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 *Astronics / C&H Technologies VX400B* at our website: ***Click HERE***

USER'S MANUAL

VXI PROTOTYPING MODULE

MODEL VX400B/C

Manual Part Number: 11026199

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

COPYRIGHT

C&H Engineering, Inc. (C&H) provides this manual "as is" without warranty of any kind, either expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. C&H may make improvements and/or changes in the product(s) and/or program(s) described in this manual at any time and without notice.

This publication could contain technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of this publication.

Copyright © 1993 by C&H Engineering, Inc.

The information and/or drawings set forth in this document and all rights in and to inventions disclosed herein which might be granted thereon disclosing or employing the materials, methods, techniques or apparatus described herein, are the exclusive property of C&H Engineering, Inc.

A Reader's Comment Form is provided at the back of this publication. If this form has been removed address comments to:

C&H Engineering, Inc.
Technical Publications
P. O. Box 14765
Austin, Texas 78761-4765

C&H may use or distribute any of the information you supply in any way that it believes appropriate without incurring any obligations whatever.

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

VME/VXI MODULE WARRANTY

C&H Engineering, Inc. warrants its VME/VXI products to be free from defects in material and workmanship for one year from date of shipment. C&H will repair or replace the defective product without charge within the warranty period, provided the defective item is shipped, freight prepaid, to C&H Engineering, at 15809 Vision Drive, Pflugerville, TX 78660. C&H will pay return freight charges to any point in the continental United States or Canada.

Obligations under this warranty shall be limited to repair or replacement, at C&H's discretion, of any product or part thereof which has been returned by the original purchaser with transportation prepaid and, upon examination by C&H, found to be defective. C&H assumes no responsibility for loss or damage to equipment being returned for repair or replacement under the terms of this warranty. Equipment which, upon examination by C&H, requires repair or replacement of parts thereof as a result of improper installation, misuse, unauthorized alterations or repairs, or user negligence, will have such repairs or replacement of parts made at then current rates.

This warranty does not cover damage caused by misuse, neglect, accident, or improper application or installation. C&H shall not be liable for consequential damages of any kind arising out of the purchase, installation, use or misuse of the product. C&H makes no representation or warranty of any kind, either expressed or implied, with respect to equipment operation or procedures. Any action that the user may take in reliance upon the operation or accuracy of this equipment shall be taken solely at the user's own responsibility and risk.

Please notify the C&H sales department to obtain a Return Authorization Number (RAN) prior to return of a product under the terms of this warranty. Notification is to include the Model and Serial numbers of the product along with full details of the problem. Modules returned should clearly show the RAN on the outside of the package.

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

AMENDMENT NOTICE

C&H Engineering, Inc. makes every attempt to provide up-to-date manuals with the associated equipment. Occasionally, changes are made to the equipment wherein it is necessary to provide amendments to the manual. If any amendments are provided for this manual they are printed on colored paper and will be found at the rear of this manual.

NOTE

The contents of any amendment may affect operation, maintenance, or calibration of the equipment.

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

INTRODUCTION

This manual describes the functional operation of the C&H Model VX400 B and C sized VXI Prototyping Modules (B-size P/N 11026195, C-size P/N 11026200). These modules are part of a number of test and data acquisition/control modules in the VME and VXI format provided by C&H.

Contained within this manual is information on the physical and electrical specifications, installation and startup procedures, operating procedures, functional analysis, and figures and diagrams required to adequately support this product.

