact Info: 800-522-6752/www.amp.com

70-0150-000: 26-Pin Connector & Cable Housing (No Pins) 2 Required

Desc: Connector Housing	Mfgr.: AMP	Mfgr P/N: 201359-1	Contact Info: 800-522-6752/www.amp.com
Desc: Connector Strain Relief, 26-Pin	Mfgr.: AMP	Mfgr P/N: 201845-1	Contact Info: 800-522-6752/www.amp.com

52-0247-036: 50 Ω RF Cable, 36 Inches

Desc: 50 Ω RF Cable, 36 Inches	Mfgr.: VXI Tech	Mfgr P/N: 52-0247-036	Contact Info: 949-955-1VXI/www.vxitech.com

46-0021-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: AMP	Mfgr P/N: 305183	Contact Info: 800-522-6752/www.amp.com

46-0018-001: Crimp Tool, Coax RG174 50 Ω

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656	Contact Info: 800-522-6752/www.amp.com

46-0018-000: Crimp Tool, Coax RG178 50 Ω

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656-2	Contact Info: 800-522-6752/www.amp.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

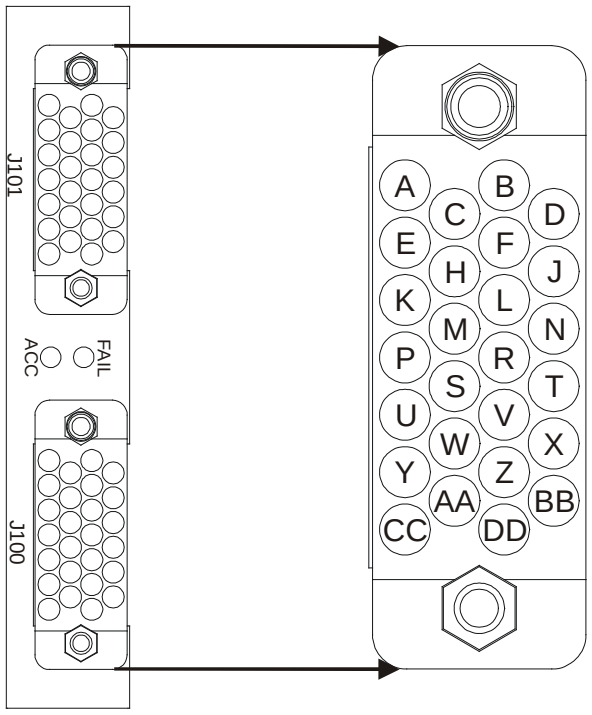
APPENDIX SMP6201

SMP6201 – 10 1 X 4 COAXIAL TREES RF TREES > 500 MHZ

The SMP6201 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems. This appendix shows the 26-pin connector, connector pin assignments, schematic, relay register map, and electrical specifications

The SMP6201 high-density 1 x 4 coaxial tree is designed for general purpose 75 Ω switching. The front panel contains two high-density, 26-pin connectors. These modules are designed for high-density 75 Ω applications under 500 MHz.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP6201 CONNECTOR PIN LOCATIONS — FIGURE 1

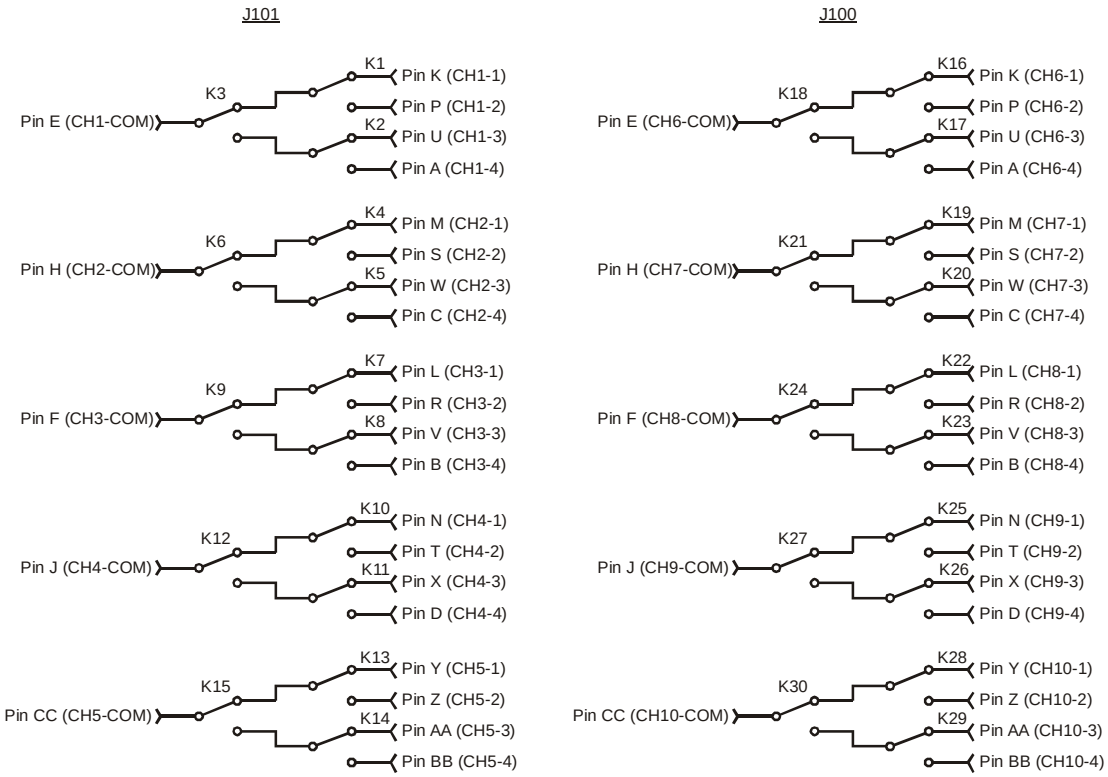
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6201 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J101		J100	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
A	CH1-4	A	CH6-4
B	CH3-4	B	CH8-4
C	CH2-4	C	CH7-4
D	CH4-4	D	CH9-4
E	CH1-COM	E	CH6-COM
F	CH3-COM	F	CH8-COM
H	CH2-COM	H	CH7-COM
J	CH4-COM	J	CH9-COM
K	CH1-1	K	CH6-1
L	CH3-1	L	CH8-1
M	CH2-1	M	CH7-1
N	CH4-1	N	CH9-1
P	CH1-2	P	CH6-2
R	CH3-2	R	CH8-2
S	CH2-2	S	CH7-2
T	CH4-2	T	CH9-2
U	CH1-3	U	CH6-3
V	CH3-3	V	CH8-3
W	CH2-3	W	CH7-3
X	CH4-3	X	CH9-3
Y	CH5-1	Y	CH10-1
Z	CH5-2	Z	CH10-2
AA	CH5-3	AA	CH10-3
BB	CH5-4	BB	CH10-4
CC	CH5-COM	CC	CH10-COM
DD	UNUSED	DD	FP-OPEN[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP6201 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6201 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2			K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6201 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	RF
CHANNELS	10 SP4T
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 5 ms
RATED SWITCH OPERATIONS	
Mechanical	5×10^6
Electrical	1×10^5 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	100 V ac
MAXIMUM SWITCHING CURRENT	0.5 A
MAXIMUM SWITCHING POWER	10 W
DC PERFORMANCE	
PATH RESISTANCE	< 1 Ω
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 500 MHz
INSERTION LOSS	
10 MHz	< 0.5 dB
100 MHz	< 1.5 dB
500 MHz	< 2.5 dB
CROSSTALK	
10 MHz	< -65 dB
100 MHz	< -50 dB
500 MHz	< -45 dB
ISOLATION	
10 MHz	< -70 dB
100 MHz	< -55 dB
500 MHz	< -50 dB
VSWR	
100 MHz	< 1.2:1
500 MHz	< 1.5:1

ACCESSORIES

70-0150-000: 26-Pin Connector & Cable Housing (No Pins) – Two Required

Desc: Connector Housing	Mfgr.: AMP	Mfgr P/N: 201359-1	Contact Info: 800-522-6752/www.amp.com
Desc: Connector, Strain Relief, 26-Pin	Mfgr.: AMP	Mfgr P/N: 201845-1	Contact Info: 800-522-6752/www.amp.com

52-0248-036: 75 Ω RF Cable, 36 Inches

Desc: 75 Ω RF Cable, 36 Inches	Mfgr.: VXI Tech	Mfgr P/N: 52-0248-036	Contact Info: 949-955-1VXI/www.vxitech.com

70-0149-000: 10-Pin/Ferrule Kit (RG179 75 Ω)

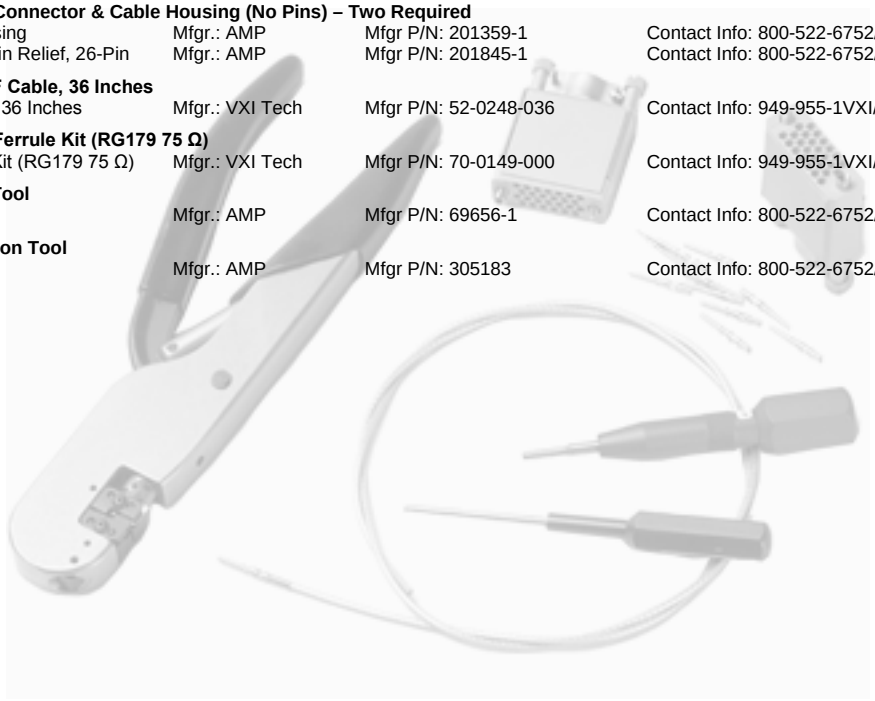
Desc: 10-Pin/Ferrule Kit (RG179 75 Ω)	Mfgr.: VXI Tech	Mfgr P/N: 70-0149-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0018-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656-1	Contact Info: 800-522-6752/www.amp.com

46-0021-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: AMP	Mfgr P/N: 305183	Contact Info: 800-522-6752/www.amp.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP6202

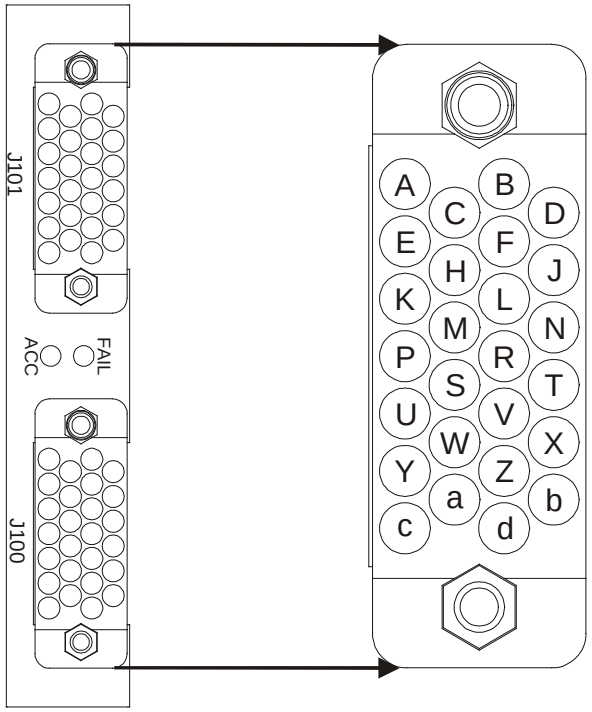
SMP6202 – 17 (1 X 2) RF SWITCHES > 500 MHZ

The SMP6202 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems. This appendix shows the 26-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

SMP6202 high-density coaxial switch module is designed for general purpose, 75 ohm RF switching. The front panel contains two high-density, 26-pin connectors. These modules are designed for high-density 75 ohm applications under 500 MHz. For higher fidelity applications >1 GHz, the SMP6203 and SMP6204 are recommended.

