



Artisan Technology Group is your source for quality new and certified-used/pre-owned equipment

- FAST SHIPPING AND DELIVERY
- TENS OF THOUSANDS OF IN-STOCK ITEMS
- EQUIPMENT DEMOS
- HUNDREDS OF MANUFACTURERS SUPPORTED
- LEASING/MONTHLY RENTALS
- ITAR CERTIFIED SECURE ASSET SOLUTIONS

SERVICE CENTER REPAIRS

Experienced engineers and technicians on staff at our full-service, in-house repair center

*InstraView*SM REMOTE INSPECTION

Remotely inspect equipment before purchasing with our interactive website at www.instraview.com ↗

WE BUY USED EQUIPMENT

Sell your excess, underutilized, and idle used equipment. We also offer credit for buy-backs and trade-ins. www.artisanng.com/WeBuyEquipment ↗

LOOKING FOR MORE INFORMATION?

Visit us on the web at www.artisanng.com ↗ for more information on price quotations, drivers, technical specifications, manuals, and documentation

Contact us: (888) 88-SOURCE | sales@artisanng.com | www.artisanng.com



POCKET REFERENCE

CIPRICO® RIMFIRE® 3500 VMEbus SCSI HOST ADAPTER

NOTE: 1 = true for all bits unless otherwise specified. All commands and error codes are in hexadecimal form.

COMMANDS

COMMANDS

Table listing commands: Start Command List, Stop Command List, Identify, Board Statistics, General Options, Unit Options, Diagnostic/Self-Test.

FLOPPY SCSI COMMANDS

Table listing floppy SCSI commands: Test Unit Ready, Request Sense, Format Unit, Read, Write, Inquiry, Reserve Unit, Release Unit, Send Diagnostic, Read Capacity, Read Extended, Write Extended.

OPTIONAL COMMANDS

Table listing optional commands: Rezero Unit, Seek, Mode Select, Mode Sense, Receive Diagnostic, Results, Seek Extended.

STANDARD PARAMETER BLOCK

Diagram of Standard Parameter Block structure showing fields: COMMAND IDENTIFIER, RESERVED, FLAGS, ADDR MOD, TARGET ID, VME MEMORY ADDRESS, TRANSFER COUNT, SCSI COMMAND, BLOCK.

COMMAND IDENTIFIER - (designated by host) TARGET ID - 0-7 = SCSI bus devices FE = Command for onboard floppy controller FF = Rimfire 3500-specific command

FLAGS BYTE

Diagram of Flags Byte structure: DBV, IR, DIR, DAT, SGO.

SGO: Scatter/Gather Operation - 1 = active DAT: Data successfully transferred - 1 = active (vendor-unique commands only) DIR: Direction of data transferred - 1 = to target 0 = from target IRS: Inhibit Request Sense - 1 = host issues Request Sense 0 = adapter issues Request Sense DBV: Data Bit Valid - 1 = active

STATUS BLOCK

Diagram of Status Block structure: COMMAND IDENTIFIER, RESERVED, SCSI STATUS, ERROR, FLAGS, CLASS/CODE, SEGMENT, SCSI FLAGS, INFO BYTE 3, INFO BYTE 4, INFO BYTE 5, INFO BYTE 6, EX LENGTH.

FLAGS BYTE

Diagram of Flags Byte structure: CC, ERR, RTY, DTT, and four 0 bits.

CC - Command Complete ERR - Command error status RTY - Retries required DTT - Data transfer truncated

COMMAND IDENTIFIER - (same as this field in parameter block) ERROR - Adapter-specific error code

TYPE 0 PARAMETER BLOCK

Diagram of Type 0 Parameter Block structure: STANDARD PARAMETER BLOCK, INTERRUPT, STANDARD STATUS BLOCK.

INTERRUPT FIELD

Diagram of Interrupt Field structure: IL0, IL1, IL2, USER-DEFINED STATUS/ID.

IL0-IL2 - 0 = no interrupt generated nonzero = interrupt level USER-DEFINED STATUS/ID - acknowledge code

COMMAND LIST DATA STRUCTURE

Diagram of Command List Data Structure showing Parameter Blocks and Status Blocks.

FLOPPY DISK ID BYTES

Diagram of Floppy Disk ID Bytes structure: LENGTH, SECTOR, SIDE, TRACK.

LENGTH BYTE TABLE

Table mapping Length Byte values to Sector and Length: 00 (128 bytes), 01 (256 bytes), 02 (512 bytes), 03 (1024 bytes).

ADDRESS REGISTERS

Table of Address Registers: Address Buffer Port, Channel Attention, Board Status, Controller Reset, with 8-bit and 16/32 bit values and R/W indicators.

Address modifier - 29 = non-privileged 16-bit address space access 2D = privileged 16-bit address space access

ADDRESS BUFFER PORT

Diagram of Address Buffer Port structure: CONTROL, AM BITS FOR PB, PB ADDRESS: MSW, PB ADDRESS: LSW.

first write second write third write

CONTROL FIELD

Diagram of Control Field structure: SET, WID, WSW, BSW.

SET - 0 = ignore control field 1 = apply control field WID - Width of data transfers: 0 = 16 bit 1 = 32 bit WSW - Word swap control 0 = VME ordering 1 = swap words BSW - Byte swap control 0 = VME ordering 1 = swap bytes

BOARD STATUS PORT

Diagram of Board Status Port structure: BOARD ID, BOARD STATUS, RDY, BSY.

BOARD ID - 02 = Rimfire 3500 BOARD STATUS - 0 = normal operation RDY - 1 = Board ready for commands 0 = Reset/error condition BSY - Busy (type 0 channel attention only)

COMMAND LIST PARAMETER BLOCKS

START COMMAND LIST PARAMETER BLOCK

Diagram of Start Command List Parameter Block structure: COMMAND IDENTIFIER, RESERVED, ADDR MOD, TARGET=FFH, COMMAND LIST MEMORY ADDRESS, RESERVED, INTERRUPT, COMMAND=01H, RESERVED, RESERVED.

STOP COMMAND LIST PARAMETER BLOCK

Diagram of Stop Command List Parameter Block structure: COMMAND IDENTIFIER, RESERVED, TARGET=FFH, RESERVED, RESERVED, COMMAND=02H, RESERVED, RESERVED.

SCATTER/GATHER DESCRIPTOR BLOCK

Diagram of Scatter/Gather Descriptor Block structure: NEXT SG DESCRIPTOR BLOCK ADDRESS, ADDR MOD 1, DATA LENGTH 1, DATA ADDRESS 1, ADDR MOD 2, DATA LENGTH 2, DATA ADDRESS 2, (Descriptor Blocks 3 - 7), ADDR MOD 8, DATA LENGTH 8, DATA ADDRESS 8.

ERROR CODES

CODE	ERROR
01	Invalid board command
02	Bad unit or ID number
03	Floppy disk option not installed
0B	Reserved field not zero
0E	Command list stopped
0F	Bad command list size field
11	List already active
14	Bus timeout
15	Bus error
16	Scatter/gather descriptor block read error
1E	SCSI select timeout
1F	SCSI disconnect timeout
20	SCSI parity error
21	Unexpected SCSI disconnect
22	General SCSI bus error
23	SCSI device returned bad status
24	Unexpected SCSI phase encountered
25	Bad byte seen by SCSI controller chip
26	Error in synchronous transfer negotiation
27	Error in scatter/gather operation
61	Static RAM error
62	PROM checksum error
63	Undefined diagnostic specified
80	Firmware errors (report to Ciprico)

STARTUP CHECKLIST

- Set board jumpers:
 - I/O space base address
 - Bus request/Bus grant levels
 - Floppy disk ready line
- Install board in rack. Connect SCSI and floppy cables to board and drives. Apply power. Reset board by activating /INIT signal or writing to Reset port in adaptor address space.
- Examine status word in adaptor address space: value 0202H should appear within 2 seconds of board reset, and red and green LED indicators should be turned off.
- Execute a command: build type-0 parameter block in memory, write block address to Address Buffer port, and write 0 to Channel Attention port. Wait for specified interrupt, and examine status block to verify command completion.
- Set up command list: clear memory area for desired number of status/parameter blocks (maximum 64 K blocks), set variable fields, execute Start Command List command as shown in Step 4.

For immediate assistance with installing/operating the Rimfire 3500, call CIPRICO Support Engineering at:

(612)559-2034

or write: CIPRICO Inc.
2955 Xenium Lane
Plymouth, MN 55441

NOTE: The information in this document is subject to change without notice.

DIAGNOSTIC BLOCKS

DIAGNOSTIC/SELF-TEST PARAMETER BLOCK

31	COMMAND IDENTIFIER			0
	RESERVED	TARGET=FFH		
	RESERVED			
	RESERVED			
	RESERVED			
	COMMAND=09H	TEST FLAGS	RESERVED	
	RESERVED			
	RESERVED			

TEST FLAGS BYTE

7							0
0	0	0	0	0	0	0	
				PCS	SRT		

SRT: Static RAM test PCS: PROM checksum test

DIAGNOSTIC STATUS BLOCK

31	COMMAND IDENTIFIER			0
	RESERVED	ERROR	FLAGS	
	ERROR ADDRESS	EXPECTED	FOUND	
	RESERVED			

EXPECTED, FOUND, ERROR - Address of error and expected/found pattern at that location

IDENTIFY COMMAND STATUS BLOCK

31	COMMAND IDENTIFIER				0
	FW REV	ENG REV	ERROR	FLAGS	
	OPT FLAGS	DAY	MONTH	YEAR	
	RESERVED				

FW REV - Last two digits of firmware PROM part number
ENG REV - Engineering revision level (Ciprico use only)
DAY, MONTH, YEAR - Date of PROM firmware

OPTION FLAGS BYTE

7							0
0	0	0	0	0	0	0	
					FDO		

FDO - Floppy Disk Option present

GENERAL OPTIONS PARAMETER BLOCK

31	COMMAND IDENTIFIER				0
	OPT FLAGS	THROTTLE	OWN ID	TARGET=FFH	
	RESERVED				
	RESERVED				
	COMMAND=07H	RESERVED			
	RESERVED				
	RESERVED				

OPTION FLAGS BYTE

7							0
0	0	0	0	0	0	0	
				BMT	PAR	DIS	

BMT: Perform block mode transfers
PAR: Use parity report parity errors on SCSI bus
DIS: Allow disconnect/reselect in SCSI operations

THROTTLE BYTE

7							0
B/T	THROTTLE COUNT						

B/T - 0 = Transfer Count 1 = Byte Count

FLOPPY DISK ERROR STATUS BLOCK

31	COMMAND IDENTIFIER			0
	STATUS=02H	ERROR=23H	FLAGS	
	0	0	0	
	0	0	0	

FLAGS - See Status Block format
STATUS - 02H (CHECK CONDITION)

CODE FIELD VALUES

Code	Description
20	Bad command issued to floppy disk
21	Bad block number specified
25	Bad logical unit number specified (not 0 - 3)
26	Bad parameter specified
29	Device not configured
40	Format table overrun
41	Timeout waiting for command complete
42	Drive not ready
43	Seek error
44	ID CRC error
44	Write fault
45	Data CRC error.
47	Sector not found
48	Floppy disk data lost
49	Data underrun during operation

BYTE ORDERING

Byte Offset	Double Word Bits, Motorola	Double Word Bits, Intel/National/AT&T
0	24-31 (MSW)	0-7 (LSW)
1	16-23	8-15
2	8-15	16-23
3	0-7 (LSW)	24-31 (MSW)

UNIT OPTIONS PARAMETER BLOCK

31	COMMAND IDENTIFIER				0
	DISCONNECT TIMEOUT	UNIT ID	TARGET=FFH		
	SELECT TIMEOUT	RETRY CNTL	RETRY LIMIT		
	RESERVED	RESERVED	UNIT FLAGS		
	COMMAND=08H	RESERVED			
	RESERVED				
	RESERVED				

UNIT ID - (0 - 7 permissible)
DISCONNECT TIMEOUT - (.1 second increments)
RETRY LIMIT - maximum number of retries attempted

RETRY CONTROL BYTE

7							0
0	0	0	0	RBE	RCE	RPE	
				ISB	INT		

RBE: Retry SCSI Bus Errors
RCE: Retry Command Errors
RPE: Retry Parity Errors
ISB: Issue status block/each retry
INT: Issue interrupt/each retry

UNIT FLAGS BYTE (bits 0,1; all other bits 0)

2	1	0
0	SYN	IDI

SYN: Enable synchronous transfers
IDI: Prevent disconnect during command

SELECT TIMEOUT - Time limit specified for target response to selection (specified in milliseconds)



Artisan Technology Group is your source for quality new and certified-used/pre-owned equipment

- FAST SHIPPING AND DELIVERY
- TENS OF THOUSANDS OF IN-STOCK ITEMS
- EQUIPMENT DEMOS
- HUNDREDS OF MANUFACTURERS SUPPORTED
- LEASING/MONTHLY RENTALS
- ITAR CERTIFIED SECURE ASSET SOLUTIONS

SERVICE CENTER REPAIRS

Experienced engineers and technicians on staff at our full-service, in-house repair center

*InstraView*SM REMOTE INSPECTION

Remotely inspect equipment before purchasing with our interactive website at www.instraview.com ↗

WE BUY USED EQUIPMENT

Sell your excess, underutilized, and idle used equipment. We also offer credit for buy-backs and trade-ins. www.artisanng.com/WeBuyEquipment ↗

LOOKING FOR MORE INFORMATION?

Visit us on the web at www.artisanng.com ↗ for more information on price quotations, drivers, technical specifications, manuals, and documentation

Contact us: (888) 88-SOURCE | sales@artisanng.com | www.artisanng.com