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User Manual

Tektronix

73A-851A
VME to VXI Adapter Module

070-9631-00

This document supports firmware version 1.00 and above.

Warning
The servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to the Safety Summary prior to performing service.

CE

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General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. To avoid potential hazards, use this product only as specified.

Only qualified personnel should perform service procedures.

While using this product, you may need to access other parts of the system. Read the *General Safety Summary* in other system manuals for warnings and cautions related to operating the system.

Injury Precautions

Avoid Electric Overload. To avoid electric shock or fire hazard, do not apply a voltage to a terminal that is outside the range specified for that terminal.

Ground the Product. This product is indirectly grounded through the grounding conductor of the mainframe power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded.

Do Not Operate Without Covers. To avoid electric shock or fire hazard, do not operate this product with covers or panels removed.

Use Proper Fuse. To avoid fire hazard, use only the fuse type and rating specified for this product.

Do Not Operate in Wet/Damp Conditions. To avoid electric shock, do not operate this product in wet or damp conditions.

Do Not Operate in an Explosive Atmosphere. To avoid injury or fire hazard, do not operate this product in an explosive atmosphere.

Avoid Exposed Circuitry. To avoid injury, remove jewelry such as rings, watches, and other metallic objects. Do not touch exposed connections and components when power is present.

Product Damage Precautions

Use Proper Power Source. Do not operate this product from a power source that applies more than the voltage specified.

Use Proper Voltage Setting. Before applying power, ensure that the line selector is in the proper position for the power source being used.

Provide Proper Ventilation. To prevent product overheating, provide proper ventilation.

Do Not Operate With Suspected Failures. If you suspect there is damage to this product, have it inspected by qualified service personnel.

Do Not Immerse in Liquids. Clean the probe using only a damp cloth. Refer to cleaning instructions.

Symbols and Terms

Terms in this Manual. These terms may appear in this manual:



WARNING. *Warning statements identify conditions or practices that could result in injury or loss of life.*



CAUTION. *Caution statements identify conditions or practices that could result in damage to this product or other property.*

Terms on the Product. These terms may appear on the product:

DANGER indicates an injury hazard immediately accessible as you read the marking.

WARNING indicates an injury hazard not immediately accessible as you read the marking.

CAUTION indicates a hazard to property including the product.

Symbols on the Product. The following symbols may appear on the product:



DANGER
High Voltage



Protective Ground
(Earth) Terminal



ATTENTION
Refer to Manual



Double
Insulated

Certifications and Compliances

Refer to the specifications section for a listing of certifications and compliances that apply to this product.

Service Safety Summary

Only qualified personnel should perform service procedures. Read this *Service Safety Summary* and the *General Safety Summary* before performing any service procedures.

Do Not Service Alone. Do not perform internal service or adjustments of this product unless another person capable of rendering first aid and resuscitation is present.

Disconnect Power. To avoid electric shock, disconnect the main power by means of the power cord or, if provided, the power switch.

Use Care When Servicing With Power On. Dangerous voltages or currents may exist in this product. Disconnect power, remove battery (if applicable), and disconnect test leads before removing protective panels, soldering, or replacing components.

To avoid electric shock, do not touch exposed connections.

Preface

This manual assumes you are familiar with VXIbus instruments and operation and with the purpose and function of this instrument.

Please read and follow all instruction for installation and configuration. Use the Installation Checklist to ensure proper installation and to record your initial settings.

The *Operation Basics* section gives a summary of VXIbus operation and presents an overview of the operation of this instrument.

Conventions

The names of all switches, controls, and indicators appear in this manual exactly as they appear on the instrument.

Getting Started

Getting Started

This chapter begins with a brief description of the 73A-851A Adapter Module, and explains how to configure and install the module in a VXIbus mainframe.

Product Description

The 73A-851A Adapter Module is a printed circuit board assembly for use in a mainframe conforming to the VXIbus specification. This module is an active extender board that allows double height VME modules or B size VXI modules to be installed in a C size VXI mainframe. The 73A-851A is installed in a single slot of the VXI mainframe. A VME or VXI module is then installed into the 73A-851A. The 73A-851A detects whether the installed module is acting as a bus master or slave and transceives the backplane address bus, data bus and control bus signals accordingly. Proper VMEbus timing and signal loading are maintained on the VXIbus and at the installed module backplane connectors.

The 73A-851A is form, fit, and function equivalent to the 73A-851 except that the 73A-851A supports A24/D64 and A32/D64 Multiplexed Block Transfers (MBLT).

Pins in rows A and C of backplane connector P2 are classified as user definable in the VMEbus specification. The VXIbus specification fully defines the usage of these pins. Since the VXIbus pin definitions may conflict with the pin definitions of a VME module, the standard 73A-851A isolates pins in rows A and C of backplane connector P2 from the corresponding pins on an installed VME module.

The 73A-851A option 02 is an assembly consisting of a single wide front panel and two ribbon cables. The two ribbon cables are terminated with “D” style 37 pin connectors located on the front panel. The opposite end of the two ribbon cables are connected to the VME module HEADER A and HEADER B connectors (refer to Figure 2–1). These headers are electrically connected to the VME module P2 connectors rows A and C. The 73A-851A Option 01 includes these ribbon cables and jumper blocks.

