

Model 3000-48
16 Channel High Power Source
90400390

Model 3000-49
16 Channel High Power Sink
9040040



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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

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

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Type of Equipment:

Switching Module

Model Series Number

3000-48, 49

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

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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

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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.

Chapter 2 Configuration Table

Module, 3000-48, Source Driver

90400390

PL90400390

Schematics

85006030

PL85006030

SCH85006030

Module, 3000-49, Sink Driver

90400400

PL90400400

Schematics

85006040

PL85006040

SCH85006040

Chapter 3 Functional Description

3.1 Introduction

This manual provides the necessary information for the maintenance of the Model 3000-48 Source Driver and 3000-49 Sink Driver.

3.2 General Description

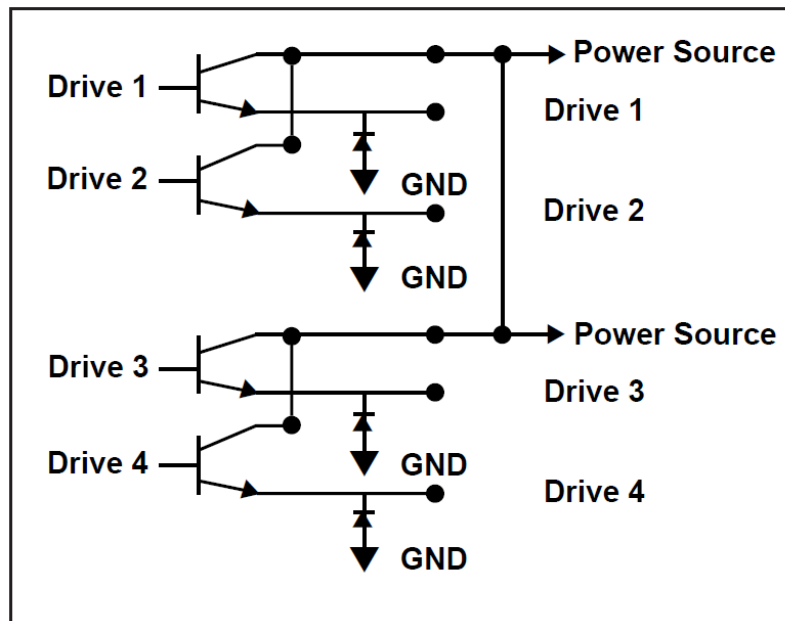
The Model 3000-48,-49 is a 16 channel high power driver with programmable timer. Each driver is capable of sourcing current up to 4 amps and deliver voltages up to 50 volts. Each device can handle up to 100 watts. However, care must be taken that the overall power dissipation does not exceed 650 watts in the entire module. Each driver has a built-in suppression diode.

The module is subdivided into 4 groups of 4 channels. Each group contains a digital programmable one-shot to drive the entire group or individual channels for a time from 10uS to 655 mSec. The controls to the high power drivers are:

- Individual output enable control with register readback for verification.
- Group start command. Drives all channels.
- Selected start command. Drives only the selected channels.
- Group stop command. Turns off all drivers.
- Selected stop command. Turns off only selected channels.
- Four timing groups. Each group has a counter readback to verify timing set-up.
- Selectable timer enable for each channel with readback for verification of programming.