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

TABLE OF CONTENTS

1.0 GENERAL DESCRIPTION 1
1.1 PURPOSE OF EQUIPMENT 1
1.2 SPECIFICATIONS OF EQUIPMENT 1
1.2.1 Key Specifications 1
1.2.2 Electrical 1
1.2.3 Mechanical 2
1.2.4 Environmental 2
1.2.5 Bus Compliance 2
2.0 INSTALLATION 5
2.1 UNPACKING AND INSPECTION 5
2.2 HANDLING PRECAUTIONS 5
2.3 INSTALLATION 5
2.4 PREPARATION FOR RESHIPMENT 5
3.0 FUNCTIONAL DESCRIPTION 7
3.1 GENERAL 7
3.1.1 Control Logic and Address Decode 7
3.1.2 VXI Registers and Data Buffer 7
3.2 SWITCHES AND JUMPERS 7
3.3 INDICATORS 7
3.4 CONNECTORS 7
3.5 VXI CONFIGURATION REGISTERS 8
3.6 USER INTERFACE SIGNALS 10
3.6.1 Buffered VXIbus Addresses 10
3.6.2 Non-buffered VXIbus Addresses 10
3.6.3 Buffered VXIbus Bi-directional Data 10
3.6.4 Buffered Data Strobes 10
3.6.5 Data Bus Direction Control 10
3.6.6 Write Gates 10
3.6.7 Read Gates 11
3.6.8 Delayed and Local Data Acknowledge 12
3.6.9 VXI Address Decode 12
3.6.10 Interrupt Signals 12
3.6.11 Reset 13
3.6.12 Upper Offset Address Decode Lines 13
3.6.13 Chip Selects 13
3.6.14 Power 13
3.6.15 P2 Signals 13
3.6.16 VXI Register Data Inputs 13
4.0 OPERATING INSTRUCTIONS 17
4.1 NORMAL OPERATION 17
4.2 SOFTWARE DRIVERS 17
5.0 MAINTENANCE 18
5.1 BUILT IN TEST AND DIAGNOSTICS 18
5.2 TROUBLE ANALYSIS GUIDE 18
APPENDIX A - ELECTRICAL AND TIMING SPECIFICATIONS 1

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

APPENDIX B - CONNECTORS 1
APPENDIX C - BOARD LAYOUT 3
APPENDIX D - SCHEMATICS 1

LIST OF FIGURES

Figure 1. VXI Configuration Registers (1 of 2) 9
Figure 2. VXI Configuration Registers (2 of 2) 9
Figure A-1. User Signal Timing 1
Figure B-1. P1 Pin Configuration 2
Figure B-2. P2 Pin Configuration 2

LIST OF TABLES

Table I. VXI Register Address Map 8
Table II. Write Gate Decode 11
Table III. Read Gate Decode 12
Table IV. Register Data Input Definitions 14

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

1.0 GENERAL DESCRIPTION

The VX400B/C VXI Prototyping Modules are VXIbus compatible B-size and C-size modules with over 22 and 78 square inches of user space, respectively. The two modules are identical, except for the physical dimensions.

1.1 PURPOSE OF EQUIPMENT

The module is well suited for applications in prototyping VXIbus designs, proof of concept testing, and design verification. The VX400 provides all necessary VXIbus register interface functions and user interconnect terminals to reduce design time and effort.

1.2 SPECIFICATIONS OF EQUIPMENT

1.2.1 Key Specifications

- Signal names silkscreened on both the component and solder sides
- Prototyping holes on a 0.1" by 0.1" grid
- VCC and GND strips along top and bottom edges
- User interface signals provided:
  - VXIbus Addresses
  - VXIbus Bi-directional Data
  - Data Strobes
  - Data Bus Direction Control
  - Write Gates
  - Read Gates
  - Delayed & Local Data Acknowledge
  - VXI Address Decode
  - Interrupt Signals
  - VXI Device Register Data Input
  - Reset
  - Upper Offset Address Decode Lines
  - VXI Register Data Inputs
  - Power
  - All P2 Signals

1.2.2 Electrical

The VXI interface circuitry provided on the module requires +4.5V to +5.5V at 0.5 amps for proper operation. The actual power requirements will depend on the user's circuitry. The connector pins are rated at 1 amp maximum.

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

1.2.3 Mechanical

The mechanical dimensions of the module are in conformance with the VXI bus specification for single slot B and C Size modules. The nominal dimensions are 233.35 mm (9.187 in) high x 160 mm (6.299 in) deep for the B-size module and 233.35 (9.187 in) high x 340 mm (13.386 in) deep for the C-size module. The B-size module is designed for a mainframe with 20.32 mm (0.800 in) spacing between slots and the C-size module is designed for a spacing of 30.48 mm (1.200 in). As required by the VXI bus specification, the dimensions are in accordance with those given in the VME bus specification (Rev. C.1), where applicable.

1.2.4 Environmental

The environmental specifications of the module are:

Operating Temperature: 0°C to +55°C

Storage Temperature: -40°C to +75°C

Humidity: <95% without condensation

The cooling air requirements depend on the user's circuitry.

