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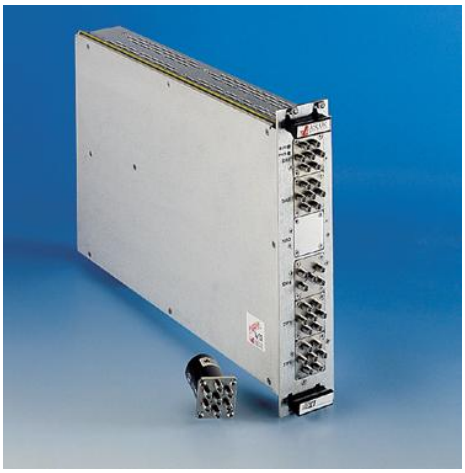
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Model 3000-2xxxx
Microwave Relay Carrier
90400340





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Regulatory compliance information

This product complies with the essential requirements of the following applicable European Directives, and carries the CE mark accordingly.

89/336/EEC and 73/23/EEC	EMC Directive and Low Voltage Directive
EN61010-1 (1993)	Electrical Safety
EN61326-1 (1997)	EMC – Emissions and Immunity
Manufacturer's Name:	**Manufacturer's Address**
Giga-tronics, Incorporated	4650 Norris Canyon Road San Ramon, California 94583 U.S.A.
Type of Equipment:	**Model Series Number**
Switching Module	3000-2xxxx

Declaration of Conformity on file. Contact Giga-tronics at the following;

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Chapter 1 **Introduction**

1.1 Safety and Manual Conventions

This manual contains conventions regarding safety and equipment usage as described below.

1.1.1 Product Reference

Throughout this manual, the term “Common Core Switching Platform, Series 8800” refers to all models of within the series, unless otherwise specified.

1.1.2 Personal Safety Alert



WARNING: Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

1.1.3 Equipment Safety Alert



CAUTION: Indicates a situation which can damage or adversely affect the product or associated equipment.

1.1.4 Notes

Notes are denoted and used as follows:

NOTE: Highlights or amplifies an essential operating or maintenance procedure, practice, condition or statement.

1.1.5 Electrical Safety Precautions

Any servicing instructions are for use by service-trained personnel only. To avoid personal injury, do not perform any service unless you are qualified to do so.

For continued protections against fire hazard, replace the AC line fuse only with a fuse of the same current rating and type. Do not use repaired fuses or short circuited fuse holders.

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Chapter 2 **Configuration Table**

Basic RF Module WITHOUT RF Switches	MAXIMUM CONFIGURATION	VXI Width
90400340	Six 1x6 RF Switches	2
90400350	Twelve 1x6 RF Switches	3
90400730	Four 1x6 RF Switches (TERM)	2
90400950	Three 1x6 TERM & Three SPDT, TERM	2
90400720	Eight 1x6, TERM.	4
90401080	Six 1x6, TERM & Six SPDT, TERM	4
90400580	Eight 1x6, TERM & Three SPDT, TERM.	5
9040350-003	Five 1x6, Non-Term, Two SPDT, Non-Term, One 1x6, Term, Two SPDT, Term	3
90401470	Fifteen 1x6 RF Switches	4
90401470-100	Ten 1x6 RF Switches, & Five Transfer RF Switches	4

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Chapter 3 **Functional Description**

3.1 Introduction

This manual provides basic information for the operation and maintenance of the Series 3000-2xxxx VXI Modules.

3.2 General Description

The Series 3000-2xx is a collection of standard VXI modules that have a variety of configurations of RF Switches. Consult the Configuration List at the back of the manual to see our present standard (COTS) products.

Our present standard offering of RF Switches is 1x6 and SPDT, 26.5GHz, Non-Terminated and 1x6 and SPDT, 18.0 GHz, Terminated. Other switch units such as 1x8, Transfer switches and bandwidths up to 40 GHz can also be accommodated.

One of the unique features of the Series 3000-2xx RF Modules is that the RF Switches can be removed and replaced from the front of the unit. This allows quick replacement for maintenance or re-configuration without requiring the complete removal of the VXI Module.