When a VXI module is installed in the 73A-851A, pins in rows A and C of backplane connector P2 are connected directly to the corresponding pins on the VXI module. These connections are made by installing ribbon cables and power jumper blocks onto the 73A-851A. The 73A-851A Option 01 includes these ribbon cables and jumper blocks.

Options and Applications

Table 1–1 lists the available options and application.

Table 1–1: 73A-851A Options

Option	Application
73A-851A No options	VME modules when access to P2 rows A and C of the installed VME module is not required.
73A-851A Option 01	B size VXI. Provides VXI module P2 rows A and C access to VXI backplane.
73A-851A Option 02	VME modules when access to P2 rows A and C of the installed module is required.

Installation

Installation Requirements and Cautions

The 73A-851A Module is a C- size VXIbus instrument module and therefore may be installed in any C- or D- size VXIbus mainframe slot other than Slot 0. If the module is being installed in a D- size mainframe, consult the operating manual for the mainframe to determine how to install the module in that particular mainframe.

***NOTE**. The following system-level restriction must be observed when using the 73A-851A Module.*

If a bus master is installed in the 73A-851A, the 73A-851A must be installed in a slot to the right of any other bus master that issues bus requests on the same level as the bus master installed on the 73A-851A.

Tools Required

The following tools are required for proper installation:

Slotted screwdriver set.

***NOTE**. In order to maintain proper mainframe cooling, unused mainframe slots must be covered with blank front panels supplied by the mainframe manufacturer.*

Refer to your mainframe Instruction manual for specific requirements.

***NOTE**. Verify that the mainframe is able to provide adequate cooling and power for the 73A-851A Module and the VME or VXI module installed in the 73A-851A. Refer to the mainframe Instruction Manual for instructions on determining cooling and power compatibility.*

Installation Procedure



CAUTION. *The 73A-851A Module is a piece of electronic equipment and therefore has some susceptibility to electrostatic discharge (ESD). To avoid ESD related damage, use precautions when handling the module.*

Any module to be installed in the 73A-851A must conform to the VME Rev C.1 rules 7.34 and 7.35 to insure it will pass through the opening in the front panel of the 73A-851A. These rules specify the maximum lead length and height of components on a VME module.

VMEbus Module Installation With Option 02

Option 02 is required when a VME module is installed in the 73A-851A and the user requires access to the pins in rows A and C of connector P2 of the VME module.

The 73A-851A installation procedure, when used with Option 02 and a double height VME module is as follows:

1. Connect the option 02 ribbon cable assembly to module headers A and B on the 73A-851A (see Figure 2–1). Make sure that pin 1 of each ribbon cable (indicated by the red wire at one side of each cable) is connected to pin 1 of its header.
2. Remove the three VXI P2 Power Jumper Blocks from the 73A-851A. These jumper blocks connect +5 V, –5.2 V, –2 V, +24 V and –24 V power and ground to the installed module P2 connector per the VXIbus Specification.



CAUTION. *Application of these voltages to a VME module could cause severe damage to the VME module.*

3. Be sure all switches are correctly set. Install the 73A-851A module in any slot other than Slot 0.
4. Remove the two captive screws at the top and bottom of the front panel of the VME module to be installed. Replace them with the captive screws shipped with the 73A-851A.
5. Slide the VME module through the cutout in the 73A-851A front panel.
6. Fasten the 73A-851A and VXIbus module to the VXIbus mainframe with the captive screws at the top and bottom of the VME card front panel.
7. Fasten the front panel of the option 02 ribbon cable assembly to the VXIbus mainframe in the slot immediately to the right of the 73A-851A module.

***NOTE**. On address selection of an installed VME module:*

The installed VME module must not reside in the upper quarter of A16 address space (0C000h to 0FFFFh). It may reside in the lower three quarters of A16 address space (0000h to 0BFFFh).

If the installed module uses any A24 or A32 address space, be sure that the address space used by the VME module does not coincide with A24/A32 address space assigned to VXIbus modules by the VXIbus Resource Manager.

Refer to your Slot 0 module Operating manual for help in determining the memory map of your VXI system.

VXIbus B Size Module Installation With Option 01

Option 01 is required when a B size VXIbus module is to be installed in the 73A-851A.

73A-851A installation procedure when used with a B size VXIbus module is as follows:

1. Connect one ribbon cable assembly (Tektronix part number 174-3396-00) from Module Header A to VXI Bus Header A on the 73A-851A module (see Figure 2–1). Connect one ribbon cable assembly from module header B to VXI bus header B on the 73A-851A. Make sure that pin 1 of each ribbon cable (indicated by the red wire stripe on one side of each cable) is connected to pin 1 of its header.
2. Install the three VXIbus P2 Power Jumper Blocks (Tektronix part number 131-5848-00) on the 73A-851A. These jumper blocks connect power and ground from backplane connector P2 rows A and C to the VXIbus module.
3. Be sure that all switches are correctly set. Install the 73A-851A in any slot other than Slot 0.
4. Remove the two captive screws at the top and bottom of the front panel of the VXI module to be installed. Replace them with the captive screws shipped with the 73A-851A.
5. Slide the VXIbus module through the cutout in the 73A-851A front panel.
6. Fasten the 73A-851A and VXIbus module to the VXIbus mainframe with the captive screws at the top and bottom of the VXI card front panel.

Installation Checklist

Installation parameters may vary depending on the mainframe being used. Be sure to consult the mainframe Operating Manual before installing and operating the 73A-851A Module.