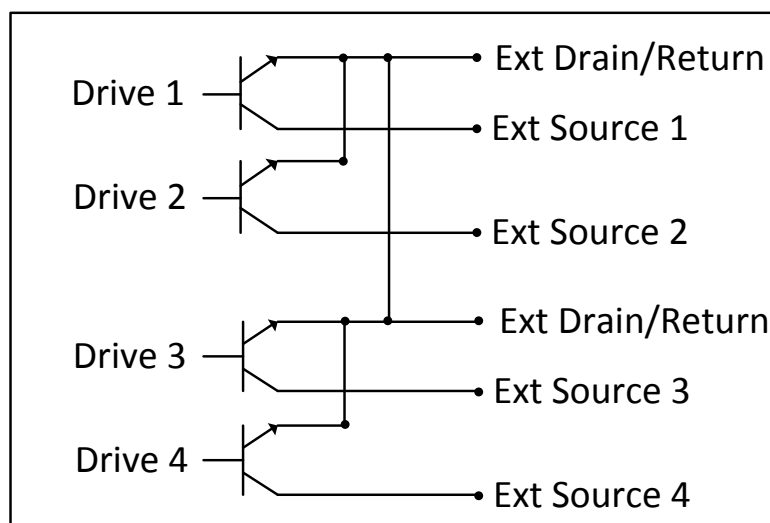
Chapter 4 Block Diagrams

4.1 3000-48, Source Driver



4 of 16 Typical Driver Channels

4.2 3000-49, Sink Driver



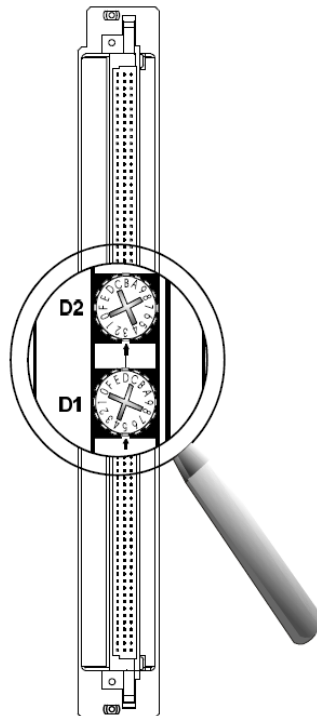
4 of 16 Typical Driver Channels

Controls and Indicators

The following controls and indicators are provided to select and display the functions of the ASCOR 3000-48, 49 Module's operating environment.

4.3 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.



4.4 LEDs

The following LEDs are visible at the Module's front panel to indicate the status of the module's operation:

4.4.1 "BUS" LED

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

4.4.2 "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 3000-48, 49 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

Electrical:

Sixteen Emitter Follower Drivers rated at up to 4 amps and 50 volts, with clamp diode.

Single "C" size register programmable VXI Slot.

Four register programmable timers, 10 μ s to 655ms, controlling 4 drivers each.

Enable/Disable control of each driver.

Time or Continuous Mode register programmable for each driver.

Group Start Command: Starts all enabled drivers.

Selected Start Command: Starts all selected and enabled drivers.

Group Stop Command: Turns off all drivers.

Selected Stop Command: Turns off selected drivers.

Register read back verification supported for: Timers,
Enable, and Mode Select.

Power limits: 100 watts per driver; 650 watts per module.

Mechanical:

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

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 8 Register Map

ASCOR Model 3000-48, 49

Features

- The Model 3000-48, 49 VXI module has 16 high power drivers. Each driver with program selectable, timed or Continuous Mode operation.
- The Model is a single slot VXI register based unit.
- The Module has four (4) Programmable timers supporting four (4) drivers each.
- Each driver can supply up to 4 amps and 50 volts. The load Power limits are; 100 watts per driver and 650 watts total for the module. Each driver has a built in suppression diode.

Programming: 16 bit mode

8.1 Registers

Register address 40h: Group 1 Timer

Type: read/write

Bit 0-15: 16 bit value of timer (digital one shot). The timing value is equal to the value in the register x 10uS (100KHz clock). The timer begins counting down when the group is selected by the Group Start Command or the Selected Group Start Command. Timer for channels 1-4.

Register address 42h: Group 2 Timer

Type: read/write

Bit 0-15: 16 bit value of timer (digital one shot). The timing value is equal to the value in the register x 10uS (100KHz clock). The timer begins counting down when the group is selected by the Group Start Command or the Selected Group Start Command. Timer for channels 5-8.

Register address 44h: Group 3 Timer

Type: read/write

Bit 0-15: 16 bit value of timer (digital one shot). The timing value is equal to the value in the register x 10uS (100KHz clock). The timer begins counting down when the group is selected by the Group Start Command or the Selected Group Start Command. Timer for channels 9-12.

Register address 46h: Group 4 Timer**Type: read/write**

Bit 0-15: 16 bit value of timer (digital one shot). The timing value is equal to the value in the register x 10uS (100KHz clock). The timer begins counting down when the group is selected by the Group Start Command or the Selected Group Start Command. Timer for channels 13-16.

Register address 48h: Timer select**Type: read/write**

Bit 0-15: Each bit controls the selected channel to be driven during the duration of the Timer (groups 1-4). The LSB selects channel 1 and the MSB selects channel 16. Each other bits selects channels 2 through 15 in incremental order. A value of "1" enables the timer to control the duration of the output drive.

Register address 4Ch: Output drive enable**Type: read/write**

Bit 0-15: Each bit enables the output of the selected driver. The LSB selects channel 1 and the MSB selects channel 16. Each other bits selects channels 2 through 15 in incremental order. A value of "1" enables the output to respond to the start and stop commands. This allows selective enabling different drivers while maintaining the timer values.