The SMP6202 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP6202 CONNECTOR PIN LOCATIONS — FIGURE 1

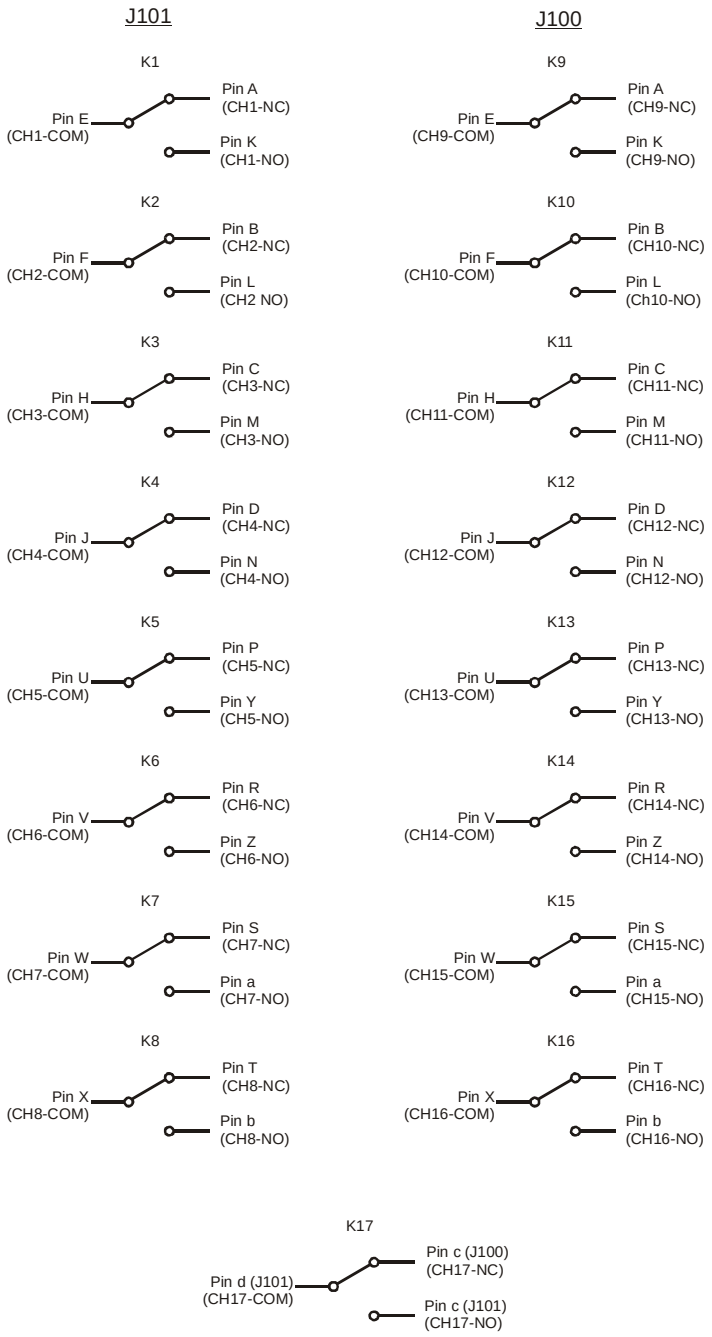
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6202 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J101		J100	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
A	CH1-NC	A	CH9-NC
B	CH2-NC	B	CH10-NC
C	CH3-NC	C	CH11-NC
D	CH4-NC	D	CH12-NC
E	CH1-COM	E	CH9-COM
F	CH2-COM	F	CH10-COM
H	CH3-COM	H	CH11-COM
J	CH4-COM	J	CH12-COM
K	CH1-NO	K	CH9-NO
L	CH2-NO	L	CH10-NO
M	CH3-NO	M	CH11-NO
N	CH4-NO	N	CH12-NO
P	CH5-NC	P	CH13-NC
R	CH6-NC	R	CH14-NC
S	CH7-NC	S	CH15-NC
T	CH8-NC	T	CH16-NC
U	CH5-COM	U	CH13-COM
V	CH6-COM	V	CH14-COM
W	CH7-COM	W	CH15-COM
X	CH8-COM	X	CH16-COM
Y	CH5-NO	Y	CH13-NO
Z	CH6-NO	Z	CH14-NO
a	CH7-NO	a	CH15-NO
b	CH8-NO	b	CH16-NO
c	CH17-NO	c	CH17-NC
d	CH17-COM	d	FP-OPEN[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP6202 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6202 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2																K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6202 Specifications and Accessories

General Specifications	
Model Type	RF
Channels	Seventeen 1 x 2 Coaxial Switches
VXI Device Type	Register Based
VXI*plug&play* Win95/NT	Yes
Switching Time	< 5 ms
Rated Switch Operations	
Mechanical	5×10^6
Electrical	1×10^5 (Full Load)
Power Specifications	
Maximum Switching Voltage	100 V ac
Maximum Switching Current	0.5 A
Maximum Switching Power	10 W
DC Performance	
Path Resistance	< 1 Ω
AC Performance	
Bandwidth (-3 dB)	> 500 MHz
Insertion Loss	
10 MHz	< 0.5 dB
100 MHz	< 1.5 dB
500 MHz	< 2.5 dB
Crosstalk	
10 MHz	< -65 dB
100 MHz	< -50 dB
500 MHz	< -45 dB
Isolation	
10 MHz	< -70 dB
100 MHz	< -55 dB
500 MHz	< -50 dB
VSWR	
100 MHz	< 1.2:1
500 MHz	< 1.5:1

Accessories

70-0149-000: 10-Pin/Ferrule Kit (RG179 75 Ω)

Desc: Contact, Coax, Pin (Qty: 10)	Mfgr.: AMP	Mfgr P/N: 226537-1	Contact Info: 800-522-6752/www.amp.com
Desc: Ferrule, Qty: 10	Mfgr.: AMP	Mfgr P/N: 1-332056-0	Contact Info: 800-522-6752/www.amp.com

70-0150-000: 26-Pin Connector & Cable Housing (No Pins) 2 Required

Desc: Connector Housing	Mfgr.: AMP	Mfgr P/N: 201359-1	Contact Info: 800-522-6752/www.amp.com
Desc: Connector Strain Relief, 26-Pin	Mfgr.: AMP	Mfgr P/N: 201845-1	Contact Info: 800-522-6752/www.amp.com

52-0248-360: 75 Ω RF Cable, 36 Inches

Desc: 75 Ω RF Cable, 36 Inches	Mfgr.: VXI Tech	Mfgr P/N: 52-0247-036	Contact Info: 949-955-1VXI/www.vxitech.com

46-0021-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: AMP	Mfgr P/N: 305183	Contact Info: 800-522-6752/www.amp.com

46-0018-002: Crimp Tool, Coax RG179 75 Ω

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656-1	Contact Info: 800-522-6752/www.amp.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

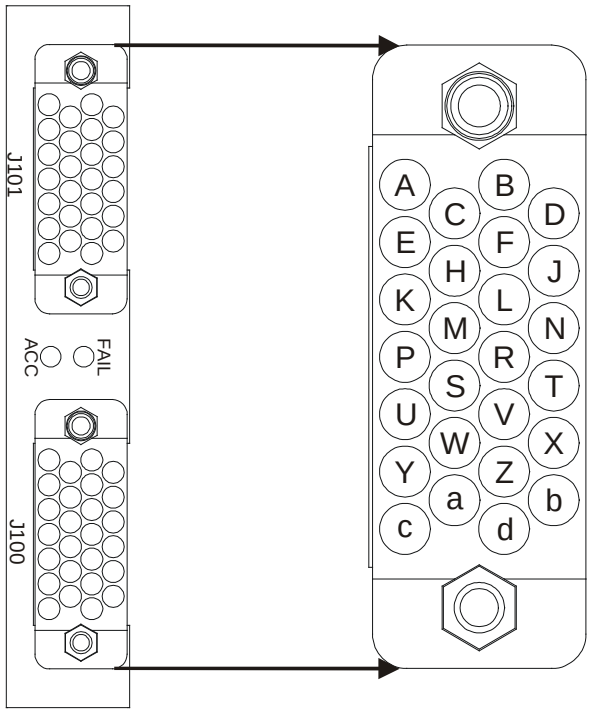
APPENDIX SMP6203

SMP6203 – 6-CHANNEL 75 Ω SP4T COAXIAL SWITCH

The SMP6203 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems. This appendix shows the 26-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP6203 is a high density 75 Ω RF switch module designed for telecommunication applications that require a controlled 75 Ω signal impedance and high bandwidth, such as high-speed internet access and cable television equipment. The front panel contains two high-density connectors that make cabling to/from and between these switch modules fast and maintainable. All modules are configured to avoid any unterminated stub effects, improving overall signal integrity.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP6203 CONNECTOR PIN LOCATIONS — FIGURE 1

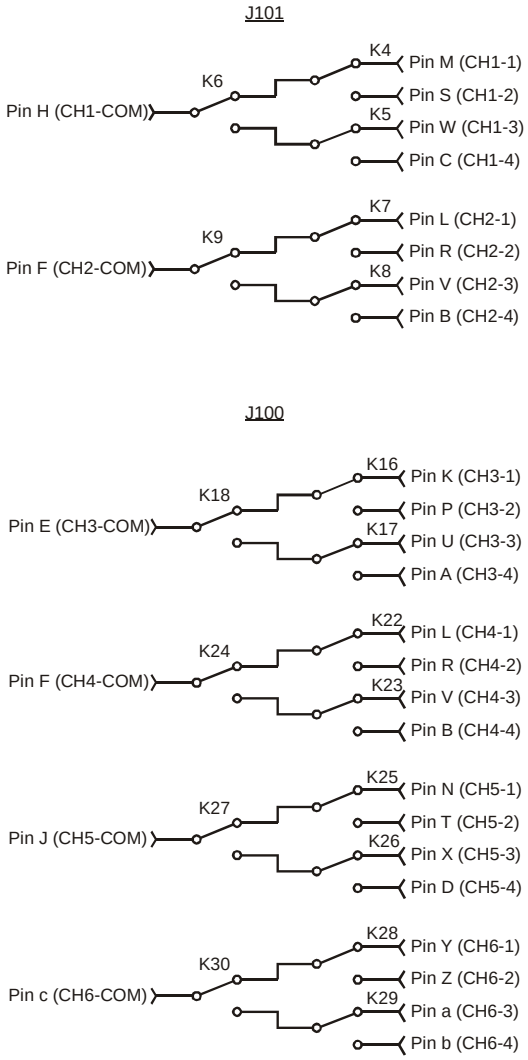
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6203 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J101		J100	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
A	UNUSED	A	CH3-4
B	CH2-4	B	CH4-4
C	CH1-4	C	UNUSED
D	UNUSED	D	CH5-4
E	UNUSED	E	CH3-COM
F	CH2-COM	F	CH4-COM
H	CH1-COM	H	UNUSED
J	UNUSED	J	CH5-COM
K	UNUSED	K	CH3-1
L	CH2-1	L	CH4-1
M	CH1-1	M	UNUSED
N	UNUSED	N	CH5-1
P	UNUSED	P	CH3-2
R	CH2-2	R	CH4-2
S	CH1-2	S	UNUSED
T	UNUSED	T	CH5-2
U	UNUSED	U	CH3-3
V	CH2-3	V	CH4-3
W	CH1-3	W	UNUSED
X	UNUSED	X	CH5-3
Y	UNUSED	Y	CH6-1
Z	UNUSED	Z	CH6-2
a	UNUSED	a	CH6-3
b	UNUSED	b	CH6-4
c	UNUSED	c	CH6-COM
d	UNUSED	d	FP-OPEN[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP6203 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6203 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2			K30	K29	K28	K27	K26	K25	K24	K23	K22				K18	K17
0	K16							K9	K8	K7	K6	K5	K4			

