

Model 3000-05
(2x36) Coaxial Matrix
90400100

Model 3000-06
2(2x18) Coaxial Matrix
90400260



All technical data and specifications in this publication are subject to change without prior notice and do not represent a commitment on the part of Giga-tronics, Incorporated.

© 2011 Giga-tronics Incorporated. All rights reserved. Printed in the U.S.A.

Warranty

Giga-tronics Series 3000 Switching Modules are warranted against defective materials and workmanship for three years from date of shipment, or as detailed in the warranty section of this manual. Giga-tronics will, at its option, repair or replace products that are proven defective during the warranty period. This warranty DOES NOT cover damage resulting from improper use, nor workmanship other than Giga-tronics service. There is no implied warranty of fitness for a particular purpose, nor is Giga-tronics liable for any consequential damages. Specification and price change privileges are reserved by Giga-tronics.

CONTACT INFORMATION

Giga-tronics, Incorporated

4650 Norris Canyon Road

San Ramon, California 94583

Telephone: 800.726.4442 (only within the United States)

925.328.4650

Fax: 925.328.4700

On the Internet: www.gigatronics.com

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

EN61010-1 (1993)

EN61326-1 (1997)

Manufacturer's Name:

Giga-tronics, Incorporated

EMC Directive and Low Voltage Directive

Electrical Safety

EMC – Emissions and Immunity

Manufacturer's Address

4650 Norris Canyon Road
San Ramon, California 94583
U.S.A.

Type of Equipment:

Switching Module

Model Series Number

3000-05,-06

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

Giga-tronics, Incorporated

4650 Norris Canyon Road

San Ramon, California 94583

Telephone: 800.726.4442 (only within the United States)

925.328.4650

Fax: 925.328.4700

Record of Changes to This Manual

Use the table below to maintain a permanent record of changes to this document. Corrected replacement pages are issued as Technical Publication Change Instructions (TPCI). When you are issued a TPCI, do the following:

1. Insert the TPCI at the front of the manual binder.
2. Remove the pages from the manual binder that are noted in the TPCI.
3. Replace the page(s) removed in the previous step with the corrected page(s).
4. Record the changes in the table below.

TPCI Number	TPCI Issue Date	Date Entered	Comments

Revision History			
Revision	Description of Change	Chg Order #	Approved By
A	Initial Release		
B	Updated		
C	Reformatted 3/12		RCW

Contents

Contents	6
Chapter 1 Introduction	7
1.1 Safety and Manual Conventions	7
1.1.1 Product Reference	7
1.1.2 Personal Safety Alert	7
1.1.3 Equipment Safety Alert	7
1.1.4 Notes	7
1.1.5 Electrical Safety Precautions	7
Chapter 2 Configuration Table	8
Chapter 3 Functional Description	9
3.1 Introduction	9
3.2 General Description	9
Chapter 4 Block Diagram	10
4.1 VXI Logical Address	11
4.2 LEDs	11
4.2.1 “BUS” LED	11
4.2.2 “PWR” LED	11
Chapter 5 Internal Settings	12
5.1 Fuse	12
5.2 VXI _{bus} Interrupt Level Selection	12
Chapter 6 Specifications	13
Chapter 8 Register Map	14
8.1 Introduction	14
8.2 Programming	14

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.

Chapter 2 Configuration Table

Model 3000-05 (2x36) Matrix

PL 90400100-002

ASSY 90400100-002

PL PL85004050

ASSY 85004050

SCH SCH85004050

WL WL85004050

Model 3000-06 2(2x18) Matrix

PL 90400260-001

ASSY 90400260-001

PL PL85004050-002

ASSY 85004050-002

SCH SCH85004050-002

WL WL85004050-002

Chapter 3 Functional Description

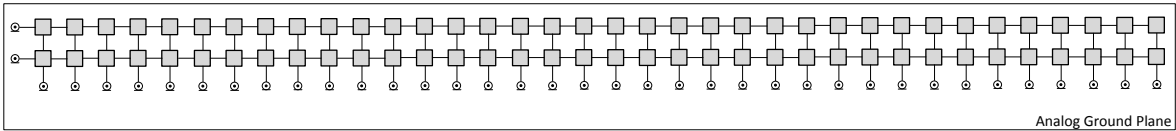
3.1 Introduction

This manual provides the necessary information for the maintenance of the Model 3000-05,-06 VXI 36 x 2 Coaxial Switch Matrix.