Another feature is that all VXI RF Modules are Configurable. This means that for any particular module you can have as many or as few RF Switches as you want, in any arrangement , for your unique application.

While the Configuration List shows the products that presently exist in our inventory, custom configurations can easily be developed since changes would primarily involve the Front Panel. The internal electronic circuits and VXI interface would remain the same. Any device that can be operated by a programmed bit and mounted on the front panel (such as Optical Switches) can be accommodated.

Consult with the factory if you have particular needs.

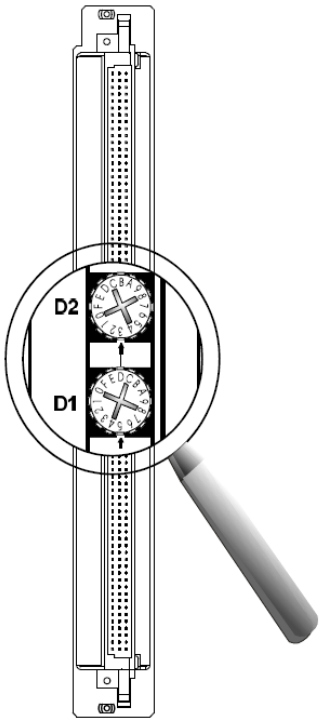
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Chapter 4 Controls and Indicators

The following controls and indicators are provided to select and display the functions of the ASCOR 3000-2xxxx Module's operating environment.

4.1 VXI Logical Address

The Logical Address Switch is dual circular switches, D1 and D2 which are located at the rear of the module. The address can be set to any value between 1 and 255 (decimal) or 1 and FF (hexadecimal), (address 0 is reserved for the resource manager). However, the Module fully supports Dynamic Configuration as defined in ***Section F of the VXI specification,*** address 255 (FF) should be selected only if the Resource Manager also supports Dynamic Configuration.



4.2 LEDs

The following LEDs are visible at the Module's front panel to indicate the

status of the module's operation:

4.2.1 "BUS" LED

This green color LED is normally off and will flash on when the module is addressed by the system.

4.2.2 "PWR" LED

This red color LED is normally on when the Module is Powered up.

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Chapter 5 Internal Settings

The following items are inside the module and can be reached by removing the side cover.

5.1 Fuse

The ASCOR VXI 3000-2xxxx uses a 10 Amp fuse in the +5 Volt line and is located on the Mother Board (MB) assembly.

5.2 VXI_{bus} Interrupt Level Selection

The VXIbus interrupt level is set with three bits in the “3Eh” register.

See the section on “A16 ADDRESS SPACE REGISTER DESCRIPTION”.

The interrupt level is factory set to “no interrupt”.

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Chapter 6 **Specifications**

RF Switches – General Characteristics, other Relays available upon Request

1x6 Non-Terminated (p/n 52200020)

Frequency (GHz)	DC - 3	3 - 8	8 -12.4	12.4 -18	18 – 26.5
VSWR (MAX)	1.20 : 1	1.30 : 1	1.40 : 1	1.50 : 1	1.60 : 1
Insertion Loss (MAX)	0.20 dB	0.30 dB	0.40 dB	0.50 dB	0.60 dB
Isolation >=	80 dB	70 dB	60 dB	60 dB	55 dB
Average Power (*)	120 W	80 W	60 W	50 W	30 W

Characteristic Impedance : 50 Ohms
Switching Time (nominal @ 25º C) < 10 ms
Actuation Voltage : 12 VDC @ 250 ma
Connectors : SMA Female
Life Expectancy : 5,000,000 cycles per position
Operation Mode : All positions Open at Reset

SPDT Non-Terminated (p/n 52200120)

Frequency (GHz)	DC - 3	3 - 8	8 -12.4	12.4 -18	18 – 26.5
VSWR (MAX)	1.20 : 1	1.30 : 1	1.40 : 1	1.50 : 1	1.60 : 1
Insertion Loss (MAX)	0.20 dB	0.30 dB	0.40 dB	0.50 dB	0.60 dB
Isolation >=	80 dB	70 dB	60 dB	60 dB	55 dB
Average Power (*)	120 W	80 W	60 W	50 W	30 W