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6203 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	RF
CHANNELS	Six 1 x 4 RF Trees
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 5 ms
RATED SWITCH OPERATIONS	
Mechanical	5×10^6
Electrical	1×10^5 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	100 V ac
MAXIMUM SWITCHING CURRENT	0.5 A
MAXIMUM SWITCHING POWER	10 W
DC PERFORMANCE	
PATH RESISTANCE	< 1 Ω
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 500 MHz
INSERTION LOSS	
10 MHz	< 0.5 dB
100 MHz	< 1.5 dB
500 MHz	< 2.5 dB
CROSSTALK	
10 MHz	< -65 dB
100 MHz	< -50 dB
500 MHz	< -45 dB
ISOLATION	
10 MHz	< -70 dB
100 MHz	< -55 dB
500 MHz	< -50 dB
VSWR	
100 MHz	< 1.2:1
500 MHz	< 1.5:1

ACCESSORIES

70-0150-000: 26-Pin Connector & Cable Housing (No Pins) – Two Required

Desc: Connector Housing	Mfgr.: AMP	Mfgr P/N: 201359-1	Contact Info: 800-522-6752/www.amp.com
Desc: Connector, Strain Relief, 26-Pin	Mfgr.: AMP	Mfgr P/N: 201845-1	Contact Info: 800-522-6752/www.amp.com

52-0248-036: 75 Ω RF Cable, 36 Inches

Desc: 75 Ω RF Cable, 36 Inches	Mfgr.: VXI Tech	Mfgr P/N: 52-0248-036	Contact Info: 949-955-1VXI/www.vxitech.com

70-0149-000: 10-Pin/Ferrule Kit (RG179 75 Ω)

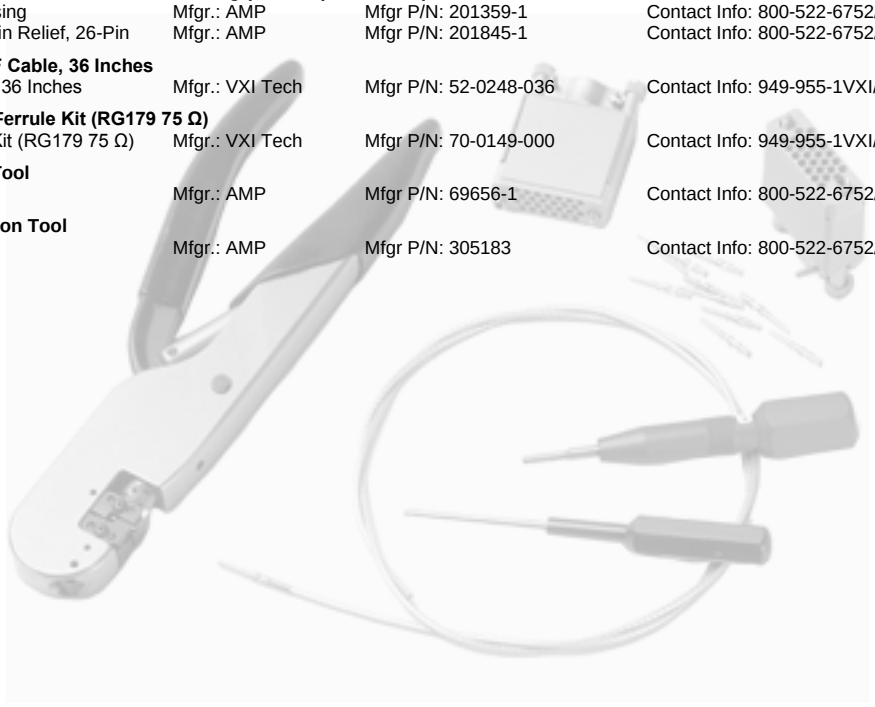
Desc: 10-Pin/Ferrule Kit (RG179 75 Ω)	Mfgr.: VXI Tech	Mfgr P/N: 70-0149-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0018-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656-1	Contact Info: 800-522-6752/www.amp.com

46-0021-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: AMP	Mfgr P/N: 305183	Contact Info: 800-522-6752/www.amp.com



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

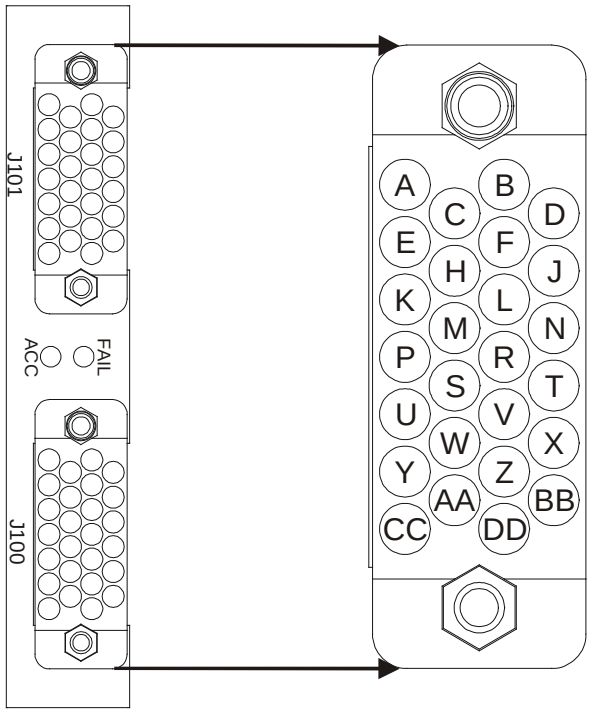
APPENDIX SMP6204

SMP6204 – 12 (1 X 2) 75 Ω RF SWITCHES > 500 MHZ

The SMP6204 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems. This appendix shows the 26-pin connector, connector pin assignments, schematic, relay register map, electrical specifications, and connector accessory information for this module.

The SMP6204 is a high density 75 Ω RF switch module designed for telecommunication applications that require a controlled 75 Ω signal impedance and high bandwidth, such as high-speed internet access and cable television equipment. The front panel contains two high-density connectors that make cabling to/from and between these switch modules fast and maintainable. All modules are configured to avoid any unterminated stub effects, improving overall signal integrity.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP6204 CONNECTOR PIN LOCATIONS— FIGURE 1

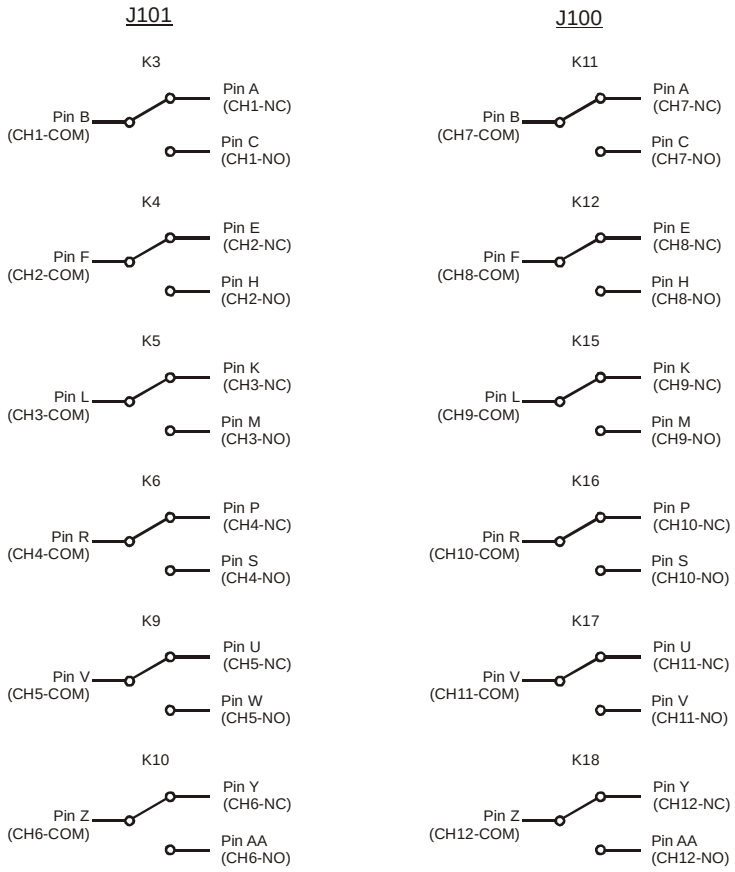
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6204 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE -1

J101		J100	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
A	CH1-NC	A	CH7-NC
B	CH1-COM	B	CH7-COM
C	CH1-NO	C	CH7-NO
D	UNUSED	D	UNUSED
E	CH2-NC	E	CH8-NC
F	CH2-COM	F	CH8-COM
H	CH1-NO	H	CH8-NO
J	UNUSED	J	UNUSED
K	CH3-NC	K	CH9-NC
L	CH3-COM	L	CH9-COM
M	CH3-NO	M	CH9-NO
N	UNUSED	N	UNUSED
P	CH4-NC	P	CH10-NC
R	CH4-COM	R	CH10-COM
S	CH4-NO	S	CH10-NO
T	UNUSED	T	UNUSED
U	CH5-NC	U	CH11-NC
V	CH5-COM	V	CH11-COM
W	CH5-NO	W	CH11-NO
X	UNUSED	X	UNUSED
Y	CH6-NC	Y	CH12-NC
Z	CH6-COM	Z	CH12-COM
AA	CH6-NO	AA	CH12-NO
BB	UNUSED	BB	UNUSED
CC	UNUSED	CC	UNUSED
DD	UNUSED	DD	FP-OPEN[1]

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP6204 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6204 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2															K18	K17
0	K16	K15			K12	K11	K10	K9			K6	K5	K4	K3		

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6204 SPECIFICATIONS AND ACCESSORIES

GENERAL SPECIFICATIONS	
MODEL TYPE	RF
CHANNELS	Twelve 1 x 2 RF Switches
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 5 ms
RATED SWITCH OPERATIONS	
Mechanical	5×10^6
Electrical	1×10^5 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	100 V ac
MAXIMUM SWITCHING CURRENT	0.5 A
MAXIMUM SWITCHING POWER	10 W
DC PERFORMANCE	
PATH RESISTANCE	< 1 Ω
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 500 MHz
INSERTION LOSS	
10 MHz	< 0.5 dB
100 MHz	< 1.5 dB
500 MHz	< 2.5 dB
CROSSTALK	
10 MHz	< -65 dB
100 MHz	< -50 dB
500 MHz	< -45 dB
ISOLATION	
10 MHz	< -70 dB
100 MHz	< -55 dB
500 MHz	< -50 dB
VSWR	
100 MHz	< 1.2:1
500 MHz	< 1.5:1