3.2 General Description

This module contains a very high bandwidth coaxial switch matrix. The coaxial matrix is organized as a 36 x 2 matrix. The matrix is a special design by ASCOR which is comprised of six 6 x 2 coaxial switch modules and a dual 1 x 6 coaxial switch module. These switch modules are true coaxial switches which are designed to match the impedance of the coaxial cable which produces superior performance over PC board strip line techniques. Each relay in the matrix is individually controlled. Any and all relays can be closed. The switch matrix are specially designed to support ATE testing and they are designed to support shielded measurements. This module is ideal for supporting high frequency general purpose switching, multi-channel stimulus or measurement switch matrices. Each switch is coaxially shielded to a common shield. The Interface and mechanical constructions meets the specification of the VXIbus System Specification, rev 1.2 and 1.3.

Chapter 4 Block Diagram

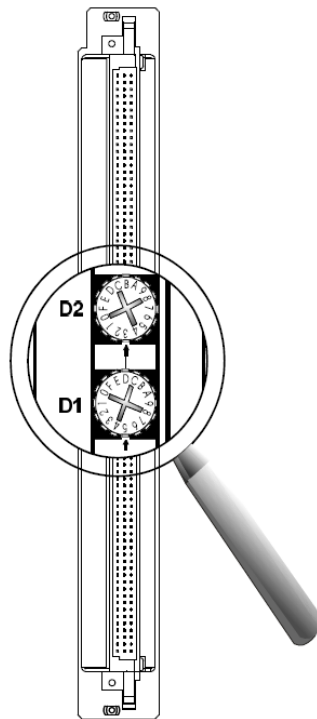


Controls and Indicators

The following controls and indicators are provided to select and display the functions of the ASCOR 3000-05,-06 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.

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 3000-05,-06 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”.

Chapter 6 Specifications

ASCOR Model 3000-05,-06

Features

ASCOR's Model 3000-05,-06 single slot, high performance, 36 x 2 Coaxial Switch Matrix achieves ultra-clean, ultra-high frequency responses in excess of 350 MHz along two simultaneous paths ideal for use with oscilloscopes, Frequency counters, and other instruments in time-delay test and measurement applications; as well as functioning as a high frequency output distributor.

All relays are individually shielded in a coaxial, 50 Ohm environment, to minimize crosstalk and eliminate signal contamination.

AC Specification

Bandwidth:	350MHz into 50 ohms
Crosstalk:	-50dB @ 100MHz
Insertion Loss	-1 dB @ 50MHz
Characteristic impedance	50 Ohms

Electrical Specifications

Switching Voltage (DC/Peak AC, Resistive)	250 Volts
Switching Current (DC/Peak AC, Resistive)	0.5 Amps
Carry Current (DC/Peak AC, Resistive)	2.0 Amps
Contact Power Rating (DC/Peak AC, Resistive)	10 Watts
Life Expectancy (@ Signal <<1.0V, 0.010A)	10,000,000
Contact resistance:	0.400 ohms

Mechanical:

Thickness:	1.200 inches
Width:	10.317 inches
Length:	13.78 inches
Weight:	3 lbs.