Address 50h:**Type: write only****Name: Global Start Command**

A write to this address will initial a start to all channels. If the channel is selected to use the timer, then the channel will be driven for the duration of the digital timer. If the timer is disable, then the output will driven on continuously until the channel is turned off.

Address 54Eh:**Type: write only****Name: Global Stop Command**

A write to this address will command a stop to all channels. This will turn off the drivers on all channels.

Address 58h:**Type: write only****Bit 0-15****Name: Selective Start Command**

A write to this address will start the selected channels based on the data sent. The LSB selects channel 1 and the MSB selects channel 16. Each other bit selects channels 2 through 15 in incremental order. A value of "1" starts the selected channel. A "0" ignores the command to the selected channel.

8.2 Strobes

Address 5Ch:**Type: write only****Bit 0-15****Name: Selective Stop Command**

A write to this address will stop the selected channels based on the data sent. The LSB selects channel 1 and the MSB selects channel 16. Each other bits selects channels 2 through 15 in incremental order. A value of "1" stops the selected channel. A "0" ignores the command to the selected channel.

Address 60h:**Type: read/write****Name: Latch control address**

A read of this address will return the contents of the input receiver latches. The receiver contains 16 event latches. A write to this address will reset the event latches to zero.

Address 64h:**Type: read only****Name: Read input data**

A read of this address will return the value of input to the event latches.

Address 68h:**Type: write only****Name: Software reset**

A write to this address is equivalent to power up reset. This will reset all registers and latches to zero. The timer counters will set set to zero. All drivers will be turned off.

8.3 Functional Description

The Model 3000-48, 49 contains 16 high power source drivers. Each driver can handle up to 4 amps at up to 50 Volts. The voltage source for the driver comes from an external supply source and it is not provided by the module. The 16 drivers are split up into four groups of four channels. Each group contains a programmable timer which can be programmed from 10 us to 655mSec. in duration. Each driver can be set up to be driven by the timer or by the start command. When a driver is set for the timer, the output will be driven for the duration of the timer and then it is turned off. The driver is set at the start command, Global or Selective. When the timer is not selected for a driver, then the driver will operate in a continuous manner. The start command will turn on the driver, and it will remain **on** until it is driven off by the stop command, Global or selective.

There is a 16 bit receiver design to monitor an event. The front end of the receiver is designed for the user to implement the proper termination to the receiver circuit. Each receiver input termination must be selected to provide a signal termination or attenuation such that the input cannot exceed 5 volts into the receiver. Each receiver has provisions to use three resistors: input series resistor, pull up resistor to +5, pull down resistor to ground. The pull up and pull down resistors are located after the series input resistor position. This allows for an attenuator design. The input receiver is an event latch. Whenever there is a level change, the input latch will trigger and will be set to a "1" state. The state of the latches can be read to see if an event occurred. Additionally, the input to the receiver can be read to determine the current level of the input.

The design of this module is intended to handle programmed duration of high power current drive. However, it can be operated in a continuous mode. ***Great care must be taken to avoid excessive continuous power dissipation which may exceed the cooling capability of the VXI chassis.*** (Consult the specifications of the VXI chassis).

8.4 Register Map

ADDRESS: 40h, write/read

Bit, FUNCTION : Timer, Group 1 (pins 1-4)

0	Timer bit 1
1	Timer bit 2
2	Timer bit 3
3	Timer bit 4
4	Timer bit 5
5	Timer bit 6
6	Timer bit 7
7	Timer bit 8
8	Timer bit 9
9	Timer bit 10
10	Timer bit 11
11	Timer bit 12
12	Timer bit 13
13	Timer bit 14
14	Timer bit 15
15	Timer bit 16

The timer value is the value loaded into the timer times 10us. Accuracy is +/- 10us.

ADDRESS: 42h, write/read

Bit, FUNCTION : Timer, Group 2 (pins 6-8)

0	Timer bit 1
1	Timer bit 2
2	Timer bit 3
3	Timer bit 4
4	Timer bit 5
5	Timer bit 6
6	Timer bit 7
7	Timer bit 8
8	Timer bit 9
9	Timer bit 10
10	Timer bit 11
11	Timer bit 12
12	Timer bit 13
13	Timer bit 14
14	Timer bit 15
15	Timer bit 16

The timer value is the value loaded into the timer times 10us. Accuracy is +/- 10us.

ADDRESS: 44h, write/read**Bit, FUNCTION : Timer, Group 3 (pins 9-12)**

0	Timer bit 1
1	Timer bit 2
2	Timer bit 3
3	Timer bit 4
4	Timer bit 5
5	Timer bit 6
6	Timer bit 7
7	Timer bit 8
8	Timer bit 9
9	Timer bit 10
10	Timer bit 11
11	Timer bit 12
12	Timer bit 13
13	Timer bit 14
14	Timer bit 15
15	Timer bit 16

The timer value is the value loaded into the timer times 10us. Accuracy is +/- 10us.