1.2.5 Bus Compliance

The VX400 complies with the VXIbus Specification Revision 1.4 for B and C size register based modules and with VMEbus Specification ANSI/IEEE STD 1014-1987, IEC 821 and IEC 822. SYSFAIL is not supported, but can be added by the user with jumpers to the P1 connector. IACKIN is tied directly to IACKOUT and BRX is tied directly to BGX; however, these configurations are easily modified by cutting accessible circuit traces.

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

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

2.0 INSTALLATION

2.1 UNPACKING AND INSPECTION

In most cases the VX400 will have been individually sealed and packaged for shipment. Verify that there has been no damage to the shipping container. If damage exists then the container should be retained as it will provide evidence of carrier caused problems. Such problems should be reported to the carrier immediately as well as to C&H. If there is no damage to the shipping container, carefully remove the module from its box and plastic bag and inspect for any signs of physical damage. If damage exists, report immediately to C&H.

2.2 HANDLING PRECAUTIONS

The VX400 contains components that are sensitive to electrostatic discharge. When handling the module for any reason, do so at a static-controlled workstation, whenever possible. At a minimum, avoid work areas that are potential static sources, such as carpeted areas. Avoid unnecessary contact with the components on the module.

2.3 INSTALLATION

CAUTION: Read the entire User's Manual before proceeding with the installation and application of power.

Set or verify the module's logical address. Insert the module into the appropriate slot according to the desired priority. Apply power. If no obvious problems exist, proceed to communicate with the module as outlined in your host processor's user's guide.

2.4 PREPARATION FOR RESHIPMENT

If the VX400 is to be shipped separately it should be enclosed in a suitable water and vapor proof plastic bag. Heat seal or tape the plastic bag to insure a moisture-proof closure. When sealing the bag, keep trapped air volume to a minimum.

The shipping container should be a rigid box of sufficient size and strength to protect the equipment from damage. If the VX400 was received separately from a C&H system, then the original module shipping container and packing material may be re-used if it is still in good condition.

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

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

3.0 FUNCTIONAL DESCRIPTION

3.1 GENERAL

A block diagram is provided on sheet 1 of the schematics in Appendix D and a layout of the board is shown in Appendix C.

The VXI Interface provides all the electrical and mechanical connections to the VXI backplane. The P1 connector implements the bus drivers and receivers according to the VXI specification and passes the information to the remainder of the board. The P2 connector provides a 96-pin DIN type connector pattern to the user. The user can solder wires directly into these holes, or insert a header for easy access.

3.1.1 Control Logic and Address Decode

The address decode section provides an enable signal to the control logic when the address on the bus matches the settings of the logic address switch on the module. Once the module has an address match, the control logic performs the proper VXIbus handshake, timing and data transfers to or from the designated registers. Read and write strobes for all the registers are decoded in the address decode section.

3.1.2 VXI Registers and Data Buffer

All required VXI registers are provided and the user has access many of the register bits. The bi-directional data buffer is implemented to the user's logic. Refer to for the user interface signals.

3.2 SWITCHES AND JUMPERS

An 8-bit logical address switch (S1) is provided to uniquely identify the module in the system.

3.3 INDICATORS

Two LED indicators are provided on the front panel. One indicates access to the MODID, the other indicates the BOARD SELECT status.

MODID: This front panel LED illuminates whenever the host processor applies the MODID signal to the slot the VX400 is occupying.

BOARD SELECT: This front panel LED illuminates whenever the VX400 is properly accessed by the host processor.

3.4 CONNECTORS

The VX400 provides the P1 VXIbus connector and provisions to mount a P2 connector. No external connections are provided at the front panel, but provisions for two DIN41612

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

compatible connectors are available. Access to the buffered data and control signals is via solder tabs with plated through holes. The user may install wire-wrap posts in these locations or solder directly to the tabs. Refer to Appendix B for the P1 and P2 pin configurations.

In order to facilitate the usage of a "piggyback" board, the user signals and P2 connector signals are physically arranged to allow insertion of 96-pin DIN compatible connectors. These connectors are provided with Option 01.