Connectors:

Burndy type MSD14PM with Raychem
D602-0279 female coax contacts.
Mates with cable assembly 88101460

Environmental Specifications

Temperature:	
Operating:	0° to 55°C
Storage:	- 40° to 75°C
Relative Humidity:	
Operating:	0 to 90% non-condensing
Storage:	0 to 95% non-condensing

Chapter 7 Register Map

7.1 Introduction

The Model 3000-05,-06 is a VXI register based module. The switch paths are controlled via *VXTMAX™* which is the 16/32 bit data controller. The Model 3000-05,-06 can be programmed in 16 bit or 32 bit wide data. Through your VXI controller, write the data to the appropriate register as shown on the register map for the relay or relays in the register that is being closed. When the data bit is true, the relay chosen will be closed. The state of the relays in a register can be determined by reading the desired register. The data read back represents the value at the coil of the relay. This allows verification that the program register has correctly controlled the relay coil.

The following register maps are shown in two configurations: 16 bit mode and 32 bit mode. In each section, 16 bit and 32 bit, the register map is organized to show the relay designation in each register. It is followed by the register's functionality and the path connections to the front panel.

7.2 Programming

Programming of the Model 3000-05,-06 is very simple. The module is organized into six functional groups. Each 16 bits control a group. A group is a set of six pins. A pin can be assign to channel A bus or channel B bus of the 36 x 2 matrix. Each register is split into two parts. The lower eight bits (bits 0-7) control the six pins for channel A. The upper eight bits (8-15) control the same six pins for channel B. Whenever a pin is selected in a group, the channel relay must be closed to complete the path. The channel relay is the seventh bit in the lower or upper byte of the register.

For example:

To close pin 1 to channel A and to close pin 2 to channel B would set the following register.

Register 40h:

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	1

To close pin 3 to channel B and to close pin 10 to channel A would set the following registers:

Register 40h:

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0

Register 42h:

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0

Register Map - 16 Bit Configuration

A16 Register

Offset	Value
00h	7FB5h 7 = Register Based, A16 / A24 Module FB5 = VXI Manufacturer ID, ASCOR<_>
02h	7F05h (for 3000-5) 7F07h (for 3000-6) 7 = A24 space requirement F05 / F07 = Model Number for this Module
04h	FFCh Bit 0, reset, is supported. Toggling this bit will clear all relay registers.
06h	(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 coil state When high enables read back of data registers. 2 High true EEPROM write enable 3-15 Don't Care

MSB

LSB

REG	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
40h	n/a	K15	K14	K13	K12	K11	K10	K9	n/a	K7	K6	K5	K4	K3	K2	K1
42h	n/a	K31	K30	K29	K28	K27	K26	K25	n/a	K23	K22	K21	K20	K19	K18	K17
44h	n/a	K47	K46	K45	K44	K43	K42	K41	n/a	K39	K38	K37	K36	K35	K34	K33
46h	n/a	K63	K62	K61	K60	K59	K58	K57	n/a	K55	K54	K53	K52	K51	K50	K49
48h	n/a	K79	K78	K77	K76	K75	K74	K73	n/a	K71	K70	K69	K68	K67	K66	K65
4Ah	n/a	K95	K94	K93	K92	K91	K90	K89	n/a	K87	K86	K85	K84	K83	K82	K81

Register Map - 16 Bit (Continued)

REGISTER: 40h, MODE: 16 bit**FUNCTION: Control Matrix Pins 1 - 6, Channels A and B**

BIT	FUNCTION	CONNECTION		RELAY	COMMENT
0	Chan A	Pin 1	J1 - A	K1	Group 1A
1	Chan A	Pin 2	J1 - B	K2	Group 1A
2	Chan A	Pin 3	J1 - C	K3	Group 1A
3	Chan A	Pin 4	J1 - D	K4	Group 1A
4	Chan A	Pin 5	J1 - E	K5	Group 1A
5	Chan A	Pin 6	J1 - F	K6	Group 1A
6	Chan A	J1 - W	K7	used with any Group 1A relay	
7	not used	-	-	resistor pull-up to 5V	
8	Chan B	Pin 1	J1 - A	K9	Group 1B
9	Chan B	Pin 2	J1 - B	K10	Group 1B
10	Chan B	Pin 3	J1 - C	K11	Group 1B
11	Chan B	Pin 4	J1 - D	K12	Group 1B
12	Chan B	Pin 5	J1 - F	K13	Group 1B
13	Chan B	Pin 6	J1 - E	K14	Group 1B
14	Chan B	J1 - X	K15	used with any Group 1B relay	
15	not used	-	-	resistor pull-up to 5V	