ADDRESS: 46h, write/read**Bit, FUNCTION : Timer, Group 4 (pins 13-16)**

0	Timer bit 1
1	Timer bit 2
2	Timer bit 3
3	Timer bit 4
4	Timer bit 5
5	Timer bit 6
6	Timer bit 7
7	Timer bit 8
8	Timer bit 9
9	Timer bit 10
10	Timer bit 11
11	Timer bit 12
12	Timer bit 13
13	Timer bit 14
14	Timer bit 15
15	Timer bit 16

The timer value is the value loaded into the timer times 10us. Accuracy is +/- 10us.

ADDRESS: 48h, write/read**Bit, FUNCTION : Timer Select Program Register**

1	Driver 1
2	Driver 2
3	Driver 3
4	Driver 4
5	Driver 5
6	Driver 6
7	Driver 7
8	Driver 8
9	Driver 9
10	Driver 10
11	Driver 11
12	Driver 12
13	Driver 13
14	Driver 14
15	Driver 15
16	Driver 16

Setting the selected bit true will enable the timer in the group to control the duration of drive after the start command.

ADDRESS: 4Ch, write/read**Bit, FUNCTION : Output Driver Program Register**

1	Driver 1
2	Driver 2
3	Driver 3
4	Driver 4
5	Driver 5
6	Driver 6
7	Driver 7
8	Driver 8
9	Driver 9
10	Driver 10
11	Driver 11
12	Driver 12
13	Driver 13
14	Driver 14
15	Driver 15
16	Driver 16

Setting the selected bit true will enable the output of the selected driver.

ADDRESS: 50h, write only

BIT FUNCTION : Global Start Command

value of data is not applicable.

A write to this address will initiate a start to all drivers. (note, enabling drivers still applies, see address 4Ch).

ADDRESS: 54h, write only

BIT FUNCTION : Global Stop Command

value of data is not applicable.

A write to this address will initiate a stop to all drivers. (note, enabling drivers still applies, see address 4Ch).

ADDRESS: 58h, write/read

Bit, FUNCTION : Selective Start Command

1	Driver 1
2	Driver 2
3	Driver 3
4	Driver 4
5	Driver 5
6	Driver 6
7	Driver 7
8	Driver 8
9	Driver 9
10	Driver 10
11	Driver 11
12	Driver 12
13	Driver 13
14	Driver 14
15	Driver 15
16	Driver 16

A write to the selected bit will initiate the selected driver.

ADDRESS: 5Ch, write/read**Bit, FUNCTION : Selective Stop Command**

1	Driver 1
2	Driver 2
3	Driver 3
4	Driver 4
5	Driver 5
6	Driver 6
7	Driver 7
8	Driver 8
9	Driver 9
10	Driver 10
11	Driver 11
12	Driver 12
13	Driver 13
14	Driver 14
15	Driver 15
16	Driver 16

A write to the selected bit will stop the selected driver.

ADDRESS: 60h, write/read**Bit, FUNCTION : Receiver Control**

1	Receiver 1
2	Receiver 2
3	Receiver 3
4	Receiver 4
5	Receiver 5
6	Receiver 6
7	Receiver 7
8	Receiver 8
9	Receiver 9
10	Receiver 10
11	Receiver 11
12	Receiver 12
13	Receiver 13
14	Receiver 14
15	Receiver 15
16	Receiver 16

A write to this address will reset the event latches.

A read to this address will return the contents of the event latches. A "0" indicates no

event occurred. A "1" indicates an event occurred.

ADDRESS: 64h, read only

Bit, FUNCTION : Receiver Input Data

1	Receiver 1
2	Receiver 2
3	Receiver 3
4	Receiver 4
5	Receiver 5
6	Receiver 6
7	Receiver 7
8	Receiver 8
9	Receiver 9
10	Receiver 10
11	Receiver 11
12	Receiver 12
13	Receiver 13
14	Receiver 14
15	Receiver 15
16	Receiver 16

A read at this address will return the current level of the receiver's input.

ADDRESS: 68h, write only

BIT FUNCTION : Software Reset

value of data is not applicable.

A write to this address is equivalent to a power up reset. This will set all registers, counters to zero. All drivers will be turned off, and the event detectors will be reset. The program registers will be set to zero (driver enable, timer select).