ACCESSORIES

70-0150-000: 26-Pin Connector & Cable Housing (No Pins) – Two Required

Desc: Connector Housing	Mfgr.: AMP	Mfgr P/N: 201359-1	Contact Info: 800-522-6752/www.amp.com
Desc: Connector, Strain Relief, 26-Pin	Mfgr.: AMP	Mfgr P/N: 201845-1	Contact Info: 800-522-6752/www.amp.com

52-0248-036: 75 Ω RF Cable, 36 Inches

Desc: 75 Ω RF Cable, 36 Inches	Mfgr.: VXI Tech	Mfgr P/N: 52-0248-036	Contact Info: 949-955-1VXI/www.vxitech.com

70-0149-000: 10-Pin/Ferrule Kit (RG179 75 Ω)

Desc: 10-Pin/Ferrule Kit (RG179 75 Ω)	Mfgr.: VXI Tech	Mfgr P/N: 70-0149-000	Contact Info: 949-955-1VXI/www.vxitech.com

46-0018-000: Crimp Tool

Desc: Crimp Tool	Mfgr.: AMP	Mfgr P/N: 69656-1	Contact Info: 800-522-6752/www.amp.com

46-0021-000: Extraction Tool

Desc: Extraction Tool	Mfgr.: AMP	Mfgr P/N: 305183	Contact Info: 800-522-6752/www.amp.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP6301 / SMP6301T

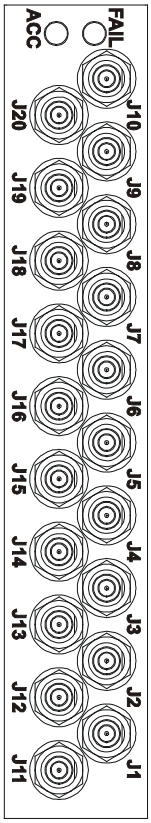
SMP6301 / SMP6301T– 4-CHANNEL SP4T RF MUX WITH SMB CONNECTORS

The SMP6301 and SMP6301T are part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems. This appendix shows the twenty SBM jack connectors, connector assignments, schematic, relay register map, and electrical specifications information for these modules.

The SMP6301 is designed with SMB male connectors for applications that require RF signal switching greater than 1.8 GHz. Excellent crosstalk and isolation is maintained by using RF relays with bandwidths in excess of 2.0 GHz, along with short low-loss coaxial runs from the connector directly to the relays. All modules are also configured to avoid any unterminated stub effects, improving overall signal integrity, and allowing for larger high frequency multiplexer configurations while maintaining bandwidth and VSWR.

For applications that require self-termination of unused channels, a kit of four 50 Ω terminations is provided as an option. A total of four of these kits (Option 79) would be required to self-terminate the complete card.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



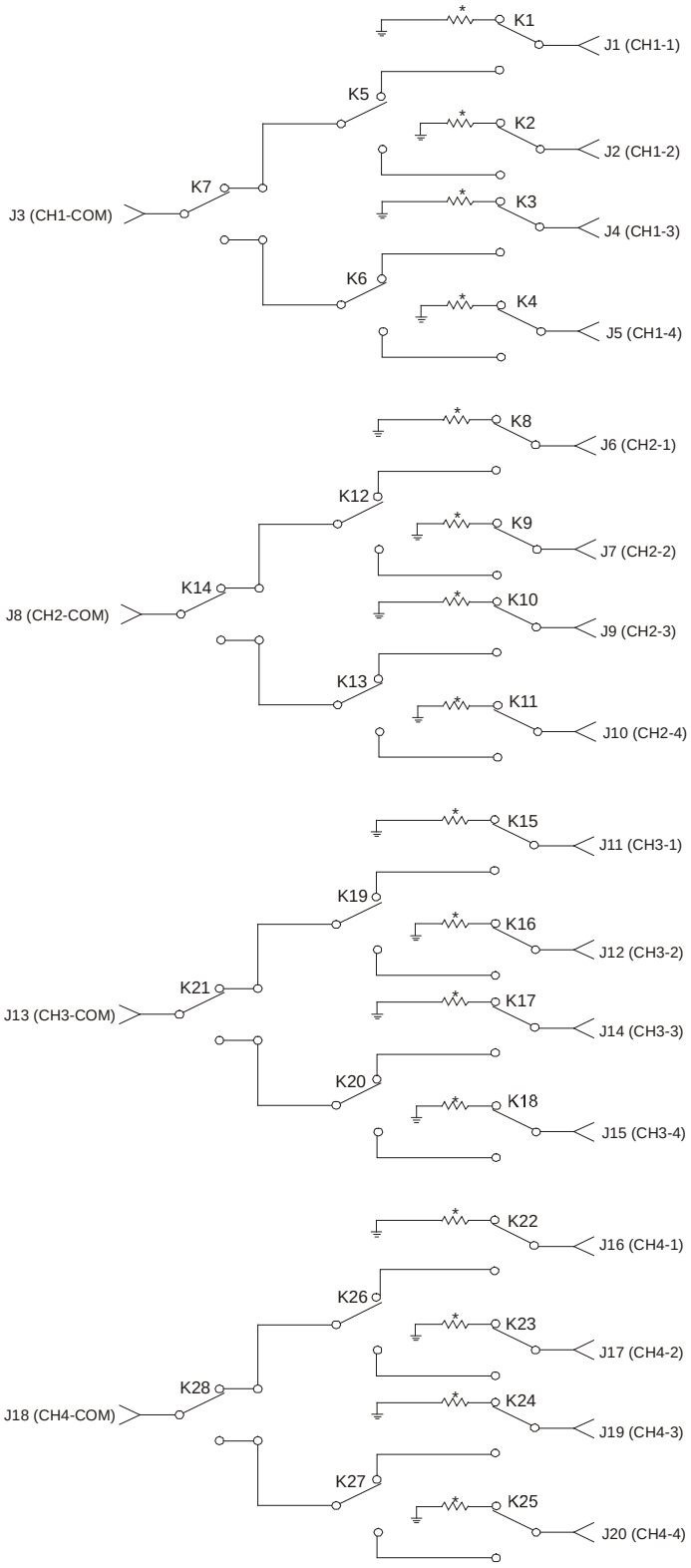
SMP6301 FRONT PANEL WITH SMB CONNECTORS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6301 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J101	
CONNECTOR	**SIGNAL**
J1	CH1-1
J2	CH1-2
J3	CH1-COM
J4	CH1-3
J5	CH1-4
J6	CH2-1
J7	CH2-2
J8	CH2-COM
J9	CH2-3
J10	CH2-4
J11	CH3-1
J12	CH3-2
J13	CH3-COM
J14	CH3-3
J15	CH3-4
J16	CH4-1
J17	CH4-2
J18	CH4-COM
J19	CH4-3
J20	CH4-4

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



* 50 Ohm Terminator, installed on SMP6301T Only

SMP6301 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6301 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																
2					K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP6301 SPECIFICATIONS

GENERAL	
MODEL TYPE	RF
CHANNELS	Four (1 x 4) 50 Ω RF Switches
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
CONNECTOR TYPE	50 Ω SMB Jack on Board Mates with 50 Ω SMB Plug
SWITCHING TIME	< 5 ms
RATED SWITCH OPERATIONS	
Mechanical	5×10^6
Electrical	1×10^5
POWER	
MAXIMUM SWITCHING VOLTAGE	100 V ac, 30 V dc
MAXIMUM SWITCHING POWER	10 W
MAXIMUM SWITCHING CURRENT	0.5 A
DC PERFORMANCE	
PATH RESISTANCE	1.0 Ω maximum
THERMAL EMF	< 40 μV
DC ISOLATION	$> 10^8$ Ω
AC PERFORMANCE	
BANDWIDTH (-3 dB)	> 1.8 GHz
INSERTION LOSS	
10 MHz	< 0.1 dB
100 MHz	< 0.4 dB
500 MHz	< 0.8 dB
1.3 GHz	< 1.5 dB
1.8 GHz	< 3.0 dB
3.0 GHz	< 6.0 dB
Crosstalk	Channel-to-Channel or Channel-to-Common
10 MHz	< -100 dB
100 MHz	< -90 dB
500 MHz	< -65 dB
1.0 GHz	< -50 dB
1.3 GHz	< -45 dB
VSWR	Through or Internal Termination
10 MHz	< 1.05:1
100 MHz	< 1.15:1
500 MHz	< 1.30:1
1.0 GHz	< 1.50:1
1.3 GHz	< 1.50:1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP6905/SMP6905-2500

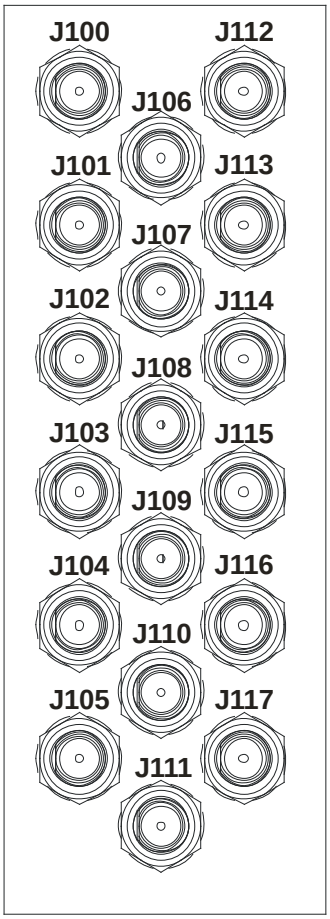
SMP6905 – SIX 2-WAY 10 MHZ – 1 GHZ SPLITTER/COMBINER

The SMP6905 and SMP6905-2500 are part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density switching systems. This appendix shows the front panel layout and provides connector pin assignments.

The SMP6905 contains six, 2-way power splitter/combiners. Each splitter/combiner has a wide bandwidth of 10 MHz to 1.0 GHz. The SMP6905 provides the same bandwidth up to 2.5 GHz. Each splitter has a matched power rating of 1.0 W and worst case VSWR of 1.3:1.

The SMP6905 is a double-wide SMP module, and designed to be mixed and matched with other SMIP *II* cards within a SMP1200 base unit. This level of modularity in configuration provides for very powerful RF signal switching configurations. As a 2-wide module, the SMP6905 can only be accommodated by the SMP1200.

For different configurations or bandwidths, please contact the manufacturer.



PIN	SIGNAL
J100	INPUT-1
J101	OUTPUT1-1
J102	OUTPUT1-2
J103	INPUT-2
J104	OUTPUT2-1
J105	OUTPUT2-2
J106	INPUT-3
J107	OUTPUT3-1
J108	OUTPUT3-2
J109	INPUT-4
J110	OUTPUT4-1
J111	OUTPUT4-2
J112	INPUT-5
J113	OUTPUT5-1
J114	OUTPUT5-2
J115	INPUT-6
J116	OUTPUT6-1
J117	OUTPUT6-2

SMP6905 FRONT PANEL WITH SMB CONNECTORS — FIGURE 1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

0° SPLITTER/COMBINER BACKGROUND

A 0° splitter is a passive device which accepts an input signal and delivers multiple output signals with specific phase and amplitude characteristics. The output signals theoretically possess the following characteristics:

- Equal amplitude
- 0° phase relationship between any two output signals
- High isolation between each output signal
- Theoretical insertion loss of 3.0 dB

Since the 0° power splitter is a reciprocal passive device it may be used as a power combiner simply by applying each signal singularly into each of the splitter output ports. The vector sum of the signals will appear as a single output at the splitter input port.

The following signal processing functions can be accomplished by power splitter/combiners:

- Vectoral addition or subtraction of signals
- Obtain multiple, in-phase output signals proportional to the level of a common input signal
- Split an input signal into multiple output signals
- Combine signals from different sources to obtain a single port output
- Provide a capability to obtain RF logic arrangements

SMP6905 SPECIFICATIONS

GENERAL			
FREQUENCY (MHZ)	10 to 100	100 to 500	500 to 1000
Isolation (dB)	30 Typ. (20 Min.)	25 Typ. (30 Min.)	23 Typ. (18 Min.)
Insertion Loss (Above 3 dB)	0.2 Typ. (0.5 Max.)	0.5 Typ. (1.0 Max.)	0.9 Typ. (1.2 Max.)
Phase Unbalance (Degrees)	2 Max.	4 Max.	4 Max.
Amplitude (dB)	0.15 Max.	0.15 Max.	0.30 Max.