REGISTER: 42h, MODE: 16 bit**FUNCTION: Control Matrix Pins 7 - 12, Channels A and B**

BIT	FUNCTION	CONNECTION		RELAY	COMMENT
0	Chan A	Pin 7	J1 - H	K17	Group 2A
1	Chan A	Pin 8	J1 - J	K18	Group 2A
2	Chan A	Pin 9	J1 - K	K19	Group 2A
3	Chan A	Pin 10	J1 - L	<P11>K20	Group 2A
4	Chan A	Pin 11	J1 - M	K21	Group 2A
5	Chan A	Pin 12	J1 - N	K22	Group 2A
6	Chan A	J1 - W	K23	used with any Group 2A relay	
7	not used	-	-	resistor pull-up to 5V	
8	Chan B	Pin 7	J1 - H	K25	Group 2B
9	Chan B	Pin 8	J1 - J	K26	Group 2B
10	Chan B	Pin 9	J1 - K	K27	Group 2B
11	Chan B	Pin 10	J1 - L	K28	Group 2B
12	Chan B	Pin 11	J1 - M	K29	Group 2B
13	Chan B	Pin 12	J1 - N	K30	Group 2B
14	Chan B	J1 - X	K31	used with any Group 2B relay	
15	not used	-	-	resistor pull-up to 5V	

Register Map - 16 Bit (Continued)

REGISTER: 44h, MODE: 16 bit**FUNCTION: Control Matrix Pins 13 - 18 , Channels A and B**

BIT	FUNCTION	CONNECTION		RELAY	COMMENT
0	Chan A	Pin 13	J1 - P	K33	Group 3A
1	Chan A	Pin 14	J1 - R	K34	Group 3A
2	Chan A	Pin 15	J1 - S	K35	Group 3A
3	Chan A	Pin 16	J1 - T	K36	Group 3A
4	Chan A	Pin 17	J1 - U	K37	Group 3A
5	Chan A	Pin 18	J1 - V	K38	Group 3A
6	Chan A	J1 - W	K39	used with any Group 3A relay	
7	not used	-	-	resistor pull-up to 5V	
8	Chan B	Pin 13	J1 - P	K41	Group 3B
9	Chan B	Pin 14	J1 - R	K42	Group 3B
10	Chan B	Pin 15	J1 - S	K43	Group 3B
11	Chan B	Pin 16	J1 - T	K44	Group 3B
12	Chan B	Pin 17	J1 - U	K45	Group 3B
13	Chan B	Pin 18	J1 - V	K46	Group 3B
14	Chan B	J1 - X	K47	used with any Group 3B relay	
15	not used	-	-	resistor pull-up to 5V	

REGISTER: 46h, MODE: 16 bit**FUNCTION: Control Matrix Pins 19 - 24 , Channels A and B**

BIT	FUNCTION	CONNECTION		RELAY	COMMENT
0	Chan A	Pin 19	J2 - A	K49	Group 4A
1	Chan A	Pin 20	J2 - B	K50	Group 4A
2	Chan A	Pin 21	J2 - C	K51	Group 4A
3	Chan A	Pin 22	J2 - D	K52	Group 4A
4	Chan A	Pin 23	J2 - E	K53	Group 4A
5	Chan A	Pin 24	J2 - F	K54	Group 4A
6	Chan A	J2 - W	K55	used with any Group 4A relay	
7	not used	-	-	resistor pull-up to 5V	
8	Chan B	Pin 19	J2 - A	K57	Group 4B
9	Chan B	Pin 20	J2 - B	K58	Group 4B
10	Chan B	Pin 21	J2 - C	K59	Group 4B
11	Chan B	Pin 22	J2 - D	K60	Group 4B
12	Chan B	Pin 23	J2 - E	K61	Group 4B
13	Chan B	Pin 24	J2 - F	K62	Group 4B
14	Chan B	J1 - X	K63	used with any Group 4B relay	
15	not used	-	-	resistor pull-up to 5V	