3.5 VXI CONFIGURATION REGISTERS

There are several registers used to configure and control the VX400. The address map of the registers is shown in :

Table I. VXI Register Address Map

Addr (Hex)	Description
0008-001F	Unused Registers Locations
0006	VXI Offset Register
0004	VXI Status Register
0002	VXI Device Type Register
0000	VXI Identification (ID) Register

The VXI configuration registers contain basic information needed to configure a VXIbus system. The configuration information includes: manufacturer identification, product model code, device type, memory requirements, device status, and device control. The registers are briefly described below and are detailed in and :

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

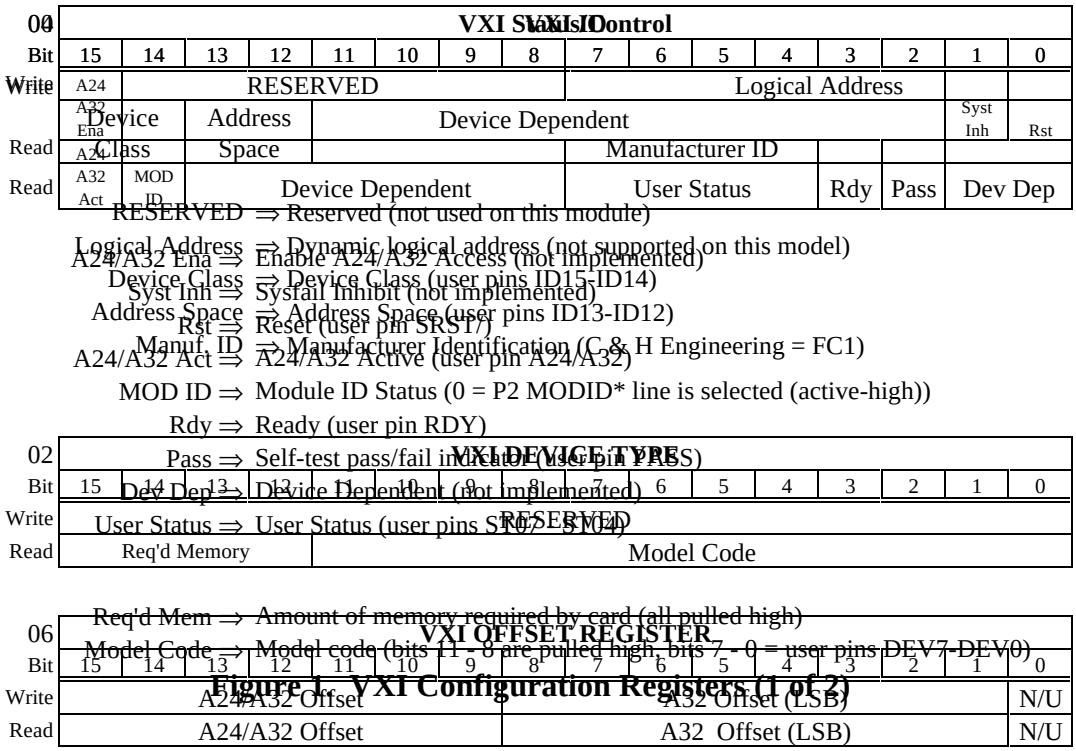


Figure 1. VXI Configuration Registers (1 of 2)

Figure 2. VXI Configuration Registers (2 of 2)

VXI Identification (ID) Register (0000h) - A read of this register provides manufacturer identification, device classification (i.e., register based), and the addressing mode (A16/A24/A32). A write to this register has no effect.

VXI Device Type Register (0002h) - A read of this register provides the model code identifier and the amount of memory required. A write to this register has no effect.

VXI Status/Control Register (0004h) - A read of this register provides the state of the A24/A32 Enable bit, the state of P2 MODID* line, and the Ready (RDY) and self-test

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

Passed (PASS) status. A write of this register controls the A24/A32 enable and the reset of the module. SYSFAIL* is not implemented on this module.

VXI Offset Register (0006h) - Only the control logic (WOFF0-1 and ROFF/) is implemented on this register.

3.6 USER INTERFACE SIGNALS

The VX400 performs all the VXIbus interface functions and provides a buffered set of address, data, and control signals to the user. See Appendix A for the timing relationships of the user interface signals.

3.6.1 Buffered VXIbus Addresses (A01, A02, A03)

The corresponding VXIbus address lines are latched into CMOS compatible devices on the leading edge of DLY1 and maintained until both data strobes are negated. These latched and buffered signals are provided to the user as A01, A02, and A03. This insures the address will remain stable until the VXIbus cycle is complete.

3.6.2 Non-buffered VXIbus Addresses (VA04, VA05, VA16 to VA23)

These address lines are direct connections to the corresponding VXIbus address lines and may be used if greater address range is required.

3.6.3 Buffered VXIbus Bi-directional Data (D00 to D15)

These signals are the bi-directional buffered 16-bit VXI Data bus. They have drive/receive characteristics of the ALS transceiver (74ALS245).

3.6.4 Buffered Data Strobes (DS0/, DS1/)

The data strobes are used by the VX400 to reset the latched address signals, determine valid VXIbus cycles, and to decode the write gate signals. The data strobes are buffered and provided to the user with CMOS compatible logic for additional decode or timing applications.

3.6.5 Data Bus Direction Control (WR/)

WRITE* from the VXIbus is buffered using CMOS compatible logic to produce WR/. This signal is used to control the direction of data flow to and from the VXIbus. The read gates and write gates are a function of this signal and it is also provided to the user.

3.6.6 Write Gates (WR8 to WRF, WLAR, WCNT, WOFF)

D00 through D015 are stable at the rising edge of the Write clocks. Each CMOS level active-high Write Gate corresponds to an 8-bit data register. For 16-bit writes, two write clocks occur simultaneously. See for a list of the signals and their functions.

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

3.6.7 Read Gates (R89, RAB, RCD, REF, RIO/, RDEV/, RSTAT/, ROFF/)

Each CMOS level active-low Read Gate corresponds to a 16-bit data register. The VXIbus data transceiver is configured to present the 16-bit data to the VXIbus while the read gate is low. All 16-bits of data are sent to the VXIbus, the host processor accepts only the byte it is seeking. See for a list of the signals and their functions.

Table II. Write Gate Decode

USER SIGNAL	REG ADDR	HIGH BYTE D15 - - - - - - - - D08	LOW BYTE D07 - - - - - - - - D00
WRE,WRF	0E,0F	User defined reg	User defined reg
WRC,WRD	0C,0D	User defined reg	User defined reg
WRA,WRB	0A,0B	User defined reg	User defined reg
WR8,WR9	08,09	User defined reg	User defined reg
WOFF1,WOFF0	06,07	VXI Offset Reg 1	VXI Offset Reg 0
WCNT1,WCNT0	04,05	VXI Control Reg 1	VXI Control Reg 0
Not Used	02,03	N/A	N/A
WLAR1,WLAR0	00,01	Logical Addr Reg 1	Logical Addr Reg 0

Notes:

1) For a 16 bit data write, both write signals are applied simultaneously. 32 bit read/writes are not supported by this module.

2) This pattern will repeat from register 10 through 3F. For additional registers the user must cut the register BDSEL/ jumper and decode the VXI base register and additional register selects.

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

3.6.8 Delayed and Local Data Acknowledge (DLY1/, LDTACK/)

Table III. Read Gate Decode

USER SIGNAL	REG ADDR	READ FUNCTION
REF/	E/F	User Defined Registers E and F
RCD/	C/D	User Defined Registers C and D
RAB/	A/B	User Defined Registers A and B
R89/	8/9	UserDefined Registers 8 and 9
ROFF/	6/7	VXI Offset Register
RSTAT/	4/5	VXI Status Register
RDEV/	2/3	VXI Device Register
RID/	0/1	VXI ID Register

Note:

1) This module does not support D32.

2) This pattern will repeat from register 10 through 3F. For additional registers the user must cut the etch on the BDSEL/ jumper and decode the VXI base register and additional register selects.

DLY1 occurs approximately 40 nsec after a valid VXIbus cycle to this module is detected. The low order address bits (Axx) and the valid address decode (DSSEL/) are latched. When these signals are stable, approximately 40 nsec later, Local Data Acknowledge (LDTACK/) is generated. LDTACK/ is used by the VX400 to generate the read and write gates. The user may use LDTACK/ to latch other pertinent information or to synchronize data. After an additional 120 nsec, DTACK* is sent to the host processor signaling the end of a cycle. LDTACK/ and DLY1 are driven by TTL compatible devices. DTACK* is driven by two paralleled tri-stated active-low devices.

3.6.9 VXI Address Decode (BDSEL/)

BDSEL/ is a CMOS output that is latched on the leading edge of DLY1 and maintained until both data strobes have been negated. This insures the address will remain stable until the VXIbus cycle is complete.

3.6.10 Interrupt Signals (IRQ1* to IRQ7*, IACKIN*, IACKOUT*)

These signals are available if the user requires interrupt capability. IACKIN* is connected to IACKOUT* on the solder side of the board, however this trace may be cut to enable interrupt capability. Solder terminals for these signals are located adjacent to the P1 connector and are marked "I" for IACKIN* and "O" for IACKOUT*.

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

3.6.11 Reset (RST/, SRST/)

The SYSRESET* from the VXIbus is buffered and supplied to the user as RST/. The VXI Control Register bit 0 is provided to the user as SRST/. These signals are driven by LS TTL compatible devices.

3.6.12 Upper Offset Address Decode Lines (UUPQ/, UPQ/)

These CMOS inputs can be used to decode the upper address bits to accommodate A24 or A32 offset addressing. These lines are pulled high on the board.

3.6.13 Chip Selects (CSA/, CSB/)

These CMOS level active-low chip selects can be used for alternate or additional register decoding. CSA/ goes low for byte register addresses $00 to $0F. CSB/ goes low for byte register addresses $10 to $1F.

3.6.14 Power (VCC, GND, +5STBY, +12, -12, -2, -5.2, +24, -24)

VCC and GND strips are provided along the top and bottom of the board and +5STBY, +12 and -12 are provided at signal points in the user signal area. Additionally, voltage/ground terminal strips for -2V, -5.2V, and ±24V are located near the P2 connector. These latter voltages are only available if the P2 connector is used.

3.6.15 P2 Signals

All P2 connector signals are provided. These signals are wired directly (not buffered) to a 96-pin hole pattern adjacent to the P2 connector.

3.6.16 VXI Register Data Inputs (ID12-ID15, A24/A32, RDY, PASS, ST07-04, DEV7-0)

These lines allow setting of various bits in the VXI configuration registers. All lines are pulled high on the board. See for additional information on these signals.

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

Table IV. Register Data Input Definitions

REGISTER INPUT	VXI REGISTER	FIELD	BIT(S)	NOTES
ID15-ID14	ID	Device Class	15-14	00 = Memory, 01 = Extended, 10 = Message Based, 11 = Register Based
ID13-ID12	ID	Address Space	13-12	00 = A16/A24, 01 = A16/A32, 10 = Reserved, 11 = A16 Only
A24/A32	Status/Control	A24/A32 Active	15	1 = A24 or A32 accessible
RDY	Status/Control	Ready	3	1 = Ready
PASS	Status/Control	Self-Test Pass/Fail	2	0 = executing or failed, 1 = passed
ST07-ST04	Status/Control	Device Dependent	7-4	User Dependent
DEV7-DEV0	Device Type	Model Code	7-0	User Dependent

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

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

4.0 OPERATING INSTRUCTIONS

The VX400 performs the interface functions to the VXI registers and provides a simplified set of control and data signals for user logic. Access to the module is through the VXI registers and VXI register user space. The interface section contains logical address and address modifier decode logic and circuitry for proper VXIbus interface timing. 16 bits of bi-directional data, decoded read and write strobes, and control functions are provided, along with the discrete VXIbus signals to the user interface connectors. See section for description of the user interface signals.

4.1 NORMAL OPERATION

For immediate use of the VX400, set the Logical Address, insert the module in the VXI chassis and perform a read or write command. The resultant read data is the VXI register's contents or pulled-up unused inputs. User write data to this module only goes to the user connector pins, however the operation may be considered successful if a Bus Error does not occur. For further verification the user can set the MODID to the slot containing the VX400 and read the VXI Status register.

Addressing the VX400 is a function of the logical address switch and the VXI host address modifier code. The logical address switch is located at S1 and is compared to the backplane address bits 6 through 13. Initial addressing is via A16 only, however A16/A24 and A16/A32 offset addressing can be implemented with additional logic.

The logical address has a range of 0 to 255. Any value within this range is valid, but care should be taken not to set the logical address the same as another module in the system. Position 1 on the switch is the most significant bit and has a weighted value of 128 when the switch is in the off position. Position 8 on the switch is the least significant bit and has a weighted value of 1 when the switch is in the off position. The sum of the weighted values of all the switches in the off position is the module address. See the module layout in Appendix C for switch location. The VXI secondary address is the logical address divided by 8.

4.2 SOFTWARE DRIVERS

No software drivers are supplied. Software drivers are application dependent and should be designed for the user hardware.

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

5.0 MAINTENANCE

5.1 BUILT IN TEST AND DIAGNOSTICS

No built in test functions are provided. The user may design in test capabilities and provide their own selftest functions.

5.2 TROUBLE ANALYSIS GUIDE

The first approach to trouble shooting the VX400 should be to try a VXIbus access. A successful access (read or write) will not produce a bus error. If a bus error occurs, insure that the modules's logical address switch is set correctly, that the card is properly installed, and the host program is properly addressing the card. If the bus error continues, contact C & H Engineering for further assistance.

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 A - ELECTRICAL AND TIMING SPECIFICATIONS



Figure A-1. User Signal Timing

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 B - CONNECTORS

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

PIN			
1	D08	-	D00
2	D09	-	D01
3	D10	-	D02
4	D11	BG0IN*	D03
5	D12	BG0OUT*	D04
6	D13	BG1IN*	D05
7	D14	BG10UT*	D06
8	D15	BG2IN*	D07
9	GND	BG20UT*	GND
10	-	BG3IN*	-
11	-	BG3OUT*	-
12	SYSRESET*	-	DS1*
13	LWORD*	-	DS0*
14	AM5	-	WRITE*
15	A23	-	-
16	A22	AM0	DTACK*
17	A21	AM1	_
18	A20	AM2	_
19	A19	AM3	_
20	A18	GND	IACK*
21	A17	-	IACKIN*
22	A16	-	IACKOUT*
23	A15	GND	AM4
24	A14	IRQ7*	A07
25	A13	IRQ6*	A06
26	A12	IRQ5*	A05
27	A11	IRQ4*	A04
28	A10	IRQ3*	A03
29	A09	IRQ2*	A02
30	A08	IRQ1*	A01
31	+12 V	-	-12 V
32	+5 V	+5 V	+5 V

Figure B-1. P1 Pin Configuration

• PIN	C	B	A
1	CLK10+	+5V	ECLTRG0
2	CLK10-	GND	-2V
3	GND	RSV1	ECLTRG1
4	-5.2V	A24	GND
5	LBUSC00	A25	LBUSA00
6	LBUSC01	A26	LBUSA01
7	GND	A27	-5.2V
8	LBUSC02	A28	LBUSA02
9	LBUSC03	A29	LBUSA03
10	GND	A30	GND
11	LBUSC04	A31	LBUSA04
12	LBUSC05	GND	LBUSA05
13	-2V	+5V	-5.2V
14	LBUSC06	D16	LBUSA06
15	LBUSC07	D17	LBUSA07
16	GND	D18	GND
17	LBUSC08	D19	LBUSA08
18	LBUSC09	D20	LBUSA09
19	-5.2V	D21	-5.2V
20	LBUSC10	D22	LBUSA10
21	LBUSC11	D23	LBUSA11

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

APPENDIX C - BOARD LAYOUT

(B-size board shown - C-size is identical, except for user area)

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 D - SCHEMATICS

The following pages contain the schematics for the VX400.

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

N O T E S :

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

READER'S COMMENT FORM

Your comments assist us in improving the usefulness of C&H's publications; they are an important part of the inputs used for revision.

C&H Engineering, Inc. may use and distribute any of the information that you supply in any way that it believes to be appropriate without incurring any obligation whatsoever. You may, of course, continue to use the information which you supply.

Please refrain from using this form for technical questions or for requests for additional publications; this will only delay the response. Instead, please direct your technical to your authorized C&H representative.

COMMENTS:

Thank you for helping C&H to deliver the best possible product. Your support is appreciated.

Sincerely,

F.R.Harrison
President and CEO

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

INSTRUCTIONS

In its continuing effort to improve documentation, C&H Engineering, Inc. provides this form for use in submitting any comments or suggestions that the user may have. This form may be detached, folded along the lines indicated, taped along the loose edge (DO NOT STAPLE), and mailed. Please try to be as specific as possible and reference applicable sections of the manual or drawings if appropriate. Also, indicate if you would like an acknowledgement mailed to you stating whether or not your comments were being incorporated.

> NOTE: This form may not be used to request copies of documents or to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

_____ (Fold along this line)

_____ (Fold along this line)

_____
_____
_____

C&H Engineering, Inc.
Technical Publications
P. O. Box 14765
Austin, Texas 78761-4765

Place Stamp Here

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