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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

Start Command List	01	General Options	07
Stop Command List	02	Unit Options	08
Identify	05	Diagnostic/Self-Test	09
Board Statistics	06		

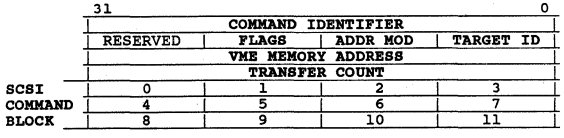
FLOPPY SCSI COMMANDS

Test Unit Ready	00	Reserve Unit	16
Request Sense	03	Release Unit	17
Format Unit	04	Send Diagnostic	1D
Read	08	Read Capacity	25
Write	0A	Read Extended	28
Inquiry	12	Write Extended	2A

OPTIONAL COMMANDS

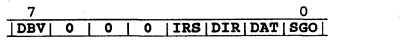
Rezero Unit	01	Receive Diagnostic Results	1C
Seek	0B		
Mode Select	15	Seek Extended	2B
Mode Sense	1A		

STANDARD PARAMETER BLOCK



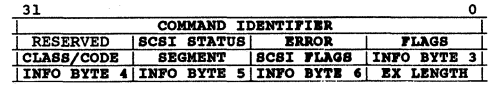
COMMAND IDENTIFIER - (designated by host)
TARGET ID - 0-7 = SCSI bus devices
FE = Command for onboard floppy controller
FF = Rimfire 3500-specific command

FLAGS BYTE

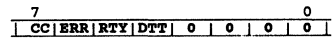


SGO: Scatter/Gather Operation - 1 = active
DAT: Data successfully transferred - 1 = active
(vendor-unique commands only)
DIR: Direction of data transferred -
1 = to target 0 = from target
IRS: Inhibit Request Sense -
1 = host issues Request Sense
0 = adapter issues Request Sense
DBV: Data Bit Valid -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

STATUS BLOCK



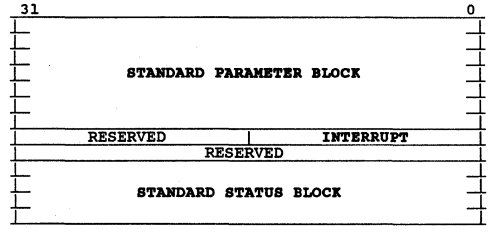
FLAGS BYTE



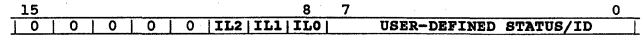
CC - Command Complete
ERR - Command error status
RTY - Retries required
DTT - Data transfer truncated

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

TYPE 0 PARAMETER BLOCK

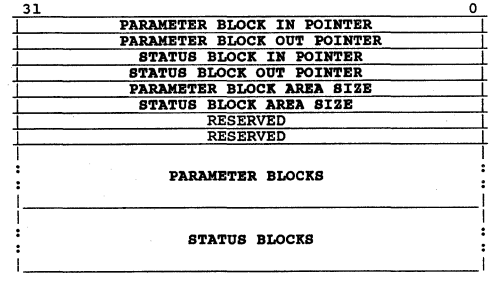


INTERRUPT FIELD

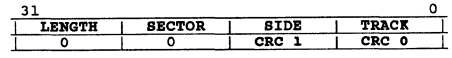


IL0-IL2 - 0 = no interrupt generated
nonzero = interrupt level
USER-DEFINED STATUS/ID - acknowledge code

COMMAND LIST DATA STRUCTURE



FLOPPY DISK ID BYTES



LENGTH BYTE TABLE

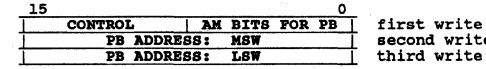
Value of Length Byte	Sector Length
00	128 bytes
01	256 bytes
02	512 bytes
03	1024 bytes

ADDRESS REGISTERS

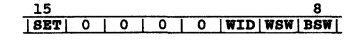
	8-Bit	16/32 bit	R/W
Address Buffer Port	--	0H	W
Channel Attention	9H	8H	W
Board Status	11H	10H	R
Controller Reset	19H	18H	W

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

ADDRESS BUFFER PORT

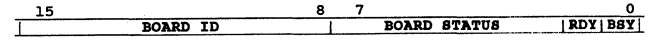


CONTROL FIELD



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

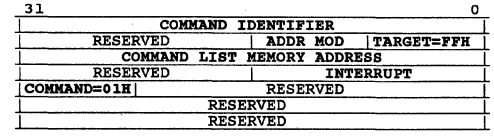
BOARD STATUS PORT



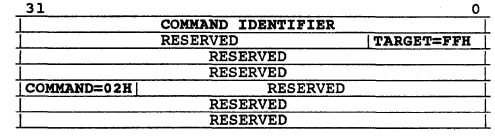
BOARD ID - 02 = Rimfire 3500
BOARD STATUS - 0 = normal operation
RDY - 1 = Board ready for commands
0 = Reset/error condition
BSY - Busy (type 0 channel attention only)

COMMAND LIST PARAMETER BLOCKS

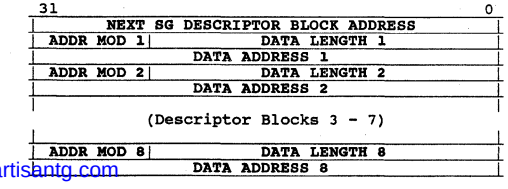
START COMMAND LIST PARAMETER BLOCK



STOP COMMAND LIST PARAMETER BLOCK



SCATTER/GATHER DESCRIPTOR BLOCK



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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

1. **Set board jumpers:**
   a. I/O space base address
   b. Bus request/Bus grant levels
   c. Floppy disk ready line

2. **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.

3. **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.

4. **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.

5. **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

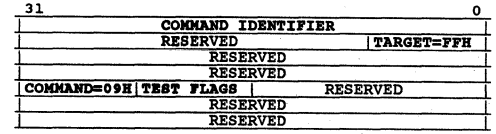
or write: CIPRICO Inc.
2955 Xenium Lane
Plymouth, MN 55441

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

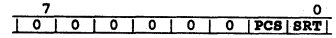
PUB. #21013200 (REV. 04) (6/87)

DIAGNOSTIC BLOCKS

DIAGNOSTIC/SELF-TEST PARAMETER BLOCK

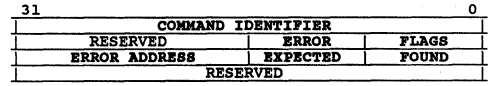


TEST FLAGS BYTE



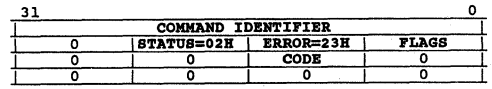
SRT: Static RAM test PCS: PROM checksum test

DIAGNOSTIC STATUS BLOCK



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

FLOPPY DISK ERROR STATUS BLOCK



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

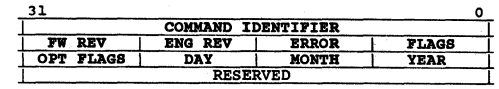
CODE FIELD VALUES

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
45	Write fault
46	Data CRC error.
47	Sector not found
48	Floppy disk data lost
49	Data underrun during operation

BYTE ORDERING

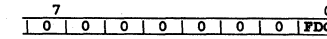
Byte Offset	Double Word Bits, Motorola	Double Word Bits, Intel/National/AT&T
0	24-31 (MSW)	0-7 (LSW)
1	16-23	8-15
2	8-15	16-23
3	0-7 (LSW)	24-31 (MSW)

IDENTIFY COMMAND STATUS BLOCK



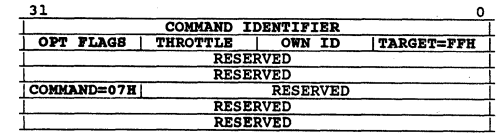
FW REV - Last two digits of firmware PROM part number
ENG REV - Engineering revision level (Ciprico use only)
DAY, MONTH, YEAR - Date of PROM firmware

OPTION FLAGS BYTE

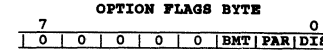


FDO - Floppy Disk Option present

GENERAL OPTIONS PARAMETER BLOCK



OPTION FLAGS BYTE



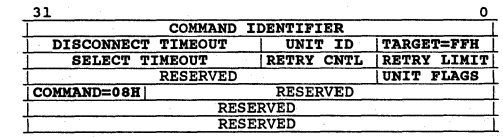
BMT: Perform block mode transfers
PAR: Use parity report parity errors on SCSI bus
DIS: Allow disconnect/reselect in SCSI operations

THROTTLE BYTE



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

UNIT OPTIONS PARAMETER BLOCK



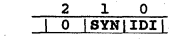
UNIT ID - (0 - 7 permissible)
DISCONNECT TIMEOUT - (.1 second increments)
RETRY LIMIT - maximum number of retries attempted

RETRY CONTROL BYTE



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)



SYN: Enable synchronous transfers
IDI: Prevent disconnect during command

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

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