SMP6905-2500 SPECIFICATIONS

GENERAL			
FREQUENCY (MHZ)	10 to 100	100 to 1250	1250 to 2500
Isolation (dB)	16 Typ. (11 Min.)	17 Typ. (14 Min.)	17 Typ. (14 Min.)
Insertion Loss (Above 3 dB)	0.5 Typ. (0.8 Max.)	0.6 Typ. (1.4 Max.)	0.8 Typ. (1.4 Max.)
Phase Unbalance (Degrees)	1 Max.	4 Max.	8 Max.
Amplitude (dB)	0.2 Max.	0.3 Max.	0.4 Max.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

APPENDIX SMP7000

SMP7000 – SMIP BREADBOARD

The SMP7000 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density measurement and switching systems. This appendix shows the SMP7000's block diagram, operation instructions, memory map, proto input connector pin outs, mother and daughter board layout, and electrical specifications.

The SMP7000 is a general purpose prototyping module that leverages the SMIP's modularity and interface architecture to the VXIbus to provide over 24 square inches of real estate that are available for user-defined designs. System engineers can incorporate their own designs within a standard SMIP carrier and combine it with products, such as 1.8 GHz RF switching or 16 A relays that are already available on the platform. Custom DAC modules or digital I/O cards with custom logic levels can easily be accommodated within the available breadboard space.

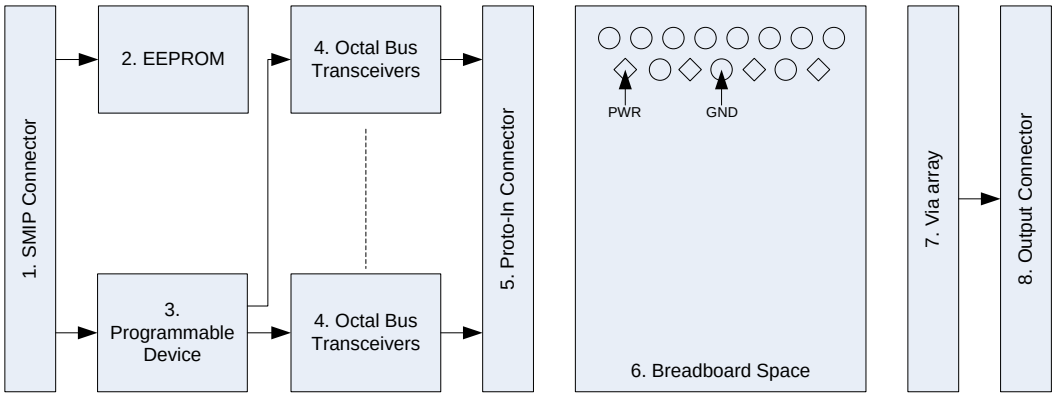
The SMP7000 provides access to 96 digital I/O lines and five fused power rails for interfacing to user-defined logic. Custom designs can be laid out on the through-hole pattern available on the breadboard space. A connector header is provided to facilitate migration of the custom design to a printed circuit board layout. This enables the use of multiple front panel I/O possibilities, ranging from 15-pin D-sub to 160-pin high-density DIN connectors. All 96 digital lines are mapped to VXI extended memory space for direct register access. API support is also provided through the standard SMIP VXI*plug&play* driver, reducing the time required for software development.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.

OVERVIEW

The SMP7000 uses the standard SMIP form factor and interface. The SMIP interface provides register based control of the SMP7000's 96 I/O lines and their associated control signals. Voltage translating octal transceivers buffer the 96 I/O lines from the low-voltage programmable logic device to the 5 V prototype signals. These signals are routed to the "Proto-Input" connector, providing user access to the I/O signals. The user can hard-wire the I/O signals to components in the via array (prototyping area). Alternatively, the end user can plug in an adapter board with their logic on it. A separate via array is provided which is compatible with a 160-pin DIN connector. Support will be provided to allow the use of three row high density D-sub on the end users adapter board.

A simplified block diagram of the SMP7000 is provided below.



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Component Detail

1. SMIP Connector: 64-pin right angle male
2. EEPROM: 1 kb two-wire serial bus
3. Programmable device
4. Octal bus transceivers: 3 state outputs and adjustable output voltage for 3.3 V to 5 V conversion
5. Proto connector in: 144-pin three row 2 mm connector
6. Breadboard space: 6” x 4”
7. Via array: 160-pin 5 row 0.1” via array
8. Output connector: 15-pin D-sub with an option of 160-pin ERNI

OPERATION

The SMP7000’s 96 I/O lines are implemented as twelve independently controlled banks of 8 bits per bank. Each bank has an associated direction bit and output enable bit. Setting a bank’s direction bit to logic 1 configures the bank as an output port. Conversely, clearing the bank’s direction bit configures the bank as an input port. If a bank is configured as an output port, clearing the bank’s enable bit will enable the output drivers. If an output port’s enable bit is set to logic 1, the output drivers are disabled.

The logic levels of the I/O lines are established through a byte-wide register per bank. The registers are located in extended memory space (A24/A32) beginning at the plug-in module’s base address (refer to the *Memory Map* section below). The plug-in module’s base address is calculated by:

MODULE BASE ADDRESS = MODULE NUMBER * 0x0400
Where “MODULE NUMBER” is 0 or 1 for an SMP1100 or 0 to 5 for an SMP1200

Each bank’s direction and output enable are controlled by a 2-bit wide bit field. These bit fields are located in extended memory space beginning at the plug-in module’s base address + 0x0210 (refer to the *Memory Map* section below).

A dual-octal bi-directional voltage translating transceiver (74ALVC164245) buffers the I/O lines from the 3.3 V programmable logic to the 5 V prototype signals. Sink and source capabilities of the I/O are guaranteed at ±10 mA per pin.

NOTE	The user must ensure that, if an implementation uses greater than this guaranteed current, it will stay within the absolute limits of the 74ALVC164245 (64 mA for port B and 30 mA for port A).

Additionally, control of the 16 MHz clock enable are available from bit 0 of offset 0x213 of board control space. By default, the 16 MHz clock is disabled for the SMP7000. The ACFAIL signal is also buffered to the prototype connector and is active after power-up.

Standard SMIP register space will be supported as follows:

0x200 Control Register – Read/Write – 16 bits
Power on state = 0000 (hex)
Only bit 5 (access LED) functionality is supported, all other bits are unused.

0x202 Delay Register – Read/Write – 16 bits
Power on state = 0000 (hex)
Note that the value of this register never affects BUSYOUTN signal and this signal is always held high by the module. This register is only implemented to support non-volatile memory programming.

0x204 Status Register – Read only – 16 bits
Power on state = HW rev code [15:12], 000 (hex) [11:0]
Only bits 15-12 are used, rest are unused.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

0x206 Flash/Odometer Capable Register – Read/Write – 16 bits
Power on state = 8000 (hex). The most significant bit will always read 1 (odometer not supported). Only read/write support is provided, bits do not affect anything.

Note that 0x300 – 0x3FF are not supported because there is no odometer flash on the module. All control registers in the programmable device will be read/write.

- Writes to a bank set up as output will be driven on the data pins of the programmable device for that bank. This data will always be driven on the pins of the programmable device for banks configured as outputs, and it is the responsibility of the end user to appropriately control direction and enable of the translating transceivers to drive the data to the prototype signals via the transceivers.
- Reads from a bank set up as output will place the data on the output pins of the programmable device onto the SMIP interface. Direct read back of prototype signals will not be provided because of the design of the transceivers, but can be implemented by the end user if needed.
- Writes to a bank set up as input will be written to the output buffer for that bank, but will not be driven on the pins of the programmable device.
- Reads from a bank set up as an input will place the data on the output pins of the programmable device's bank on the SMIP interface. It is the responsibility of the end user to appropriately control the direction and enable signals of the translating transceivers to present data from the prototype signals to the programmable device I/O bank. Data will be latched into the programmable device on the first occurring falling edge of either the STROBE0INN or the STROBE1INN signal of the SMIP interface. Note: Double flop synchronization will be used on the inputs of the programmable device so that data transitions occurring inside the bounds of setup or hold of the first occurring strobe do not generate meta-stable results.
- In case of 16-bit accesses affecting two banks at a time, reads and writes to each I/O bank will be handled individually per the four cases listed above.

POWER-ON/RESET STATES

At power on and after a reset, the SMP7000 takes on the following states:

• I/O Direction	• Read (Input)
• Transceivers	• Disabled
• I/O Register Information	• "0" for all banks
• 16 MHz clock buffer	• Disabled

It should be noted that when direction is set to read and transceivers are disabled, data on output pins of the programmable device's bank will be pulled high and data will be read as all 1's.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

MEMORY MAP

NOTE Board Address = Module Number <0 to 5> * 0x0400.

I/O DATA CONTROL @ BOARD ADDRESS + OFFSET																															
I/O BANK B								I/O BANK A								I/O BANK 9								I/O BANK 8							
Offset = 0x000B								Offset = 0x00A								Offset = 0x009								Offset = 0x008							
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
I/O BIT NUMBER																															
95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
I/O BANK 7								I/O BANK 6								I/O BANK 5								I/O BANK 4							
Offset = 0x007								Offset = 0x006								Offset = 0x005								Offset = 0x004							
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
I/O BIT NUMBER																															
63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
I/O BANK 3								I/O BANK 2								I/O BANK 1								I/O BANK 0							
Offset = 0x003								Offset = 0x002								Offset = 0x001								Offset = 0x000							
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
I/O BIT NUMBER																															
31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

I/O BANK CONTROL @ BOARD ADDRESS +OFFSET																															
Offset = 0x213								Offset = 0x212								Offset = 0x211								Offset = 0x210							
16 MHz CLK CTRL								BANK B		BANK A		BANK 9		BANK 8		BANK 7		BANK 6		BANK 5		BANK 4		BANK 3		BANK 2		BANK 1		BANK 0	
							E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E
Offset = 0x200 Through 0x20F																															
Reserved for SMIP Driver use																															
CONTROL AND STATUS REGISTERS @ BOARD ADDRESS +OFFSET																															
Offset = 0x206																Offset = 0x204															
FLASH/ODO CAPABLE REG																STATUS REG															
F																F	E	D	C												
CONTROL AND STATUS REGISTERS @ BOARD ADDRESS +OFFSET																															
Offset = 0x202																Offset = 0x200															
DELAY REG																CONTROL REG															
																										5					

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

The following registers have been modified for use with the SMP7000. The shaded sections of the map indicate where the SMP7000 differs from the standard SMIP *II*.

Control Register — Read & Write*		
ADDR	A24/A32 Offset + 0x200	
D15 – D6	Unused	
D5	Access LED Fail Bit	0 = Non-active 1 = Active P_{on} state = 0 Lights the Access LED red when activated.
D15 – D6	Unused	

Delay Register — Read & Write		
ADDR	A24/A32 Offset +0x202	
D15 - D0	Data Bus (16-bit)	Note that the value of this register never affects BUSYOUTN signal and this signal is always held high by the module. This register is only implemented to support non-volatile programming.