Register Map -16 Bit (Continued)

REGISTER: 48h, MODE: 16 bit**FUNCTION: Control Matrix Pins 25 - 30 , Channels A and B**

BIT	FUNCTION	CONNECTION		RELAY	COMMENT
0	Chan A	Pin 25	J2 - H	K65	Group 5A
1	Chan A	Pin 26	J2 - J	K66	Group 5A
2	Chan A	Pin 27	J2 - K	K67	Group 5A
3	Chan A	Pin 28	J2 - L	K68	Group 5A
4	Chan A	Pin 29	J2 - M	K69	Group 5A
5	Chan A	Pin 30	J2 - N	K70	Group 5A
6	Chan A	J1 - W	K71	used with any Group 5A relay	
7	not used	-	-	resistor pull-up to 5V	
8	Chan B	Pin 25	J2 - H	K73	Group 5B
9	Chan B	Pin 26	J2 - J	K74	Group 5B
10	Chan B	Pin 27	J2 - K	K75	Group 5B
11	Chan B	Pin 28	J2 - L	K76	Group 5B
12	Chan B	Pin 29	J2 - M	K77	Group 5B
13	Chan B	Pin 30	J2 - N	K78	Group 5B
14	Chan B	J1 - X	K79	used with any Group 5B relay	
15	not used	-	-	resistor pull-up to 5V	

REGISTER: 50h, MODE: 16 bit**FUNCTION: Control Matrix Pins 31 - 36 , Channels A and B**

BIT	FUNCTION	CONNECTION		RELAY	COMMENT
0	Chan A	Pin 31	J2 - P	K81	Group 6A
1	Chan A	Pin 32	J2 - R	K82	Group 6A
2	Chan A	Pin 33	J2 - S	K83	Group 6A
3	Chan A	Pin 34	J2 - T	K84	Group 6A
4	Chan A	Pin 35	J2 - U	K85	Group 6A
5	Chan A	Pin 36	J2 - V	K86	Group 6A
6	Chan A	J1 - W	K87	used with any Group 6A relay	
7	not used	-	-	resistor pull-up to 5V	
8	Chan B	Pin 31	J2 - P	K89	Group 6B
9	Chan B	Pin 32	J2 - R	K90	Group 6B
10	Chan B	Pin 33	J2 - S	K91	Group 6B
11	Chan B	Pin 34	J2 - T	K92	Group 6B
12	Chan B	Pin 35	J2 - U	K93	Group 6B
13	Chan B	Pin 36	J2 - V	K94	Group 6B
14	Chan B	J1 - X	K95	used with any Group 6B relay	
15	not used	-	-	resistor pull-up to 5V	

Register Map - 32 Bit Configuration
MSB

REG		31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
40h		n/a	K31	K30	K29	K28	K27	K26	K25	n/a	K23	K22	K21	K20	K19	K18	K17

LSB

REG		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
40h		n/a	K15	K14	K13	K12	K11	K10	K9	n/a	K7	K6	K5	K4	K3	K2	K1

MSB

REG		31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
44h		n/a	K63	K62	K61	K60	K59	K58	K57	n/a	K55	K54	K53	K52	K51	K50	K49

LSB

REG		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
44h		n/a	K47	K46	K45	K44	K43	K42	K41	n/a	K39	K38	K37	K36	K35	K34	K33

MSB

REG		31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
48h		n/a	K95	K94	K93	K92	K91	K90	K89	n/a	K87	K86	K85	K84	K83	K82	K81

LSB

REG		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
48h		n/a	K79	K78	K77	K76	K75	K74	K73	n/a	K71	K70	K69	K68	K67	K66	K65

Register Map -32 Bit (Continued)

REGISTER: 40h, MODE: 32 bit**FUNCTION: Control Matrix Pins 1 - 6, Channels A and B**

BIT	FUNCTION	CONNEC TION	RELAY	COMMENT	
0	Chan A	Pin 1	J1 - A	K1	Group 1A
1	Chan A	Pin 2	J1 - B	K2	Group 1A
2	Chan A	Pin 3	J1 - C	K3	Group 1A
3	Chan A	Pin 4	J1 - D	K4	Group 1A
4	Chan A	Pin 5	J1 - E	K5	Group 1A
5	Chan A	Pin 6	J1 - F	K6	Group 1A
6	Chan A	J1 - W	K7	used with any Group 1A relay	
7	not used	-	-	resistor pull-up to 5V	
8	Chan B	Pin 1	J1 - A	K9	Group 1B
9	Chan B	Pin 2	J1 - B	K10	Group 1B
10	Chan B	Pin 3	J1 - C	K11	Group 1B
11	Chan B	Pin 4	J1 - D	K12	Group 1B
12	Chan B	Pin 5	J1 - F	K13	Group 1B
13	Chan B	Pin 6	J1 - E	K14	Group 1B
14	Chan B	J1 - X	K15	used with any Group 1B relay	
15	not used	-	-	resistor pull-up to 5V	

REGISTER: 40h, MODE: 32 bit**FUNCTION: Control Matrix Pins 7 - 12, Channels A and B**

BIT	FUNCTION	CONNEC TION		RELAY	COMMENT
16	Chan A	Pin 7	J1 - H	K17	Group 2A
17	Chan A	Pin 8	J1 - J	K18	Group 2A
18	Chan A	Pin 9	J1 - K	K19	Group 2A
19	Chan A	Pin 10	J1 - L	<P11>K20	Group 2A
20	Chan A	Pin 11	J1 - M	K21	Group 2A
21	Chan A	Pin 12	J1 - N	K22	Group 2A
22	Chan A	J1 - W	K23	used with any Group 2A relay	
23	not used	-	-	resistor pull-up to 5V	
24	Chan B	Pin 7	J1 - H	K25	Group 2B
25	Chan B	Pin 8	J1 - J	K26	Group 2B
26	Chan B	Pin 9	J1 - K	K27	Group 2B
27	Chan B	Pin 10	J1 - L	K28	Group 2B
28	Chan B	Pin 11	J1 - M	K29	Group 2B
29	Chan B	Pin 12	J1 - N	K30	Group 2B
30	Chan B	J1 - X	K31	used with any Group 2B relay	
31	not used	-	-	resistor pull-up to 5V	

Register Map -32 Bit (Continued)

REGISTER: 44h, MODE: 32 bit**FUNCTION: Control Matrix Pins 13 - 18, Channels A and B**

BIT	FUNCTION	CONNEC TION		RELAY	COMMENT
0	Chan A	Pin 13	J1 - P	K33	Group 3A
1	Chan A	Pin 14	J1 - R	K34	Group 3A
2	Chan A	Pin 15	J1 - S	K35	Group 3A
3	Chan A	Pin 16	J1 - T	K36	Group 3A
4	Chan A	Pin 17	J1 - U	K37	Group 3A
5	Chan A	Pin 18	J1 - V	K38	Group 3A
6	Chan A	J1 - W	K39	used with any Group 3A relay	
7	not used	-	-	resistor pull-up to 5V	
8	Chan B	Pin 13	J1 - P	K41	Group 3B
9	Chan B	Pin 14	J1 - R	K42	Group 3B
10	Chan B	Pin 15	J1 - S	K43	Group 3B
11	Chan B	Pin 16	J1 - T	K44	Group 3B
12	Chan B	Pin 17	J1 - U	K45	Group 3B
13	Chan B	Pin 18	J1 - V	K46	Group 3B
14	Chan B	J1 - X	K47	used with any Group 3B relay	
15	not used	-	-	resistor pull-up to 5V	

REGISTER: 44h, MODE: 32 bit**FUNCTION: Control Matrix Pins 19 - 24, Channels A and B**

BIT	FUNCTION	CONNEC TION		RELAY	COMMENT
16	Chan A	Pin 19	J2 - A	K49	Group 4A
17	Chan A	Pin 20	J2 - B	K50	Group 4A
18	Chan A	Pin 21	J2 - C	K51	Group 4A
19	Chan A	Pin 22	J2 - D	K52	Group 4A
20	Chan A	Pin 23	J2 - E	K53	Group 4A
21	Chan A	Pin 24	J2 - F	K54	Group 4A
22	Chan A	J2 - W	K55	used with any Group 4A relay	
23	not used	-	-	resistor pull-up to 5V	
24	Chan B	Pin 19	J2 - A	K57	Group 4B
25	Chan B	Pin 20	J2 - B	K58	Group 4B
26	Chan B	Pin 21	J2 - C	K59	Group 4B
27	Chan B	Pin 22	J2 - D	K60	Group 4B
28	Chan B	Pin 23	J2 - E	K61	Group 4B
29	Chan B	Pin 24	J2 - F	K62	Group 4B
30	Chan B	J1 - X	K63	used with any Group 4B relay	
31	not used	-	-	resistor pull-up to 5V	

Register Map -32 Bit (Continued)

REGISTER: 48h, MODE: 32 bit**FUNCTION: Control Matrix Pins 25 - 30, Channels A and B**

BIT	FUNCTION	CONNEC TION	RELAY	COMMENT	
0	Chan A	Pin 25	J2 - H	K65	Group 5A
1	Chan A	Pin 26	J2 - J	K66	Group 5A
2	Chan A	Pin 27	J2 - K	K67	Group 5A
3	Chan A	Pin 28	J2 - L	K68	Group 5A
4	Chan A	Pin 29	J2 - M	K69	Group 5A
5	Chan A	Pin 30	J2 - N	K70	Group 5A
6	Chan A	J1 - W	K71	used with any Group 5A relay	
7	not used	-	-	resistor pull-up to 5V	
8	Chan B	Pin 25	J2 - H	K73	Group 5B
9	Chan B	Pin 26	J2 - J	K74	Group 5B
10	Chan B	Pin 27	J2 - K	K75	Group 5B
11	Chan B	Pin 28	J2 - L	K76	Group 5B
12	Chan B	Pin 29	J2 - M	K77	Group 5B
13	Chan B	Pin 30	J2 - N	K78	Group 5B
14	Chan B	J1 - X	K79	used with any Group 5B relay	
15	not used	-	-	resistor pull-up to 5V	

REGISTER: 48h, MODE: 32 bit**FUNCTION: Control Matrix Pins 31 - 36, Channels A and B**

BIT	FUNCTION	CONNEC TION		RELAY	COMMENT
16	Chan A	Pin 31	J2 - P	K81	Group 6A
17	Chan A	Pin 32	J2 - R	K82	Group 6A
18	Chan A	Pin 33	J2 - S	K83	Group 6A
19	Chan A	Pin 34	J2 - T	K84	Group 6A
20	Chan A	Pin 35	J2 - U	K85	Group 6A
21	Chan A	Pin 36	J2 - V	K86	Group 6A
22	Chan A	J1 - W	K87	used with any Group 6A relay	
23	not used	-	-	resistor pull-up to 5V	
24	Chan B	Pin 31	J2 - P	K89	Group 6B
25	Chan B	Pin 32	J2 - R	K90	Group 6B
26	Chan B	Pin 33	J2 - S	K91	Group 6B
27	Chan B	Pin 34	J2 - T	K92	Group 6B
28	Chan B	Pin 35	J2 - U	K93	Group 6B
29	Chan B	Pin 36	J2 - V	K94	Group 6B
30	Chan B	J1 - X	K95	used with any Group 6B relay	
31	not used	-	-	resistor pull-up to 5V	