Revision Level: _____

Serial No.:

Mainframe Slot Number: _____

Switch Settings:	**1**	**2**
Interrupt Select Switches:		
IRQ1*	_____	
IRQ2*	_____	
IRQ3*	_____	
IRQ4*	_____	
IRQ5*	_____	
IRQ6*	_____	
IRQ7*	_____	
TTL Trigger Direction Switches:		
TTLTRG0*	_____	
TTLTRG1*	_____	
TTLTRG2*	_____	
TTLTRG3*	_____	
TTLTRG4*	_____	
TTLTRG5*	_____	
TTLTRG6*	_____	
TTLTRG7*	_____	
ECL Trigger Direction Switches:		
ECLTRG0	_____	
ECLTRG1	_____	
SERCLK Direction Switch:	_____	
SYSRESET* Direction Switch:	_____	

Jumpers:		
VXIbus P2 Power Jumper Blocks:	____ IN	____ OUT
SUMBUS:	____ IN	____ OUT
IACKIN*/IACKOUT*:	____ A	____ B
BG0IN*/BG0OUT*:	____ A	____ B
BG1IN*/BG1OUT*:	____ A	____ B
BG2IN*/BG2OUT*:	____ A	____ B
BG3IN*/BG3OUT*:	____ A	____ B
ECL Trigger 0 Input:	____ IN	____ OUT
ECL Trigger 1 Input:	____ IN	____ OUT
SERCLK Input:	____ IN	____ OUT
SERCLK Output:	____ IN	____ OUT
SERDAT*:	____ IN	____ OUT
RSV1:	____ IN	____ OUT
+5V STDBY:	____ IN	____ OUT

Performed by: _____ Date: _____

Operating Basics

Operating Basics

This chapter describes the 73A-851A controls.

Switches

The following controls are provided to select the functions of the 73A-851A Module operating environment (See Figure 2–1 for their physical locations).

Interrupt Select Switch

The 73A-851A has an Interrupt Select switch for each interrupt level on the VXIbus. These switches determine whether the installed module is to act as an interrupt handler or as an interrupter for each of the VXIbus interrupt levels, IRQ1* through IRQ7*.

If an Interrupt Select switch is set to position 1, the module installed in the 73A-851A may be an interrupt handler on the corresponding interrupt level but may not be an interrupter on that level.

If an Interrupt Select switch is set to position 2, the module installed in the 73A-851A may be an interrupter on the corresponding level, but may not be an interrupt handler on that level.

If the installed module is neither an interrupter nor an interrupt handler on a particular interrupt level, the switch position for that level has no effect.

TTL Trigger Direction Switches

The 73A-851A has a Direction switch for each VXIbus TTL trigger line, which must be set if a B size VXIbus module is installed in the 73A-851A. These switches correspond to VXIbus signals TTLTRG0* through TTLTRG7*.

If a Trigger Direction switch is set to position 1, the corresponding VXIbus trigger signal is an input to the module installed in the 73A-851A. If a Trigger Direction switch is set to position 2, the corresponding VXIbus trigger signal is an output from the installed module.

If the installed module does not monitor or drive a particular TTL trigger signal, the switch position for that signal has no effect.

ECL Trigger Direction Switches

The 73A-851A has a Direction switch for each VXIbus ECL trigger line, which must be set if a B size VXIbus module is installed in the 73A-851A. These switches correspond to VXIbus signals ECLTRG0 and ECLTRG1.

If a Trigger Direction switch is set to position 1, the corresponding VXIbus trigger signal is an input to the module installed in the 73A-851A. If a Trigger

Direction switch is set to position 2, the corresponding VXIbus trigger signal is an output from the installed module.

If the installed module does not monitor or drive a particular ECL trigger signal, the switch position for that signal has no effect.

SYSRESET* Direction Switch

If this switch is set to position 1, the installed module can monitor SYSRESET* (P1-C12) on the VXIbus backplane. If this switch is set to position 2, the installed module can drive SYSRESET*. The SYSRESET* Direction switch should normally be set to position 1.

Jumpers

The following jumpers are provided to select the functions of the 73A-851A Module operating environment (See Figure 2–1 for their physical locations).

Power Jumper Blocks

You must use the P2 Power Jumper Blocks (included as part of Option 01) if a B size VXIbus module is installed in the 73A-851A. The VXIbus P2 Power Jumper Blocks apply power to the installed module on the pins listed below:



CAUTION. *To avoid VME module damage remove the three VXIbus P2 power jumper blocks from the 73A-851A.*

Table 2–1: 73A-851A P2 Power Jumper Blocks

Applied Power	VXI Module Pins
+5 V	A25
–5 V	A7, A13, A19, C4, C19
–2 V	A2, C13
+24 V	C31
–24 V	C32
GND	A4, A10, A16, A22, A28, A31, C3, C7, C10, C16, C22, C25, C28, C30
VXIbus MODID signal	A30

Jumpered Signal Connections

The following signals may either be jumpered, or the jumpering connections may be changed, as indicated.

To avoid unnecessary loading of the signal line, the SUMBUS signal should be jumpered only in VXIbus applications where it is used.