Status Register — Read Only		
ADDR	A24/A32 Offset +0x204	
D15 - D12	Hardware Revision Code	This code is incremented each time hardware/firmware changes are made to an SMIP *II* board.
D11 – D0	Unused	

Flash Capable / Odometer Capable – Read & Write		
ADDR	A24/A32 Offset +0x206	
D15	Flash Write Protect Not bit	This bit will always read “1” for the SMP7000, as the odometer function is not supported.
D14 - D0	Unused	

Flash – Read & Write		
ADDR	A24/A32 Offset +0x300 – 0x3FF	
D15 – D0	Unused	Typically reserved for the Flash Odometer, this space is unused in the SMP7000 as the odometer function is not supported.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

PROTO INPUT CONNECTOR PIN OUTS

The logic lines will be made available on the user breadboard through pads on the PCB and are 5 V logic. The I/O lines will be connected to the pads of a “proto-input” connector which can be used to fly-wire to the via array of the prototype board or can connect to an end user’s prototype adapter card. A similar set of connector pads will be available to connect from the via array or adapter board to the front panel connector.

Pin	Row A	Row B	Row C
1	Ch0:B7	GND	Ch1:B7
2	Ch0:B6	+12V_FUSED	Ch1:B6
3	Ch0:B5	+12V_FUSED	Ch1:B5
4	Ch0:B4	GND	Ch1:B4
5	Ch0:B3	GND	Ch1:B3
6	Ch0:B2	+12V_FUSED	Ch1:B2
7	Ch0:B1	+12V_FUSED	Ch1:B1
8	Ch0:B0	GND	Ch1:B0
9	Ch2:B7	GND	Ch3:B7
10	Ch2:B6	-12V_FUSED	Ch3:B6
11	Ch2:B5	-12V_FUSED	Ch3:B5
12	Ch2:B4	GND	Ch3:B4
13	Ch2:B3	GND	Ch3:B3
14	Ch2:B2	-12V_FUSED	Ch3:B2
15	Ch2:B1	-12V_FUSED	Ch3:B1
16	Ch2:B0	GND	Ch3:B0
17	Ch4:B7	GND	Ch5:B7
18	Ch4:B6	16 MHz CLK	Ch5:B6
19	Ch4:B5	GND	Ch5:B5
20	Ch4:B4	+5V_FUSED	Ch5:B4
21	Ch4:B3	+5V_FUSED	Ch5:B3
22	Ch4:B2	GND	Ch5:B2
23	Ch4:B1	GND	Ch5:B1
24	Ch4:B0	+5V_FUSED	Ch5:B0
25	Ch6:B7	+5V_FUSED	Ch7:B7
26	Ch6:B6	GND	Ch7:B6
27	Ch6:B5	GND	Ch7:B5
28	Ch6:B4	GND	Ch7:B4
29	Ch6:B3	GND	Ch7:B3
30	Ch6:B2	GND	Ch7:B2
31	Ch6:B1	GND	Ch7:B1
32	Ch6:B0	ACFAILN	Ch7:B0
33	Ch8:B7	GND	Ch9:B7
34	Ch8:B6	GND	Ch9:B6
35	Ch8:B5	-24V_FUSED	Ch9:B5
36	Ch8:B4	-24V_FUSED	Ch9:B4
37	Ch8:B3	GND	Ch9:B3
38	Ch8:B2	GND	Ch9:B2
39	Ch8:B1	-24V_FUSED	Ch9:B1
40	Ch8:B0	-24V_FUSED	Ch9:B0
41	Ch10:B7	GND	Ch11:B7
42	Ch10:B6	GND	Ch11:B6
43	Ch10:B5	+24V_FUSED	Ch11:B5
44	Ch10:B4	+24V_FUSED	Ch11:B4
45	Ch10:B3	GND	Ch11:B3
46	Ch10:B2	GND	Ch11:B2
47	Ch10:B1	+24V_FUSED	Ch11:B1
48	Ch10:B0	+24V_FUSED	Ch11:B0

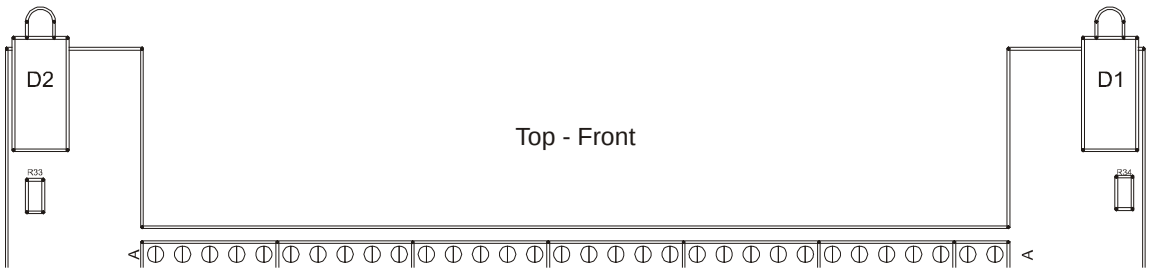
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

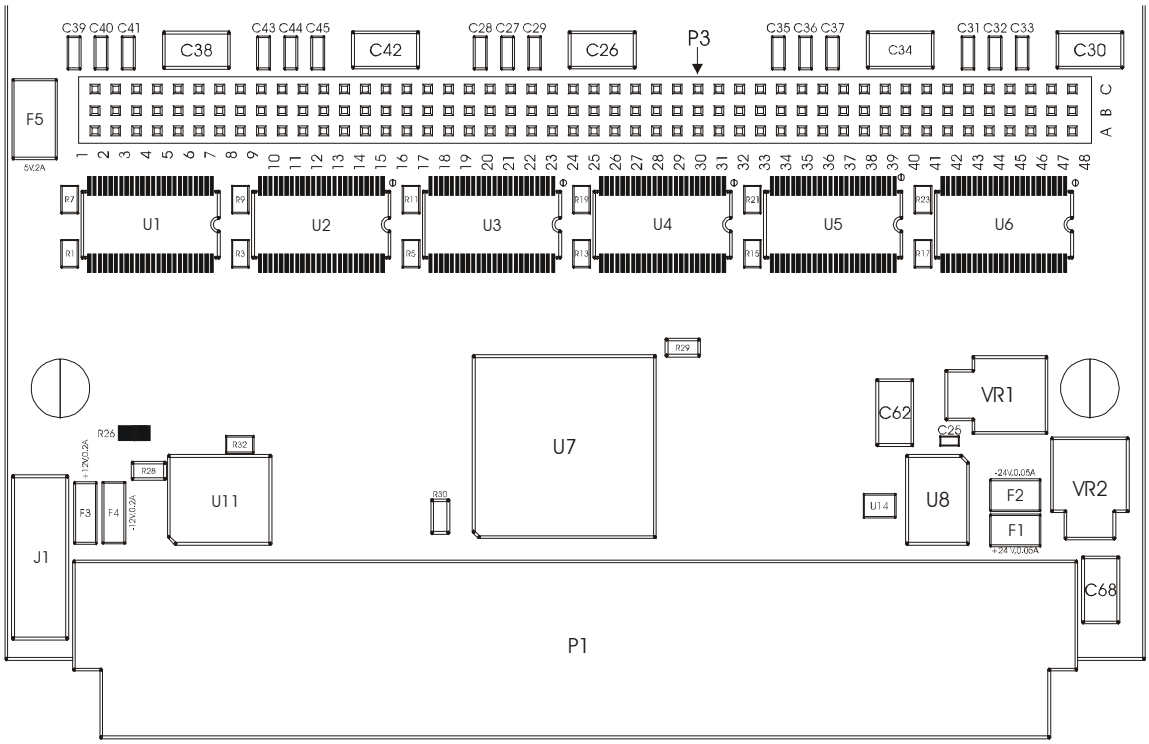
MOTHERBOARD LAYOUT

A list of SMP7000 components is provided below. The list includes the VXI Technology part number, a description of the part, the manufacturer's part number, and the reference designators. The pages that follow show the location of the reference designators on the SMP7000 PCB. Note that reference designators may have been reoriented for ease of reading.

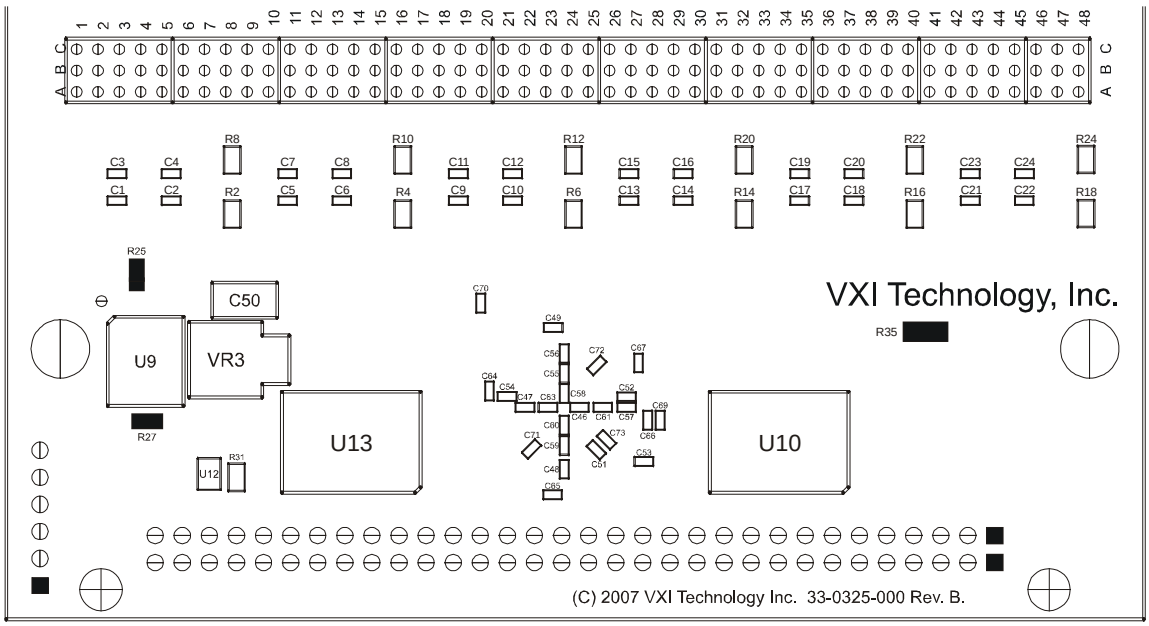
VTI P/N	Qty	Description	MFG P/N	Ref Des
01-0010-820	1	Res, Chip, 82 Ω 5%, 0.12W, 1206	CRCW120682R0JNEA	R35
01-0011-680	3	Res, Chip, 68 Ω 5%, 0.06W, 0805	CRCW080568R0JNEA	R25-R27
01-0115-471	2	Res, Chip, 470 Ω 5%, 0.06W, 0603	CRCW0603470RJNEA	R33-R34
01-0115-472	2	Res, Chip, 4.7 kΩ 5%, 0.06W, 0603	CRCW06034K70JNEA	R28, R30
01-0164-330	1	Res, Chip, 330 Ω, 1%, 0.06W, 0603	CRCW0603330RFKEA	R29
01-0196-103	26	Res, Chip, 10.0 kΩ, 5%, 0.06W, 0402	CRCW040210K0JNEA	R1-R24, R31-R32
05-0022-335	8	Cap, Tant, 3.3uF 20%, 25V, B Size SMD	293D335X0025B2T	C26, C30, C34, C38, C42, C50, C62, C68
05-0097-103	8	Cap, Chip. 0.01uF 10% 25V, X7R, 0402	04023C103KAT2A	C46-C49, C66-67, C72-C73
05-0097-104	24	Cap, Chip, 0.1uF 10% 16V, X7R, 0402	04023C104KAT2A	C2, C4, C6, C8, C10, C12, C14, C16, C18, C20, C22, C24, C54-C61, C64-65, C70-71
05-0169-105	18	Cap, Chip, 1.0uF 10% 10V X5R, 0402	0402ZD105KAT2A	C1, C3, C5, C7, C9, C11, C13, C15, C17, C19, C21, C23, C25, C51-C53, C63, C69
05-0173-105	15	Cap, Chip, 1.0uF 20% 25V X5R, 0603	06033D105MAT2A	C27-C29, C31-C33, C35-C37, C39-C41, C43-C45
11-0046-000	2	LED, Bi-color, Red/Green, White/Diffused, T-1, 2-Leaded	PL07-WD-PG	D1-D2
15-0079-033	1	IC, Low Dropout Regulator, 800 mA, 3.3 V, SOT-223	LD1117S33C	VR3
15-0085-025	1	IC, Regulator, Low Drop-out, 2.5 V, 1.5 A, LT1963-2.5	LT1963AEST-2.5	VR1
15-0145-000	2	IC, Non-inverting, 3-state Buffer, NL17SZ125, SOT-353	NL17SZ125DF	U12, U14
15-0182-000	1	IC, Low Dropout Regulator, 1 A, 1.2V, SOT-223	FAN1112-SX	VR2
17-0095-125	1	IC, Quad Tri-state Buffer, SN74LVC125AD, SO-14	SN74LVC125AD	U11
17-0107-000	6	IC, 16-bit Dual SUP, Transceiver, 74ALVC164245 48P TSSOP	74ALVC164245DGG	U1-U6
19-0061-000	1	IC, EEPROM, 1K, 128 x 8, 5ms, X24C01, Extended Temp, SMD	AT24C11N-10SU-2.7	U8
19-0081-000	1	IC, EEPROM, 2Mb, XCF02, 3.3V, SMD, VO20	XCF02SVO20C	U9
21-0061-000	1	IC, FPGA, XC3S400, Spartan 3, 256 PIN, FT BGA	XC3S400-4FT256C	U7
23-0117-000	2	IC, CMOS, Octal Bus Transceiver, 74LVT162245A (TSSOP), SMD	SN74LVT162245ADGGR	U10, U13
27-0034-006	1	Conn, Post Header Straight w/lock, MTA100, 6 POS	1-640456-6	J1
27-0093-064	1	Conn, Male, Euro-DIN, Rt Angle PCB Mount, 64 PIN	533406	P1
27-0334-144	1	Conn, Header, Triple Row, 48 PIN, 2MM	SQW-1-48-01-F-T	P3
35-0208-002	2	Fuse, Resettable Polyswitch, 15 V, 200 mA, 1206 SMD	1206L020	F3-4
35-0236-015	2	Fuse, Resettable, 0.15 A, 30 V	MICROSMD005F-2	F1-2
35-0237-020	1	Fuse, Resettable Poly, 2 A, 6 V, 1812L SERIES	1812L200DR	F5