Characteristic Impedance : 50 Ohms
Switching Time (nominal @ 25º C) < 10 ms
Actuation Voltage : 12 VDC @ 160ma
Connectors : SMA Female
Life Expectancy : 10,000,000 cycles
Operation Mode : Failsafe

1x6 Terminated (p/n 52200060) (1)

Frequency (GHz)	DC - 3	3-8	8-16	16-18
VSWR (MAX)	1.20 : 1	1.30 : 1	1.40 : 1	1.50 : 1
Isolation (MAX)	80 dB	70 dB	60 dB	60 dB
Insertion Loss (dB)	0.20 dB	0.30 dB	0.40 dB	0.50 dB
Average Power (*)	120 W	80 W	60 W	50 W

Characteristic Impedance : 50 Ohms
Switching Time (nominal @ 25º C) < 15 ms
Actuation Voltage : 12 VDC @ 680ma
Connectors : SMA Female
Life Expectancy : 1,000,000 cycles
Operation Mode : Terminated at Reset

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SPDT Terminated (p/n 52200040) (1)

Frequency (GHz)	DC - 3	3-8	8-16	16-18
VSWR (MAX)	1.20 : 1	1.30 : 1	1.40 : 1	1.50 : 1
Isolation (MAX)	80 dB	70 dB	60 dB	60 dB
Insertion Loss (dB)	0.20 dB	0.30 dB	0.40 dB	0.50 dB
Average Power (*)	120 W	80 W	60 W	50 W

Characteristic Impedance :	50 Ohms
Switching Time (nominal @ 25º C)	< 20 ms
Actuation Voltage :	12 VDC @ 680ma
Connectors :	SMA Female
Life Expectancy :	1,000,000 cycles
Operation Mode :	At Reset : NC -> C ; NO Terminated

(*) = average Power a 25º C per RF Path
(1) = CAUTION : Termination Resistors have a MAXIMUM Power rating of 2 Watt.

Mechanical:

The VXI RF modules come in various standard VXI widths. Some are 2-wide, 3-wide , 4-wide or 5-wide. The Depth and the Height are per the VXI Standard. The Widths are multiplies of the standard VXI 1-wide modules. See the Configuration List for the Width of any particular module.

	2-WIDE	3-WIDE	4-WIDE	5-WIDE
WIDTH	2.4 inches	3.6 inches	4.8 inches	6.0 inches
HEIGHT	10.317 inches	10.317 inches	10.317 inches	10.317 inches
DEPTH	13.78 inches	13.78 inches	13.78 inches	13.78 inches

Weight 3 to 8 lbs depending on configuration

Environmental Specifications

Temperature:

Operating: 0º to 55ºC

Storage: - 40º to 75ºC

Relative Humidity:

Operating: 0 to 90% non-condensing

Storage: 0 to 95% non-condensing

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Chapter 8 **Register Map**

Programming of the Model 3000-2xx is very straight forward. The module is organized into eight sixteen bit registers. Each register supports 16 coil drivers in 16 BIT Mode or two 16 bit registers support 32 coil drivers in 32 BIT Mode.

For example, the lower eight bits (bits 0-7) of the first register control the first switch SW1.

The upper eight bits (8-15) controls the second switch SW2.

The lower eight bits (bits 0-7) of the second register controls SW3.

The upper eight bits (8-15) controls SW4.

This configuration is carried through the complete module.

Register Map – 16 Bit Configuration

A16 Register

Offset	Value
00h	CFB5 7 = Register Based, A16,/A24 Module FB5 = VXI Manufacturer ID, ASCOR
02h	7FCC (for 3000-2xx) 7 = A24 space requirement FCC – Model Number for this Module
04h	FFFCh Bit 0, reset, is supported. Toggling this bit will clear all relay registers
06G	(Assigned by Resource Manager)

Control Bit

3Eh	0	Low true output enable to the coil driver IC's
	1	When low, enables read back of the coil state. When high, enables read back of the data registers.

NOTE : There is no data register read back for this module. Always clear this bit low.