Table 2–2: Configuration Jumpers

Jumper Name	Signal Connections
SUMBUS	VXIbus SUMBUS to P2-A32 when installed.
IACKIN*/IACKOUT*	
Position A (default)	Jumpers VME signals IACKIN* and IACKOUT* to the module installed in 73A-851A.
Position B	Jumper VME signal IACKIN* to IACKOUT* without passing IACKIN* to the module installed in the 73A-851A. The IACKIN*/IACKOUT* jumper should not be moved to position B if the installed module can be an interrupt handler or interrupter in either a VME or VXIbus application.
BG0IN*/BG0OUT*	
Position A (default)	Jumpers VME signals BG0IN* and BG0OUT* to the module installed in the 73A-851A.
Position B	Jumpers VME signal BG0IN* to BG0OUT* without passing BG0IN* to the module installed in the 73A-851A. The BG0IN*/BG0OUT* through BG3IN*/BG3OUT* jumpers should not be moved to position B if the installed module has bus master capability in either a VME or VXIbus application.
BG1IN*/BG1OUT*	
Position A (default)	Jumper VME signals BG1IN* and BG1OUT* to the module installed in the 73A-851A.
Position B	Jumper VME signal BG1IN* to BG1OUT* without passing BG1IN* to the module installed in the 73A-851A. The BG0IN*/BG0OUT* through BG3IN*/BG3OUT* jumpers should not be moved to position B if the installed module has bus master capability in either a VME or VXIbus application.
BG2IN*/BG2OUT*	
Position A (default)	Jumper VME signals BG2IN* and BG2OUT* to the module installed in the 73A-851A.
Position B	Jumper VME signal BG2IN* to BG2OUT* without passing BG2IN* to the module installed in the 73A-851A. The BG0IN*/BG0OUT* through BG3IN*/BG3OUT* jumpers should not,be moved to position B if the installed module has bus master capability in either a VME or VXIbus application.

Table 2–2: Configuration Jumpers (Cont.)

Jumper Name	Signal Connections
BG3IN*/BG3OUT*	
Position A (default)	Jumper VME signals BG3IN* and BG3OUT* to the module installed in the 73A-851A.
Position B	Jumper VME signal BG3IN* to BG3OUT* without passing BG3IN* to the module installed in the 73A-851A. The BG0IN*/BG0OUT* through BG3IN*/BG3OUT* jumpers should not be moved to position B if the installed module has bus master capability in either a VME or VXIbus application.
SERDAT*	
	When jumper is installed, VME signal SERDAT* is connected to P1-B22. The SERDAT* signal should be jumpered only in VXIbus applications where it is used, to avoid unnecessary loading of the signal.
SERCLK Input	
	When installed, enables the installed module to monitor VME signal SERCLK. If this jumper is installed, the SERCLK Output jumper must be removed.
SERCLK Output	
	When installed, enables the installed module to drive VME signal SERCLK. If this jumper is installed, the SERCLK Input jumper must be removed.
ECLTRG0 Input	
	This jumper must be installed when the direction switch for VXIbus signal ECLTRG0 is set to position 1. It terminates the output of the ECL gate that monitors the ECLTRG0 signal. This jumper must be removed when the direction switch for VXIbus signal ECLTRG0 is set to position 2.
ECLTRG1 Input	
	This jumper must be installed when the direction switch for VXIbus signal ECLTRG1 is set to position 1. It terminates the output of the ECL gate that monitors the ECLTRG1 signal. This jumper must be removed when the direction switch for VXIbus signal ECLTRG1 is set to position 2.

Table 2–2: Configuration Jumpers (Cont.)

Jumper Name	Signal Connections
RSV1	This jumper connects the RESERVED backplane signal on pin P2-B3 of the VXIbus backplane to pin P2-B3 of the installed module.
+5 V STDBY	This jumper connects +5 V Standby power on backplane pin P2-B31 of the VXIbus backplane to pin P2-B31 of the installed module.

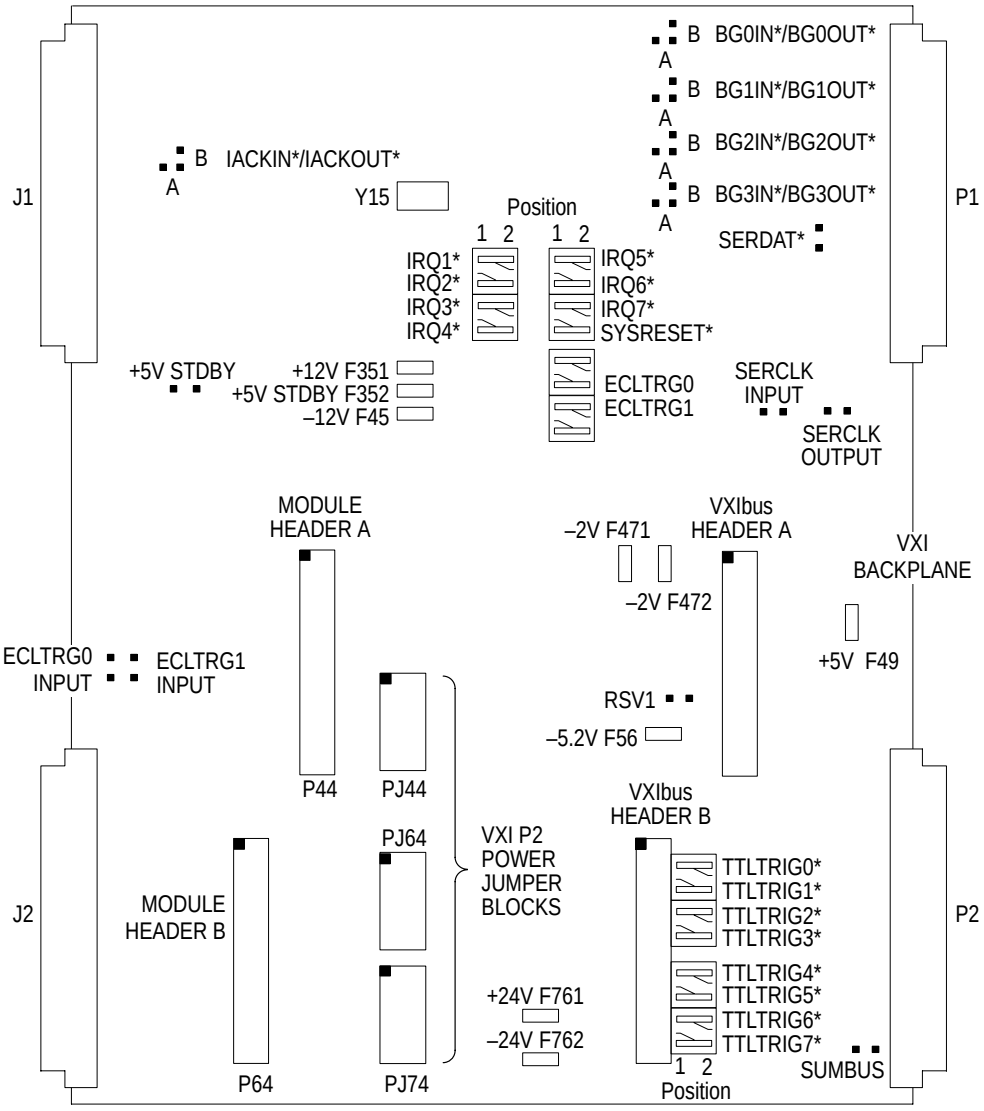


Figure 2–1: 73A-851A Controls, Indicators, and Fuses

***NOTE**. The –2V, +12V, –12V, +24V, and –24V lines are fused with a self resetting fuse. These fuses are thermally activated and open after a brief period of over current. The fuse will remain open until it cools off. It will then close and supply power to the module.*

Operation

Once the 73A-851A Module is installed, no operator intervention is required for proper operation.

The commands normally used to interact with the VME or VXIbus module installed on the 73A-851A will function as usual.

Appendices

Appendix A: Specifications

Table A–1: Specifications

Characteristic	Description
VMEbus Interface	Data Transfer bus: D08(O), D08(EO), D16 OR D32. Address bus: A16, A24 OR A32. Multiplexed Block Transfers (MBLT): A24/D64, A32/D64. The module installed in the 73A-851A may act as a bus master or slave or both. VMEbus monitor modules that are neither masters nor slaves on the VME bus are not supported by the 73A-851A. The module installed in the 73A-851A must not have a bus arbiter (can not be used in VXIbus Slot 0), and must not drive SYSCLK (P1-A10). The module installed in the 73A-851A may be an interrupter or interrupt handler, but not both, on any given interrupt level. The module may be an interrupter on one level and an interrupt handler on another level. If the installed module has bus master capability, the 73A-851A converts the module bus request protocol to the FAIR Requestor protocol specified by the VXIbus Specification. The installed module must generate bus requests on a single bus request level. Address pipelined bus cycles are not supported. In addition, the 73A-851A may not be installed in a mainframe containing bus masters that perform address pipelined bus cycles.
Triggering	VXIbus TTL trigger protocol synchronous, asynchronous, and start/stop are supported. TTL semi-synchronous protocol is not supported. VXIbus ECL trigger protocol synchronous, asynchronous, and start/stop are supported. ECL semi-synchronous protocol is not supported.
Number of Slots	One slot is required if the installed module is a VXIbus module. Two slots are required if the installed module is a VME module and access is needed to signals on module connector P2 rows A and C. The second slot is used to mount a front panel containing connectors that allow user access to the signals on module rear connector rows P2-A and P2-C.

Table A–1: Specifications (Cont.)

Characteristic	Description
Power Requirements	All required DC power is provided by the Power Supply in the VXIbus mainframe.
Voltage	+5 V Supply +24 V Supply –24 V Supply +12 V Supply –12 V Supply –5.2 V Supply –2.0 V Supply
Ripple/Noise	See VXI Specification Appendix B for allowed variation and ripple/noise specifications for these supplies.
Current (Peak Module, IPM)	With no VME or VXI module installed: 5 V Supply: 0.7 A +24 V Supply: 0 A –24 V Supply: 0 A +12 V Supply: 0 A –12 V Supply: 0 A –5.2 V Supply: 90 mA –2.0 V Supply: 90 mA
Current (Maximum available. Limited by fuses)	5 V Supply: 10 A +24 V Supply: 2.5 A –24 V Supply: 2.5 A +12 V Supply: 2.5 A –12 V Supply: 2.5 A –5.2 V Supply: 10 A –2.0 V Supply: 5 A +5 V Standby 2.5 A
Cooling	Cooling is provided by the fan in the VXIbus mainframe. The air flow required to cool the 73A-851A and the pressure drop across the 73A-851A depend on the power requirements and component heights of the module installed in the 73A-851A.
No module installed in the 73A-851A	Less than 10° C temperature rise with 0.332 liters/sec of air at a pressure drop of 0.010 mm of H_2O.
Performance Technologies PT-VME 600A module installed in the 73A-851A	Less than 10° C temperature rise with 1.6 liters/sec of air at a pressure drop of 0.020 mm of H_2O.
Temperature	–10° C to +55° C, operating (assumes ambient temperature of 55° and airflow to assure less than 10°C temperature rise). –40° C to +85° C, storage.
Humidity	Less than 95% R.H. noncondensing, –10° C to +30° C. Less than 75% R.H. noncondensing, +31° C to +40° C. Less than 45% R.H. noncondensing, +41° C to +55° C.
VXIbus Radiated Emissions	The 73A-851A provides shielding for the installed VME or VXIbus module. Compliance with the VXIbus Radiated Emissions specifications must be verified by the user.

Table A–1: Specifications (Cont.)

Characteristic	Description
VXIbus Conducted Emissions	The 73A-851A provides AC isolation from the DC power busses on the VXIbus backplane. Compliance with the VXIbus Conducted Emissions specifications must be verified by the user.
I/O Connections	Option 02 only: Two DC37-S connectors (required for use with 73A-851A Option 02).
Module Envelope Dimensions	VXIbus C size. 262 mm × 353 mm × 30.5 mm (10.3 in × 13.9 in × 1.2 in)
Dimensions, Shipping	When ordered alone, the modules shipping dimensions are: 546mm x 394mm x 254mm. (21.5in x 15.5in x 10in).
Weight	0.97 kg. (2.14 lb).
Weight, Shipping	When ordered with a Tektronix Inc. mainframe, this module will be installed and secured in one of the instrument module slots (slots 1–12). When ordered alone, the module's shipping weight is: 2.6 kg. (5.7 lb).
Mounting Position	Any orientation.
Mounting Location	Installs in an instrument module slot (slots 1–12) of a C or D size VXIbus mainframe. (Refer to D size mainframe manual for information on required adapters.)
Equipment Supplied	73A-851A Adapter Module. 1 each – User Manual (part number 070-9631-00). 2 ea.ch– Captive Screws (part number 950-5554–00).
Options	Option 01: Required when installing a B size VXI module in the 73A-851A: 2 each Ribbon Cable Assembly (part number 174-3396-00). 3 each Jumper Blocks (part number 131-5848-00). Option 02: Used when installing a double height VME module in the 73A-851A that requires access to P2 connector, rows P2-A and -C; includes separate removable 1–slot wide front panel: 1 each Ribbon Cable Assembly (part number 174-3463-00). 1 each Ribbon Cable Assembly (part number 174-3491-00).

Table A–2: Certifications and compliances

EC Declaration of Conformity (applies only to 73A-851A and 73A-851A Option 01)	Meets intent of Directive 89/336/EEC for Electromagnetic Compatibility. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities: 73A-851A and option 01 EN 55011 Class A Radiated and Conducted Emissions EN 50081-1 Emissions: EN 60555-2 AC Power Line Harmonic Emissions EN 50082-1 Immunity: IEC 801-2 Electrostatic Discharge Immunity IEC 801-3 RF Electromagnetic Field Immunity IEC 801-4 Electrical Fast Transient/Burst Immunity IEC 801-5 Power Line Surge Immunity

Appendix B: Front-Panel Input/Output Connections

The table below applies only when a double height VME module and an Option 02 ribbon cable assembly are installed on the 73A-851A Module. This cable assembly connects pins in rows A and C of P2 of the installed VME module to two 37-contact D connectors mounted on a separate removable front panel. These connectors are labeled S4 and S5 on the front panel of the Option 02 cable assembly. Pins 17, 18, 19, 36, 37 of front panel connector S4 are spares. Pins 17, 18, 19, 36, 37 of front panel connector S5 are connected to VXI chassis ground.

Table B–1: I/O Connections

P2 Pin Numbers	Header Pin Numbers	Front-Panel Connector Pin Numbers	P2 Pin Numbers	Header Pin Numbers	Front Panel Connector Pin Numbers
A1 *	P44–1	S4–1	C1	P44–2	S4–20
A2	P44–3 PJ44–1	S4–2	C2	P44–4	S4–21
A3 *	P44–5	S4–3	C3	P44–6 PJ44–2	S4–22
A4	P44–7 PJ44–4	S4–4	C4	P44–8 PJ44–3	S4–23
A5	P44–9	S4–5	C5	P44–10	S4–24
A6	P44–11	S4–6	C6	P44–12	S4–25
A7	P44–13 PJ44–6	S4–7	C7	P44–14 PJ44–5	S4–26
A8	P44–15	S4–8	C8	P44–16	S4–27
A9	P44–17	S4–9	C9	P44–18	S4–28
A10	P44–19 PJ44–7	S4–10	C10	P44–20 PJ44–8	S4–29
A11	P44–21	S4–11	C11	P44–22	S4–30
A12	P44–23	S4–12	C12	P44–24	S4–31
A13	P44–25 PJ44–9	S4–13	C13	P44–26 PJ64–1	S4–32
A14	P44–27	S4–14	C14	P44–28	S4–33
A15	P44–29	S4–15	C15	P44–30	S4–34
A16	P44–31 PJ64–2	S4–16	C16	P44–32 PJ64–3	S4–35
A17	P64–1	S5–1	C17	P64–2	S5–20

Table B–1: I/O Connections (Cont.)

P2 Pin Numbers	Header Pin Numbers	Front-Panel Connector Pin Numbers	P2 Pin Numbers	Header Pin Numbers	Front Panel Connector Pin Numbers
A18	P64–3	S5–2	C18	P64–4	S5–21
A19	P64–5 PJ64–4	S5–3	C19	P64–6 PJ64–5	S5–22
A20	P64–7	S5–4	C20	P64–8	S5–23
A21	P64–9	S5–5	C21	P64–10	S5–24
A22	P64–11 PJ64–6	S5–6	C22	P64–12 PJ64–7	S5–25
A23	P64–13	S5–7	C23	P64–14	S5–26
A24	P64–15	S5–8	C24	P64–16	S5–27
A25	P64–17 PJ64–8	S5–9	C25	P64–18 PJ64–9	S5–28
A26	P64–19	S5–10	C26	P64–20	S5–29
A27	P64–21	S5–11	C27	P64–22	S5–30
A28	P64–23 PJ74–2	S5–12	C28	P64–24 PJ74–1	S5–31
A29	P64–25	S5–13	C29	P64–26	S5–32
A30	P62–27 PJ74–7	S5–14	C30	P64–28 PJ74–3	S5–33
A31	P64–29 PJ74–4	S5–15	C31	P64–30 PJ74–8	S5–34
A32 †	P64–31	S5–16	C32	P64–32 PJ74–9	S5–35

***** **User-installed jumpers connect ECLTRG0 and ECLTRG1 to 51 Ω terminations to –2 V. See Figure 2–1**

† **User-installed SUMBUS jumper connects SUMBUS to P2–A32. See Figure 2–1**

Appendix C: Troubleshooting Procedure

If a VME module installed in the 73A-851A module does not function properly, use the following procedure before consulting the Tektronix field office or representative:

VME modules must not be placed in the upper quarter of A16 address space (0C000h through 0FFFFh with address modifiers 29h or 2Dh). Also verify that any A24 or A32 address space used by the module does not coincide with address space assigned to a VXIbus module installed in the system.

1. Check the switch settings on the 73A-851A Module. These settings must be set according to the capabilities of the installed module. For example, if the installed module generates interrupts on VME level 3, the IRQ3* switch on the 73A-851A Module must be set to position 2.

2. Check the jumper positions on the 73A-851A Module. The three P2 power jumper blocks must be removed if a VME module is installed in the 73A-851A.

3. If the 73A-851A switch settings and jumper positions are correct and the module still does not function properly, remove the module from the 73A-851A module and install it on a VME extender board. If a VME module is being used, be sure to isolate the VME module from P2 rows A and C.

4. If the module functions properly after following step 3, call the Tektronix field office or representative for help in resolving the problem that appears when the module is installed on the 73A-851A.

5. If the module still does not function properly after following step 3, recheck the switch settings and jumper positions on the module. Contact the manufacturer of the VME module if the module settings are correct and the module does not function on a passive extender board.

Appendix D: Replaceable Parts

This section contains a list of the replaceable modules for the 73A-851A. Use this list to identify and order replacement parts.

Parts Ordering Information

Replacement parts are available through your local Tektronix field office or representative.

Changes to Tektronix products are sometimes made to accommodate improved components as they become available and to give you the benefit of the latest improvements. Therefore, when ordering parts, it is important to include the following information in your order.

- Part number
- Instrument type or model number
- Instrument serial number
- Instrument modification number, if applicable

If you order a part that has been replaced with a different or improved part, your local Tektronix field office or representative will contact you concerning any change in part number.

Change information, if any, is located at the rear of this manual.

Module Servicing

Modules can be serviced by selecting one of the following three options. Contact your local Tektronix service center or representative for repair assistance.

Module Exchange. In some cases you may exchange your module for a reman-ufactured module. These modules cost significantly less than new modules and meet the same factory specifications. For more information about the module exchange program, call 1-800-TEK-WIDE, extension 6630.

Module Repair and Return. You may ship your module to us for repair, after which we will return it to you.

New Modules. You may purchase replacement modules in the same way as other replacement parts.

Using the Replaceable Parts List

This section contains a list of the mechanical and/or electrical components that are replaceable for the 73A-851A. Use this list to identify and order replacement parts. The following table describes each column in the parts list.

Parts List Column Descriptions

Column	Column Name	Description
1	Figure & Index Number	Not Used.
2	Tektronix Part Number	Use this part number when ordering replacement parts from Tektronix.
3 and 4	Serial Number	Column three indicates the serial number at which the part was first effective. Column four indicates the serial number at which the part was discontinued. No entries indicates the part is good for all serial numbers.
5	Qty	This indicates the quantity of parts used.
6	Name & Description	An item name is separated from the description by a colon (:). Because of space limitations, an item name may sometimes appear as incomplete. Use the U.S. Federal Catalog handbook H6-1 for further item name identification.
7	Mfr. Code	This indicates the code of the actual manufacturer of the part.
8	Mfr. Part Number	This indicates the actual manufacturer's or vendor's part number.

Abbreviations

Abbreviations conform to American National Standard ANSI Y1.1–1972.

Mfr. Code to Manufacturer Cross Index

The table titled Manufacturers Cross Index shows codes, names, and addresses of manufacturers or vendors of components listed in the parts list.

Manufacturers Cross Index

Mfr. Code	Manufacturer	Address	City, State, Zip Code
91506	AUGAT IPD	452 JOHN DIETSCH BLVD PO BOX 2510	ATTLEBORO FALLS, MA 02763
1Y013	DEANCO ACACIA DIVISION	3601 SW MURRY BLVD SUITE 60	BEAVERTON, OR 97005
06090	RAYCHEM CORP	300 CONSTITUTION DR	MENLO PARK, CA 94025–1111
64338	REDCO DEVELOPMENT CO	3000 ARROWHEAD DRIVE	CARSON CITY, NV 89706
61857	SAN–O INDUSTRIAL CORP	91–3 COLIN DRIVE	HOLBROOK, NY 11741
62559	SCHROFF INC	170 COMMERCE DRIVE	WARWICK, RI 02886–2430
0KB01	STAUFFER SUPPLY CO	810 SE SHERMAN	PORTLAND, OR 97214–4657
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON, OR 97077–0001
0LUT2	TOYOCOM USA INC	617 E GOLF ROAD SUITE 172	ARLINGTON HEIGHTS, IL 60005

Replaceable Parts List

Fig. & Index Number	Tektronix Part Number	Serial No. Effective	Serial No. Discont'd	Qty	Name & Description	Mfr. Code	Mfr. Part Number
					Standard 73A-851A		
	671–2809–XX			1	CIRCUIT BD ASSY:CLOCK DAUGHTER CARD	80009	671–3877–XX
	211–0867–00			16	SCREW PHIL M2.5X 4,FLHD	0KB01	211–0867–00
	337–4086–00			1	SHIELD:FACE PLATE	80009	337–4086–00
	342–1001–00			3	INSULATOR MYLAR5.7 X 8.0 IN	80009	342–1001–00
	950–5014–00			1	SHIELD REAR 851 CARD	80009	950–5014–00
	950–5468–00			3	SCREW 4–40X.125 PHIL FTHD CSK	0KB01	950–5468–00
	950–5554–00			2	SCREW CAPTIVE M2.5 RAISED	80009	950–5554–00
	950–5593–00			1	INSULATING STRIP	64338	950–5593–00
	950–5688–01			8	STANDOFF HEX M2.5 THRU X .538L	80009	950–5688–01
	950–8663–01			8	REAR SHIELD STANDOFF	80009	950–8663–01
	070–9631–XX			1	MANUAL,TECH:USER MANUAL	80009	070–9631–XX
	163–0764–XX			1	IC,DIGITAL:CMOS,PLD,EEPLD,16V8,7.5NS,PRGM (U231 REFERENCE DESIGNATOR)	80009	163–0764–XX
	163–0765–XX			1	IC,DIGITAL:CMOS,PLD,EEPLD,22V10,7.5NS,PRGM (U05 REFERENCE DESIGNATOR)	80009	163–0765–XX
	158–5029–00			1	OSCILLATOR,RF:CRYSTAL CONTROLLED,50MHZ,0.01% HCMOS (F15 REFERENCE DESIGNATOR)	0LUT2	TC0–711JTC50.0M HZ
	163–0766–XX			1	IC,DIGITAL:CMOS,PLD,EEPLD,MAX,7000 FAMILY,7032,PRGM (U04 REFERENCE DESIGNATOR)	80009	163–0766–XX
	159–0193–00			2	FUSE,WIRE LEAD:10A,60V,FAST BLOW,5 SEC (F49, F56 REFERENCE DESIGNATORS)	61857	SP5–10A
	159–0380–00			2	FUSE,THERMAL:SELF RESETTING,2.5A HOLD,5.0A TRIP,30V MAX (F761, F762 REFERENCE DESIGNATORS)	06090	RUE250–2
	159–5020–00			5	FUSE,SMD:SELF RESETTING FUSE,2.5A HOLD,5.0A TRIP,15V MAX (F351, F352, F45, F471, F472 REFERENCE DESIGNATORS)	80009	159–5020–00
					Option 01		
	671–3920–XX			1	CIRCUIT BD ASSY: JUMPER BLOCKS FOR VXI B SIZE OPTION 01	80009	671–3920–XX
	131–5848–00			3	SHUNT:JUMPER,MALE (J44, J64, AND J74 REFERENCE DESIGNATORS)	91506	8136–475G9
	174–3396–00			2	RIBBON CABLE ASSEMBLY:26 AWG,4.75 L,2X20	1Y013	174–3396–00

Replaceable Parts List (Cont.)

Fig. & Index Number	Tektronix Part Number	Serial No. Effective	Serial No. Discont'd	Qty	Name & Description	Mfr. Code	Mfr. Part Number
					Option 02		
	131–0890–00			8	CONN,HARDWARE:DSUB,JACK SCREW,4–40 X 0.312 L HEX HDW/2 FLAT WASHERS,1 LOCK WASHER	0KB01	131–0890–00
	174–3463–00			1	CA ASSY: RIBBON 28 AWG,13.125 L,37	1Y013	174–3463–00
	174–3491–00			1	CA ASSY,SP:RIBBON 28 AWG,9.25 L,37	1Y013	174–3491–00
	950–3799–00			2	SLEEVE CAPTIVE SCREW GRAY	62559	950–3799–00
	950–5015–00			1	FACE PLATE 851 CARD	80009	950–5015–00
	950–0952–00			2	COLLAR SCREW M 2.5 X 11	62559	950–0952–00

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