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com





Top - Rear

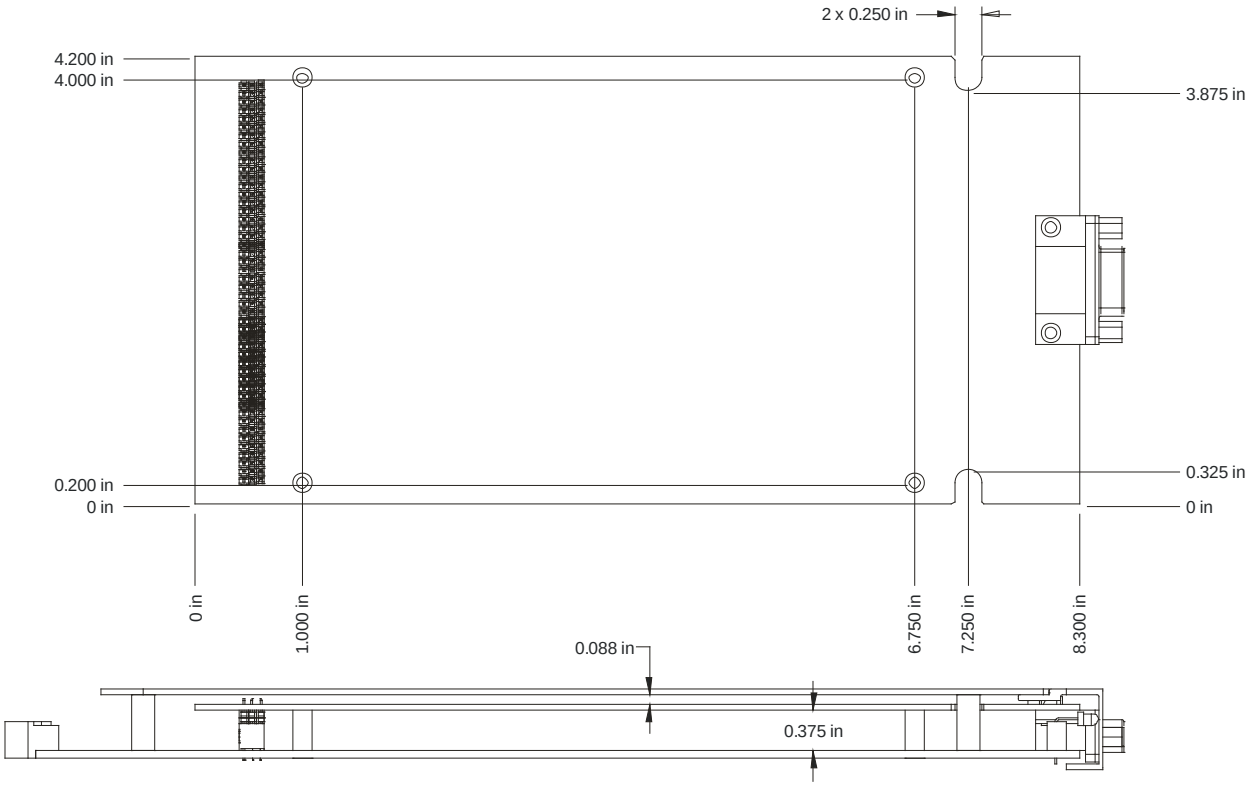


Bottom - Rear

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

DAUGHTER BOARD LAYOUT

The figure below shows the SMP7000 daughter board with the standard 15-pin D-sub connector. A variety of connectors can be provided on the daughter board at the customer's request.



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP7000 SPECIFICATIONS

GENERAL SPECIFICATIONS	
MODEL TYPE	Prototyping module
BREADBOARD SPACE	6” x 4”
DATA ACCESS	Register Based (A24/A32)
FRONT PANEL CONNECTORS	15-pin high-density D-Sub 26-pin high-density D-Sub 44-pin high-density D-Sub 62-pin high-density D-Sub (solder cup) 160-pin DIN
POWER RAILS	See table below
I/O CHANNELS	96 bi-directional TTL

Voltage	I_{hold} Limit	I_{trip} Limit
+5 V	2.0 A	3.5 A
±12 V	0.2 A	0.4 A
±24 V	0.05A	0.15 A

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

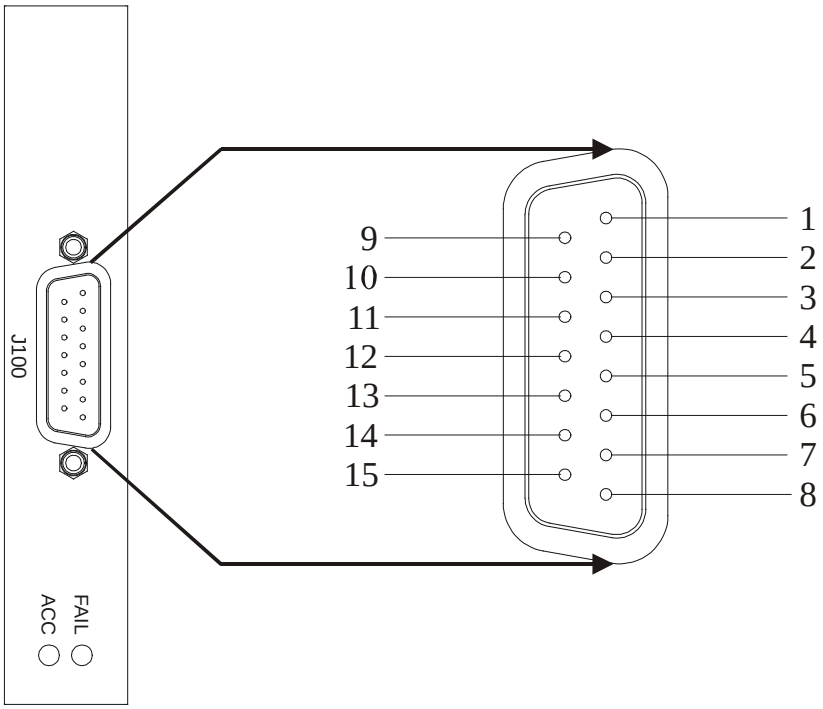
APPENDIX SMP7600

SMP7600 – SINGLE OUTPUT, PROGRAMMABLE RESISTOR LADDER

The SMP7600 is part of the SMIP *II* family and can be mixed and matched with other SMIP *II* modules to configure high-density measurement and switching systems. This appendix shows the 15-pin DSUB connector, connector pin assignments, schematic, relay register map, operation and calibration information, electrical specifications, and connector accessory information for this module.

The SMP7600 is a single output, programmable resistor ladder. It is designed for applications such as RTD or other sensor simulation, process control, ATE calibration, and device under test loading. The SMP7600 contains internal, high-precision 5 W power resistors that are switched in and out via mechanical relays. It is capable of producing any resistance value between 0.5 Ω to 1,500,000 Ω and can be adjusted in 0.1 Ω increments via external commands. It is designed for terminal voltages from 0 to 200 V dc and for currents up to 0.5 A.

NOTE	The connector pictured below is for the single-wide SMP1100 only. When used in the double-slot SMP1200, the orientation of the front panel is rotated by 180°. See Figure 4-1 for an illustration.



SMP7600 CONNECTOR PIN LOCATIONS — FIGURE 1

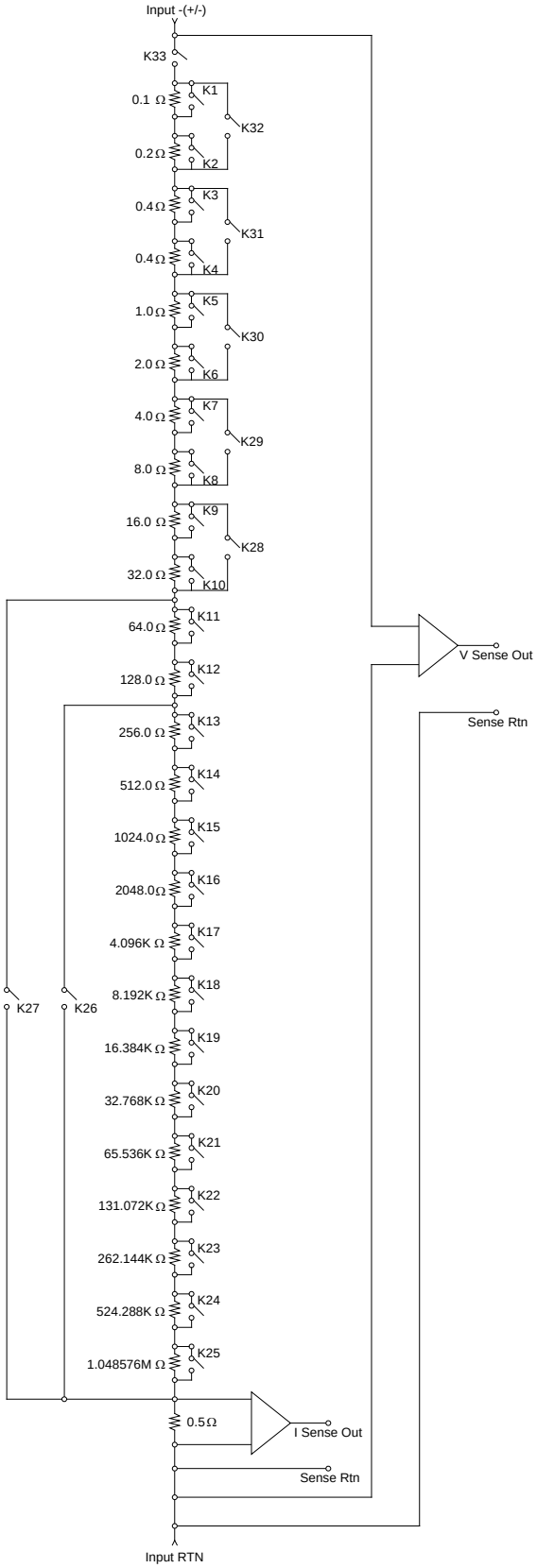
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP7600 CONNECTOR PIN / SIGNAL ASSIGNMENTS — TABLE 1