	2	Always set LOW. (Reserved for factory use only)
	3-15	Don't Care Bits

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8.1 REGISTER MAP – 16 BIT ASSIGNMENTS

ADDRESS OFFSET = 40h

	MSB															LSB
Register Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SW - Contact	2-8	2-7	2-6	2-5	2-4	2-3	2-2	2-1	1-8	1-7	1-6	1-5	1-4	1-3	1-2	1-1

ADDRESS OFFSET = 42h

	MSB															LSB
Register Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SW - Contact	4-8	4-7	4-6	4-5	4-4	4-3	4-2	4-1	3-8	3-7	3-6	3-5	3-4	3-3	3-2	3-1

ADDRESS OFFSET = 44h

	MSB															LSB
Register Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SW - Contact	6-8	6-7	6-6	6-5	6-4	6-3	6-2	6-1	5-8	5-7	5-6	5-5	5-4	5-3	5-2	5-1

ADDRESS OFFSET = 46h

	MSB															LSB
Register Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SW - Contact	8-8	8-7	8-6	8-5	8-4	8-3	8-2	8-1	7-8	7-7	7-6	7-5	7-4	7-3	7-2	7-1

ADDRESS OFFSET = 48h

	MSB															LSB
Register Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SW - Contact	10-8	10-7	10-6	10-5	10-4	10-3	10-2	10-1	9-8	9-7	9-6	9-5	9-4	9-3	9-2	9-1

ADDRESS OFFSET = 4Ah

	MSB															LSB
Register Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SW-Contact	12--8	12--7	12--6	12--5	12--4	12--3	12--2	12--1	11-8	11-7	11-6	11-5	11-4	11-3	11-2	11-1

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ADDRESS OFFSET = 4Ch

	MSB															LSB
Register Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SW - Contact	14-8	14-7	14-6	14-5	14-4	14-3	14-2	14-1	13-8	13-7	13-6	13-5	13-4	13-3	13-2	13-1

ADDRESS OFFSET = 4Eh

	MSB															LSB
Register Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SW - Contact	16-8	16-7	16-6	16-5	16-4	16-3	16-2	16-1	15-8	15-7	15-6	15-5	15-4	15-3	15-2	15-1

SW = Switch designation
Contact = Switch Contact

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8.2 REGISTER MAP – 32 BIT ASSIGNMENTS

ADDRESS OFFSET = 40h

LSB

Register Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SW - Contact	2-8	2-7	2-6	2-5	2-4	2-3	2-2	2-1	1-8	1-7	1-6	1-5	1-4	1-3	1-2	1-1

MSB

Register Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SW - Contact	4-8	4-7	4-6	4-5	4-4	4-3	4-2	4-1	3-8	3-7	3-6	3-5	3-4	3-3	3-2	3-1

ADDRESS OFFSET = 44h

LSB

Register Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SW - Contact	6-8	6-7	6-6	6-5	6-4	6-3	6-2	6-1	5-8	5-7	5-6	5-5	5-4	5-3	5-2	5-1

MSB

Register Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SW - Contact	8-8	8-7	8-6	8-5	8-4	8-3	8-2	8-1	7-8	7-7	7-6	7-5	7-4	7-3	7-2	7-1

ADDRESS OFFSET = 48h

LSB

Register Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SW - Contact	10-8	10-7	10-6	10-5	10-4	10-3	10-2	10-1	9-8	9-7	9-6	9-5	9-4	9-3	9-2	9-1

MSB

Register Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SW-Contact	12--8	12--7	12--6	12--5	12--4	12--3	12--2	12--1	11-8	11-7	11-6	11-5	11-4	11-3	11-2	11-1

ADDRESS OFFSET = 4Ch

LSB

Register Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SW - Contact	14-8	14-7	14-6	14-5	14-4	14-3	14-2	14-1	13-8	13-7	13-6	13-5	13-4	13-3	13-2	13-1

MSB

Register Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SW - Contact	16-8	16-7	16-6	16-5	16-4	16-3	16-2	16-1	15-8	15-7	15-6	15-5	15-4	15-3	15-2	15-1

SW = Switch designation
Contact = Switch Contact

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