JORWAY

MODEL 73A

SCSI CRATE CONTROLLER
New Option for Level 1 FASTCAMAC

- **STANDARD INTERFACE FOR WIDE VARIETY OF PROCESSORS**
  DECstations - VAXstations - Alpha - Macintosh - IBM & Clones
  Hewlett Packard 9000 - IBM RS/6000 - Motorola MVME - Sparc IPC

- **FAST TRANSFER RATES** 2 Megabytes per second in standard block transfers

- **OPTIONS FOR LEVEL 1 FASTCAMAC OPERATION**
  FASTCAMAC read transfers to 7.5 Megabytes per second

MODEL 73A
SCSI BUS
CRATE CONTROLLER

CRATE
ADDRESS

3

D   R/G ON

I   REQ

ON LINE   G IN

OFF LINE
Z   G OUT
C

SCSI
BUS

SCSI
BUS

J0RWAY

The Jorway Model 73A allows up to 7 CAMAC Crates to be controlled by a personal computer or workstation using the popular Small Computer System Interface (SCSI) Bus (ANSI Standard X3.131). The Model 73A adheres to revision 10b (1989) of the SCSI-2 Standard, and can coexist with other SCSI devices on the bus. The single-ended SCSI bus is employed, allowing a maximum bus length of six meters. The Controller has two identical SCSI-2 high density shielded connectors; either can be used as input or output allowing devices to be daisy-chained. The Model 73A is provided with internal SCSI termination's. These termination's can be removed for a multiple SCSI device system or a SCSI terminator can be placed at the unused connector.

The Model 73A responds to all mandatory messages in the SCSI-2 Standard, as well as all required commands. A high speed Schottky RISC microprocessor rapidly executes SCSI protocols. A FIFO buffer allows simultaneous Dataway and SCSI transfers, with a maximum transfer rate of 2 Mbytes/sec. in either Synchronous or Asynchronous SCSI mode. Either 16 or 24 bit CAMAC transfers can be selected; in the latter case the CAMAC words are expanded to 32 bits for full word buffer alignment. The order of byte transmission is user selectable as high order first or low order first.

A Level 1 FASTCAMAC option is now available on the Model 73A. When a F(5) read command is selected, FASTCAMAC block reads transfer data every 400 nanoseconds providing a 7.5 megabyte transfer rate for 24 bit data and 5 megabyte per second for 16 bit data. A suitable 10 MHz SCSI Host Adapter on a pentium class PC or equivalent processor is required. FASTCAMAC block transfers terminate on no Q or transfer length satisfied.

The Model 73A functions as a master controller occupying the rightmost stations in the crate. It however supports the ACB (Auxiliary Control Bus) for operation with other auxiliary controllers in the crate. Arbitration protocol may be selected for Request/Grant or Auxiliary Controller Lockout (ACL). In addition a switch is provided to allow for selection of Arbitration on each dataway cycle or for each block transfer to maximize data transfer speeds. The Model 73A can report CAMAC LAMs by interrupting the host computer using the AEN (Asynchronous Event Notification) protocol described in the SCSI specification. For host adapters not supporting AEN, LAMs can be polled using the Read LAM Pattern command, which reports all LAMs present.

The Model 73A contains a 24 bit LAM mask register, which may be enabled by a switch. When enabled, only LAMs from stations corresponding to a set mask bit will be returned by a read-L command or generate an interrupt. If the switch is off, all LAMs will be recognized. Also incorporated is a 24 bit
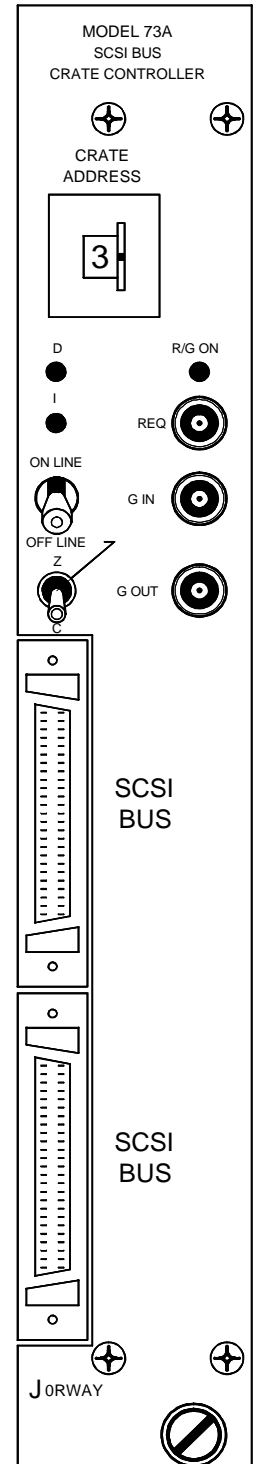
1100

Mailbox register which can be written or read from either the dataway or the SCSI bus to facilitate the transfer of information from multiple controllers occupying the same crate. A LAM associated with the Mailbox option may also be used to facilitate communication between processors.

An optional version, the Model 73A-1, can operate as either a Master or Auxiliary Controller. Selection of Master or Auxiliary role is made by switches accessible from the rear eliminating the need to remove any components when changing roles.

The Model 73A and 73A-1 are a double width CAMAC modules implementing most of the features and commands of IEEE standard type A1 controllers including a station number register and N26 (all N's).

CONTROLLER CAMAC COMMANDS

73A & 73A-1 Commands

Generate Dataway Z	$F(26) \cdot N(28) \cdot A(8)$
Generate Dataway C	$F(26) \cdot N(28) \cdot A(9)$
Read LAM Pattern	$F(0) \cdot N(30) \cdot A(0-7)$
Load Station N Reg.	$F(16) \cdot N(30) \cdot A(8)$
Remove Dataway I	$F(24) \cdot N(30) \cdot A(9)$
Set Dataway I	$F(26) \cdot N(30) \cdot A(9)$
Disable Demands	$F(24) \cdot N(30) \cdot A(10)$
Enable Demands	$F(26) \cdot N(30) \cdot A(10)$
Write LAM Mask Reg.	$F(16) \cdot N(30) \cdot A(0)$

Mail Box Commands :

Read Mailbox Q=1	$F(0) \cdot N(*) \cdot A(0)$
Read Mailbox	$F(0) \cdot N(*) \cdot A(1)$
if flag set, read data & clear flag, Q=1	
if flag clear, mailbox empty, Q=0	
Write Mailbox Q=1	$F(16) \cdot N(*) \cdot A(0)$
Write Mailbox	$F(16) \cdot N(*) \cdot A(1)$
if flag set, no write, Q=0	
if flag clear, write & set flag, Q=1	
Test LAM	$F(8) \cdot N(*) \cdot A(0)$
Clear LAM source	$F(10) \cdot N(*) \cdot A(0)$
Set LAM source	$F(14) \cdot N(*) \cdot A(0)$
Disable LAM	$F(24) \cdot N(*) \cdot A(0)$
Enable LAM	$F(26) \cdot N(*) \cdot A(0)$
	N(*) is N28 for SCSI, N if Aux. or
	N25(if master and addressed by Aux.)

FASTCAMAC Level 1 (Option 2)

FASTCAMAC Level 1 read	$F(5) \cdot$ module (N) any $\cdot (A)$

ORDER INFORMATION	Jorway Part Number
SCSI Full Protocol Crate Controller	Model 73A
SCSI Full Protocol Crate Controller , Master or Auxiliary Operation (Option 1)	Model 73A-1
FASTCAMAC Level 1 (Option 2)	Model 73A-2 or Model 73A-1-2

Accessories:

SCSI High Density Male to Low Density Male, 4 meters long,	A5541-4
SCSI High Density Male to High Density Male, 4 meters long	A5560-4
Macintosh connection consisting of 4 meter A5541-4, Gender changer, and 1/2 Meter Macintosh system cable	A5158-5