J100	
PIN	**SIGNAL**
1	INPUT – (+/-)
2	INPUT – (+/-)
3	UNUSED
4	UNUSED
5	UNUSED
6	FP-OPEN[1]
7	V SENSE OUT
8	I SENSE OUT
9	INPUT RTN
10	INPUT RTN
11	UNUSED
12	UNUSED
13	FP-GND[1]
14	V SENSE OUT RTN
15	I SENSE OUT RTN

NOTE[1] Refer to ***Description of SMIP II Module Registers A24/A32 Extended Memory*** in the programming section of this manual for more detail about these functions.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



SMP7600 SCHEMATIC — FIGURE 2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP7600 RELAY REGISTER MAP — TABLE 2

Offset (Hex)																
12																
10																
E																
C																
A																
8																
6																
4																K33
2	K32	K31	K30	K29	K28	K27	K26	K25	K24	K23	K22	K21	K20	K19	K18	K17
0	K16	K15	K14	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

OPERATION

This instrument contains internal, high-precision 5 W power resistors that are switched in and out via mechanical relays. It is capable of producing any resistance value between 0.5 Ω to 1,500,000 Ω and can adjusted in 0.1 Ω increments via external commands. It is designed for terminal voltages from 0 V to 200 V dc and for currents up to 0.5 A.

To enable the programmable load resistance, **K33** must be closed.

The module's resistance value is set by opening the relays corresponding to the resistors required to create the desired programmed value. For example, a programmed resistor value of 0.6 Ω will result when **K1** is opened and all other relays are closed. Note this is due to a native 0.5 Ω resistance.

Paralleled relays must be closed in order to ensure that the high tolerances of this module's resistance values are achieved. For example, if **K1** and **K2** are closed, then **K32** must be closed as well. If **K13** through **K25** are closed, then **K26** must also be closed. These paralleled relays are automatically closed by the VXI*plug&play* driver.

After power up or a reset or fault condition, all relays on this module are open. A fault condition is the result of exceeding the maximum current, maximum voltage or maximum temperature for this module.

The *V Sense Out* signal provides an indication of the voltage across the programmed resistance. The relationship between *V Sense Out* and the voltage across the resistor load is determined by using the following equation:

40 x (V Sense Out) = Voltage across the resistor load (in volts)

For example, if *V Sense Out* reads 2.5 V, then the voltage across the resistor load is 100 V. The maximum voltage reading is 200 V.

The *I Sense Out* signal provides an indication of the current across the programmed resistance. The relationship between *I Sense Out* and the current across the resistor load is determined by using the following equation:

100 x (I Sense Out) = Current across the resistor load (in milliamps)

For example, if *I Sense Out* reads 2.5 V, then the voltage across the resistor load is 250 mA. The maximum current reading is 500 mA.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

OVER-VOLTAGE & OVER-CURRENT ADJUSTMENT

Equipment Needed

1) One +200 V Power Supply
2) One 0.5 A Power Supply
3) One Digital Voltmeter (DVM)
4) One POT Adjustment Screwdriver

Adjusting the Voltage Sense Circuit

1) Connect the positive probe of the DVM to P2:7 and the negative probe to P2:14
2) Apply +200 V to a programmed load resistance of 1.0 MΩ
3) Adjust R73 with the screwdriver until +5.00 V ±0.05 is displayed on DVM

Adjusting the Current Sense Circuit

1) Connect the positive probe of the DVM to P2:8 and the negative probe to P2:15
2) Apply 0.5 A to a programmed load resistance of 10 Ω
3) Adjust R35 with the screwdriver until +5.00 V ±0.05 is displayed on DVM

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

PROGRAMMING

The SMP7600 Status Register contains three bits (D1-D3) in addition to the bits found standard in other SMIP modules in order to monitor Over Current, Over Voltage and Over Temperature Fault Conditions, respectively. These bits are in addition to the standard Status Register of other modules. Should an error occur during operation, a status register read will indicate if a fault condition exists.

Status Register — Read Only		
ADDR	A24/A32 Offset +0x204	
D15 – D11		See *Status Register* on page 34 for details for these registers.
D3	Over Temperature	0 = Indicates that the Over Temperature Fault condition was not detected. 1 = Indicates that the maximum temperature for this module has been exceeded. (Set to approximately 60 °C.) Pon state = 0 In the event that this fault condition is triggered, all relays will be opened. A read of this register clears this bit to 0. However, if this fault condition continues to exist, all relays will remain open and the bit will read as 1. If this fault condition occurs, a Front Panel Open event is also triggered. This event may be programmed to alert the user of this fault.
D2	Over Voltage	0 = Indicates that the Over Voltage Fault condition was not detected. 1 = Indicates that the maximum input voltage rating for the module has been exceeded. Pon state = 0 In the event that this fault condition is triggered, all relays will be opened. A read of this register clears this bit to 0. If this fault condition occurs, a Front Panel Open event is also triggered. This event may be programmed to alert the user of this fault.
D1	Over Current	0 = Indicates that the Over Current Fault condition was not detected. 1 = Indicates that the maximum input current rating for the module has been exceeded. Pon state = 0 In the event that this fault condition is triggered, all relays will be opened. A read of this register clears this bit to 0. If this fault condition occurs, a Front Panel Open event is also triggered. This event may be programmed to alert the user of this fault.
D0		See *Status Register* on page 34 for details for these registers.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SMP7600 SPECIFICATIONS

GENERAL SPECIFICATIONS	
MODEL TYPE	Programmable Resistor Load
CHANNELS	1
VXI DEVICE TYPE	Register Based
VXI*PLUG&PLAY* WIN95/NT	Yes
SWITCHING TIME	< 5 ms
RATED SWITCH OPERATIONS	
Mechanical	5×10^6
Electrical	1×10^5 (Full Load)
POWER SPECIFICATIONS	
MAXIMUM SWITCHING VOLTAGE	200 V ac
MAXIMUM SWITCHING CURRENT	0.5 A
MAXIMUM SWITCHING/CARRY POWER	5 W
RESISTOR PERFORMANCE	
VOLTAGE OUTPUT RANGE/GAIN	40:1 ±1% Full Scale
CURRENT OUTPUT RANGE/GAIN	100:1 ±1% Full Scale
SETTING ACCURACY	
0.5 – 60.0 Ω	±0.15 Ω
60.1 – 1,499,999 Ω	±0.25 % of Programmed Value
MINIMUM INCREMENT	0.1 Ω

NOTE Specifications are attained after a 30 minute warm-up

.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

INDEX

A

A16 address space 24
A16 base address 22
A16 offset register 22
A16 offset register address 22
A16 register descriptions 24
A24 / A32 extended memory 34
A24 address space 22
A24 base address 22
A24/A32 active bit 24
A24/A32 enable bit 24
A24/A32 memory offset bits 25
A32 address space 22
A32 base Aaddress 22
access LED fail bit 35, 340
ACFAILN enable bit 34
address space 20
address space bits 24
addressing 22
automatic scanning 21

B

backplane jumpers 17
BBM/MBB bit 35
BBM/MBB enable bit 35
blanking panel 46
Board Busy register 32
board busy trigger slope bit 30
board X, Y used address register 28
Break-Before-Make 22
Busy Trigger Control register 32
busy trigger enable bits 32

C

calculating system power and cooling requirements 17
cause/status bit 25
combiner 335
command parsing 22
confidence checking 21
configuration registers 34
control register 24, 34, 340
Control register 35, 36
cooling 17

D

Data Bus 111, 117
data bus bits 37, 340
delay 21
Delay register 36, 340
delay timer 35
description of registers - A16 24
device class bits " 24
device memory Maps 39
device type register 24
direct register access 21
dynamic configuration 24

E

extended memory device bits 27
Extended Memory Space 20
extensive triggering 21

F

FAIL LED control bits 30
firmware version number 25
Flash address paging register bits 38
FLASH Capable / Odometer Capable 37, 340
Flash write protect not bit 37, 340
front panel open signal operation select bit 36
front panel open signal polarity bit 36
front panel open signal set by this module bit 37

G

GPIB 13, 41

H

handler IRQ line bits 27
hardware revision code bits 37, 340

I

ID register 24
IH ENA* bit 27
interrupt control register 27
interrupt mask bit 27
interrupt status register 25
interrupter IRQ line bits 27
IR ENA* bit 27
IRQ line 27

J

JTAGENA / JTAG / ENABLE bit 34

L

logical address 17, 20, 24
logical address bits 24
logical address register 24
logical module location assignments 45
LOOP ENABLE bit 31
LSB (least significant bit) 18, 19

M

major hardware version number 25
Make-Before-Break 22
Manufacturer's ID bits 24
memory space 34
message-based 22
minor hardware version number 25
model code bits 24
MODID* bit 24
module 0 - 5 busy complete bits 27
module installation 44
module orientation, SMP1100 16
module orientation, SMP1200 16
Module Relay Address 39
module shielding 45
modules 0 – 5 busy complete bits 25
modules installed bits 31
modules used in trace mode bits 31
MSB (most significant bit) 18, 19

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

N

non-volatile memory 22
NVM access register 23, 27

O

odometer/FLASH capable bit 37
offset fegister 22
offset register 25
offset value 22
open trigger select register 30
Openbus active event true bit 25
Openbus active event true mask bit 27
Openbus out enable bit 36

P

polled fashion 26
power 17
programmable timing delays 21
programming 21
programming via GPIB 41
programming via VISA 40

R

register access 22
register address 22
register-based device 40
registers 22, 24
relay control 39
relay data read back polarity bit 34
relay open input slope bit 30
relay open output slope bit 30
Relay Register Address 39
relay register offset 39
Relay Register Offset 39
relay reset enable bit 35
relay reset select bit 35
required memory bits 24
reserved register 25
Reserved register 32
reset bit 25

S

safety interrupt 22
selecting the extended memory space 20
serial clock 27
setting the chassis backplane jumpers 17
setting the logical address 18
signal integrity 12
SMIP *II* base units 15
SMIP *II* register map - A16 23
Specifications and Accessories .... *See* Individual Module Appendix
status register 24
Status register 37, 340
subclass register 27
sysfail inhibit bit 24

T

TCK / JTAG / TCK bit 34
TDI / JTAG / TDI bit 34
TDO / JTAG / TDO bit 34
TMS / JTAG / TMS bit 34
trace advance input slope bit 30
trace advance output slope bit 30
trace advance trigger select register 28
TRACE ENABLE bit 31
trace RAM address HIGH register 28
trace RAM address LOW register 28
trace RAM control register 31
trace RAM end high register 28
trace RAM end low register 28
trace RAM start high register 28
trace RAM start low register 28
Trigger 32
Trigger Advance register 32
triggers 22
TTL trigger polarity register 30
TTLTRIG select bits 32

U

utilizing A32 extended memory space 40

V

version number register 25
VISA 40
VXI backplane download of non-user configurable FPGAs 34
VXIbus 17, 22
VXIbus extended device bit 27

W

WEEE 8
writing to relays 39

Z

zero-degree splitter 335

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP