

VXIBUS PRODUCTS

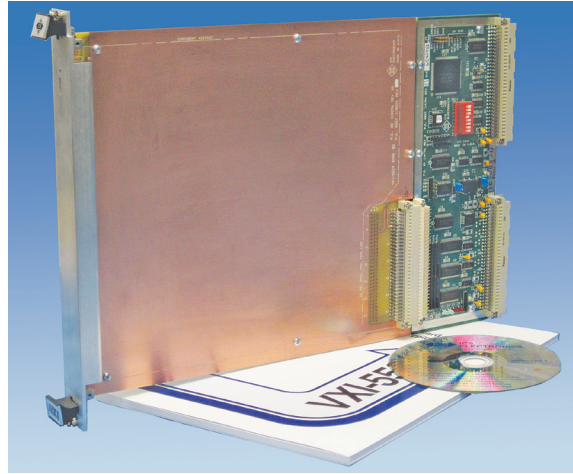
VXI -5501

VXI -5502

VXI PROTOTYPE MODULE KITS

DESCRIPTION

ICS's VXI-5501 and VXI-5502 Prototype Kits are flexible, low-cost solutions for developing prototype or short-run VXIbus modules. Both kits use ICS's VXI-5524 Register-based Interface card to interface with the VXIbus. The VXI-5524 provides the user with a simple but powerful interface for controlling his circuits from the VXIbus. The user circuits are constructed on the supplied bare or prototyping board that mates with the VXI-5524. A blank front panel, ejector and side shields make up the complete 'C' size, VXI module.



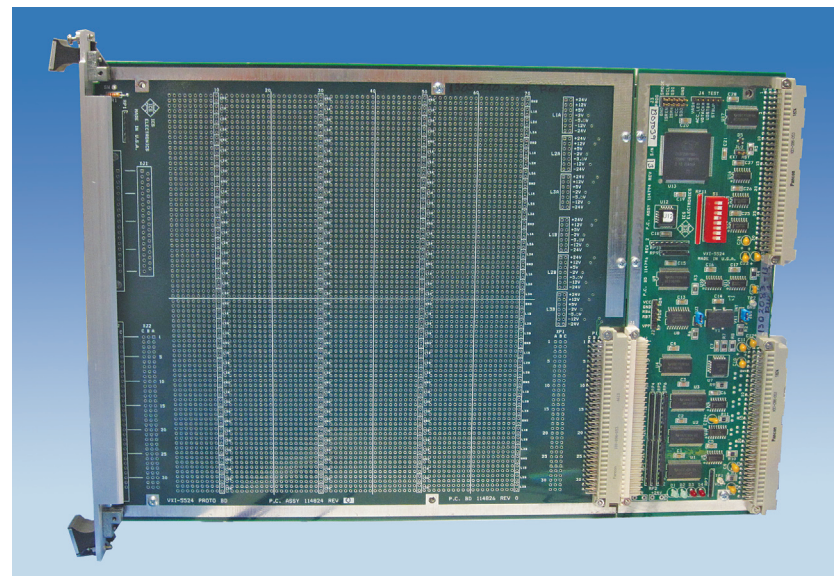
VXI-5501 without top shield

The VXI-5501 Kit includes a bare copper-clad board for mounting RF devices. The VXI-5502 Kit includes a prototyping board with a sea-of-holes on 0.1 inch centers for mounting sockets or components.

The user has a choice of VXI hardware shield kit widths that lets the user assemble one, two or three-slot wide modules. The two and three slot wide covers accommodate oversized components or even wirewrap tails. Applications are fabricating prototype VXIbus modules, packaging circuits in VXIbus modules and building short-run modules.

VXI Interface

ICS's VXI-5524 VXI Interface Card is a VXI extended register-based interface that meets the latest VXI-1 and VXI-2 Specifications for a Register Based Device. The VXI-5524 has three 16-bit IO registers that can be used as buffered inputs or latched outputs for a total of 48 TTL lines that can read input signals or control logic devices. The VXI-5524 also has a 16-bit wide data expansion bus with address lines for driving additional circuits, an interrupt input and two VXIbus Trigger lines. The user's interface also includes all seven VXIbus power lines, a selectable clock and ground.



VXI-5502 showing the sea-of-holes breadboard

- Choice of two prototyping boards and 4 VXI Shield widths.
Fastest way to build any size VXIbus module.
- VXI-5501 has a Bare Copper-clad Board for RF and microwave modules.
Provides ground planes for high frequency modules.
- VXI-5502 has a Prototyping Board with holes on 0.1 centers plus power and ground planes.
Breadboard analog or digital circuits.
- Register-based VXI interface that provides digital I/O lines and a VXI data expansion bus
Easiest interface for controlling user's circuits.
- CAD Design aids for PC board layout.
Upward migration path to a PC board without major redesign.
- User configurable VXI response registers.
Personalizes the finished module as your product.



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VXI-5501/VXI-5502 DESCRIPTIONS

User Interface

Figure 1 shows a Block Diagram of the VXI-5524 and the User's Interface. The VXI-5524 provides the user with three 16-bit registers, a Data Expansion Bus, a VXIbus interrupt and TTL Trigger lines. The three registers are configured as inputs or outputs by setting bits in the VXI-5524's Configuration Register. As outputs, each line can sink 40 mA or source 20 mA to drive most any TTL/CMOS compatible device. When configured as inputs, each line is a high impedance TTL gate with a 33 Kohm pullup to 5 Vdc for sensing open collector lines, contact closures or TTL/CMOS level signals. The VXI-5524's Configuration Register is saved in non-volatile flash and restored when the module is powered on.

The Data Expansion Bus is a 16 bit wide bus that extends the unused VXI register addresses and data lines to the user's circuits. Examples in the manual show how to decode the address lines and connect registers, FIFOs and other circuits to the Data Expansion Bus.

The VXI-5524 extends a selected pair of TTL Trigger lines to the user's interface. The TrigIn# line can be used to initiate an action such as data capture, data conversion, etc. in the user's circuits. The TrigOut# line can be used to pulse a VXIbus TTL Trigger line and initiate action in another module.

The VXI-5524 has an IRQ input that latches three Cause code lines when pulsed. The Cause lines are new with the VXI-2 Specification and gives a register-based device a way of communicating the cause of the interrupt when it is queried by the Slot 0 Controller. VXIbus IRQ line selection and interrupt enable is controlled by bits set in the new Interrupt Control Register.

The VXI-5524 passes all seven VXIbus voltages and a 10 MHz clock on to the user's interface. The user can select either the VXI-5524's internal 10 MHz oscillator or the VXIbus ECL 10 MHz clock as the clock source.

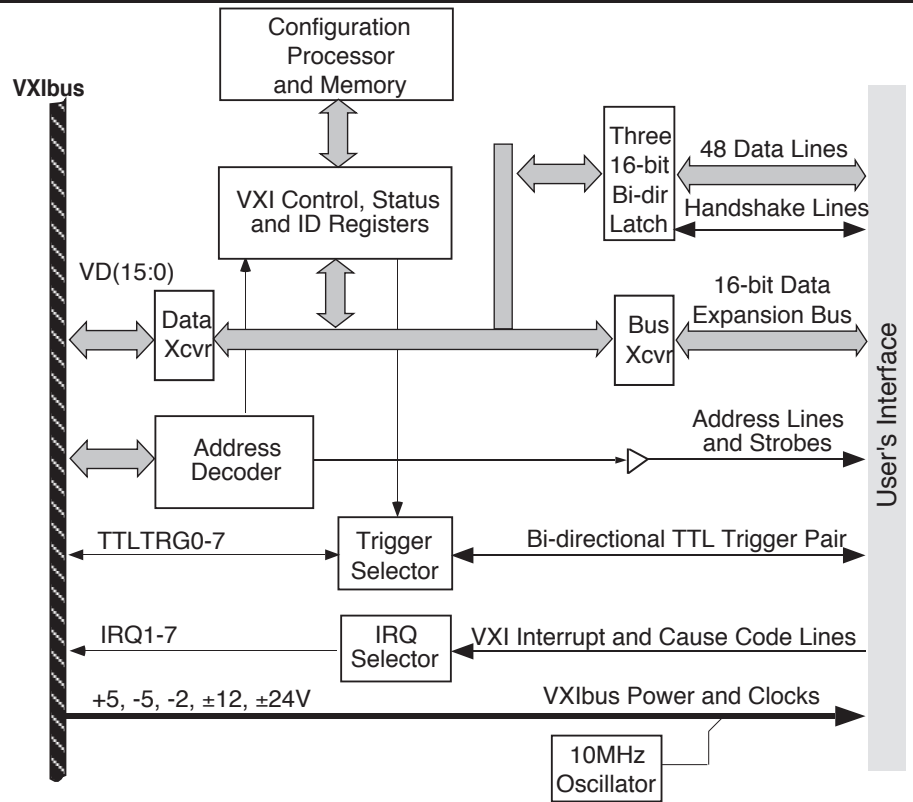


Figure 1 VXI-5524 Block Diagram

VXI-5524 Register Map

Figure 2 shows the VXI-5524's register map. Each VXIbus module is assigned 32 (16-bit) register addresses in the VXI A16 address space. The lower 16 register addresses are used for the VXIbus interface, the upper 16 register addresses are for the Digital IO Registers and for the Data Expansion Bus. The VXI-5524 uses the top three register addresses for the Digital IO Register. Addresses 0x20 through 0x38 are available to address the user's circuits on the Data Expansion Bus.

The Configuration and Interrupt Control registers configure the Digital I/O lines and control the Trigger and Interrupt operation. The ID, Type, Serial Number and Version registers identify the VXI module and its capability. The user can change these registers to configure the interface and personalize the finished module as his product. All register values are then saved in an EEPROM on the VXI-5524 and are automatically recalled at power turn-on time or when the board is reset.

Reg	Addr	Register	Use
3E		Digital I/O Reg-CH 48:33	R/W
3C		Digital I/O Reg-CH 32:17	R/W
3A		Digital I/O Reg-CH 16:1	R/W
38			
36			
34			
32			
30		Data Expansion	
2E		Bus Area	
2C			
2A			
28			
26			
24			
22			
20			
1E		Sub Class	R
1C		Interrupt Control	R/W
1A		Interrupt Status	R
18			
16		Reserved by	
14		VXI-2 Specification	
12			
10			
0E		Version Number	R
0C		(Serial Number Lo)	
0A		Serial Number Hi	R
08		Attribute Register	R
06		Configuration Processor	W (8 bits only)
04		Status/Control	R/W
02		Device Type	R
00		ID/(Logical Address)	R

Figure 2 VXI-5524 Register Map

VXI-5501/VXI-5502 DESCRIPTIONS

Bare Board

Provides bare copper ground planes on top and bottom of the board for mounting RF or microwave modules. Board includes signal and power pads for making connection to user's circuits. Board also includes LEDs on the front panel that show VXIbus status and a Reset button. The standard front panel has a small cutout for the LEDs and a hole for the push-button.

Proto Board

Provides a sea of floating pads on 0.1 inch centers for mounting components and sockets. Multi-layer PC board includes three split power planes for distributing power and a ground plane to assure quiet circuits. Board includes signal and power pads for making connections to user's circuits and pad patterns for selecting power plane voltages. Power plane access is via four strips of pads distributed across the PCB. Board also includes LEDs on the front panel that show VXIbus status, a Reset push-button and pads for mounting a 9 to 37-pin 'D' shell connector and a 96-pin DIN connector on the PCB. The standard blank front panel has openings for the LEDs and the push-button switch.

Kit Sizes

VXI-5501 and VXI-5502 Prototype Module Kits are available with various VXI Shield Kits to make 1, 2 or 3-slot wide modules. Two slot kits can be ordered with the extra space on the circuit side of the PC board for wirewrap tails. Refer to Table 1 for inside component clearance dimensions and ordering suffix letter.

Design Aids

Use our ORCAD template as the starting point for your circuit schematic or to layout a custom PC Board. Request a copy of Disk 123153 which includes the ORCAD templates and .dxf drawing files to modify the VXI front panels.

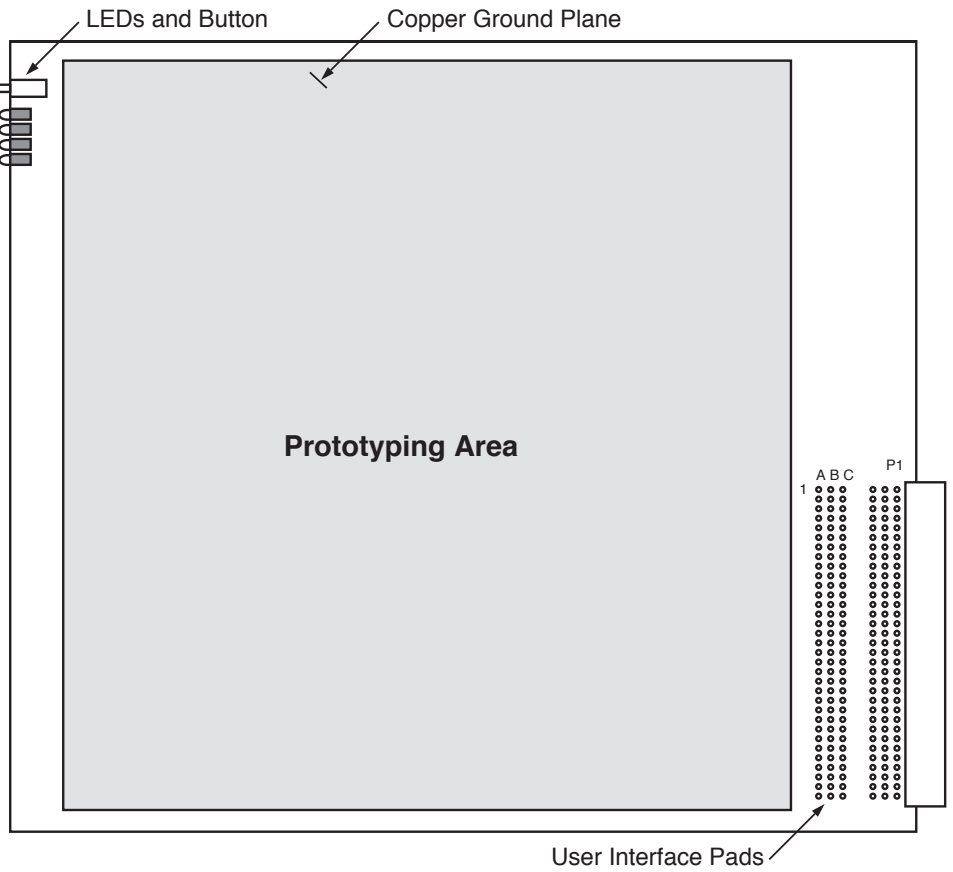


Figure 3 VXI-5501 Bare Board

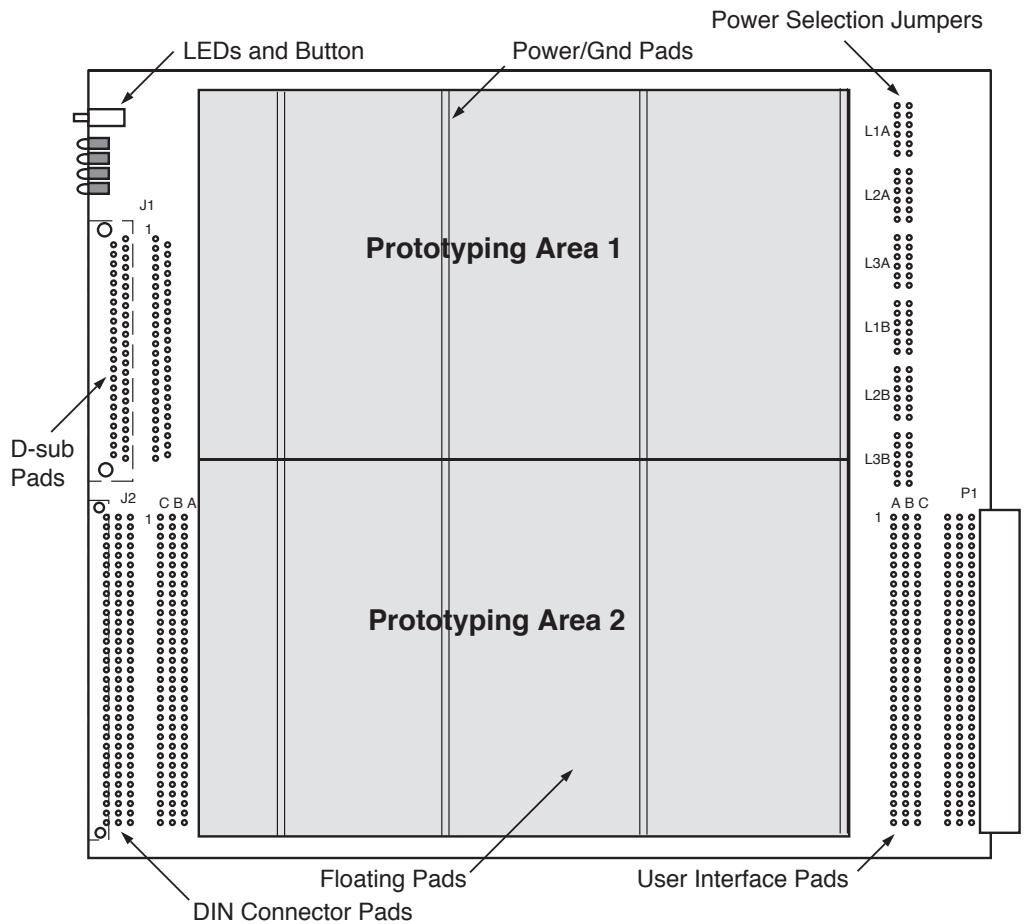


Figure 4 VXI-5502 Prototyping Board

VXI-5501/VXI-5502 SPECIFICATIONS

VXI Specifications

VXI Capabilities

VXI-1 Revision 1.4 compliant
 VXI-2 Revision 1.0 compliant
 Static Address capability
 Register based, servant device
 A16 Address space, D16 Data
 Programmable interrupter
 Normal handshake data transfer
 Includes VXI-2 Version, Serial
 Number, Interrupt and Subclass
 Registers.

Diagnostic Capability

Four LEDs for VXI status and trouble shooting.

Indicators

Four LEDs showing the state of the VXI-bus interface and VXI-5524's logic.

RDY	On after initialization
ACCESS	Blinks when address recognized
FAIL	On when initialization failed
SYSFAIL	VXIbus SysFail signal line

User Interface

Digital I/O Lines

48 TTL/CMOS latched data lines with 33 Kohm pullups, 20 mA source and 40 mA sink capability. Data line direction set in 16-bit increments.

Expansion bus

16 data lines, 4 address lines, strobe and write lines for addresses 0x20-0x38. All signals have 20 mA source and 40 mA sink capability.

Triggers

VXI TTLTRG line pair. TrigIn# may be TTL Triggers 0, 2, 4, or 6. TrigOut# may drive TTL Trigger lines 1, 3, 5 or 7.

Interrupter Capability

IRQ line and three Cause Code lines.

Other Signals

CLEAR#: low true pulse to reset user logic. 20 mA source/40 mA sink.

RST#: low true input to reset VXI-5524 logic.

CLK10: VXIbus or VXI-5524 10 MHz clock. 20 mA source/40 mA sink.

LED drive signals for operating four front panel LEDs. 2 mA sink.

Physical

Size

C-Size Single slot module
 1.2 in W x 9.187 in H x 13.9 in D
 (30 mm W x 233 mm H x 353 mm D)

Bare or Proto Board

9.187 in H x 10.37 in D
 (233 mm H x 263 mm D)

Weight

1.2 kg. (2.5 lbs.) Single slot module

Power Consumption for Interface

5 Vdc @ 300 mA

-5.2 Vdc at 45 mA

-2 Vdc at 9 mA

Included Accessories

Instruction manual with PCB layout drawings, design rules for user's PCB and example user circuits.

Programming guide and sample routines for user interface signals, and expansion bus data transfers.

Mounting bracket.

Component Clearance Table

Width Code Ltr	VXI Slots	Component Clearance	
		Circuit Side	Component Side
none	1	0.226 in	0.769 in
D	2	0.226	1.969
W	2	1.426	0.769
T	3	0.226	3.169

ORDERING INFORMATION

Part Number

VXIbus Prototyping Module, C-size, with bare board, single slot wide	VXI-5501
VXIbus Prototyping Module, C-size, with bare board, two slot wide	VXI-5501D
VXIbus Prototyping Module, C-size, with bare board, three slot wide	VXI-5501T
VXIbus Prototyping Module, C-size, with bare board, two slot wide for wirewrap tails	VXI-5501W
VXIbus Prototyping Module, C-size, with prototype board, single slot wide	VXI-5502
VXIbus Prototyping Module, C-size, with prototype board, two slot wide	VXI-5502D
VXIbus Prototyping Module, C-size, with prototype board, three slot wide	VXI-5502T
VXIbus Prototyping Module, C-size, with prototype board, two slot wide for wirewrap tails	VXI-5502W