

**SENTINEL SUBSYSTEM  
INTEGRATION DESIGN GUIDE**

## Purpose

The purpose of this document is to provide information to assist in the integration of the Sentinel Tape Drive to a Computer Subsystem. The Document consists of two parts:

Part 1: Integration with in-house Design Controllers

Part 2: Integration utilizing Purchased Controllers

## Reference:

Product Specification  
Tape Cartridge Subsystem  
Spec # 49793500

SENTINEL INTEGRATION WITH  
IN-HOUSE DESIGN CONTROLLER

General

1. Consult power supply vendor list for power supply procurement.
2. Purchase or fabricate proper cabling.
3. Design Controller with Sentinel device level interface per product spec and timing diagram.
4. Purchase or fabricate proper cabling.
5. Write host software device handler and diagnostics.

NOTE: The following LSI chips are available:

WD 1100-01 Serial/parallel converter  
WD 1100-05 Parallel/serial converter

Western Digital Corp.  
2445 McCabe Way  
Irvine, California 92714

(714) 557-3550

POWER SUPPLIES

"CONDOR" INC.

4880-82 Adohr Lane  
Camarillo, CA 93010  
Phone: 805-484-2851

"POWER ONE" INC.

Power One Drive  
Camarillo, CA 93010  
Phone: 805-484-2806

"AC DC" ELECTRONICS (EMERSON ELECTRIC CO.)

401 Jones Road  
Oceanside, CA 92054  
Phone: 714-757-1880

"LAMBDA" ELECTRONICS DIV. VEECO INSTRUM., INC.

515 Broad Hollow Road  
Melville, NY 11747  
Phone: 516-694-4200

"DELTRON" INC.

Wissahickon Ave.  
North Wales, PA 19454  
Phone: 215-699-9261

"ADTECH" POWER INC.

1621 S. Sinclair St.  
Anaheim, CA 92806  
Phone: 714-634-9211

"SLERRACIN"/ALPHA

20536-T Plummer  
Chatsworth, CA 91311  
Phone: 213-998-9873

"POWERTEC" INC. (AIRTRONICS, INC.)

20550 Nordhoff St.  
Chatsworth, CA 91311  
Phone: 213-882-0004

POWER SUPPLIES

"STANDARD POWER" INC. (INDUSTRIAL PRODUCTS DIV.)

1400 S. Village Way  
Santa Ana, CAL. 92705  
Phone: 714-558-8515

"ERA TRANSPAC" CORP.

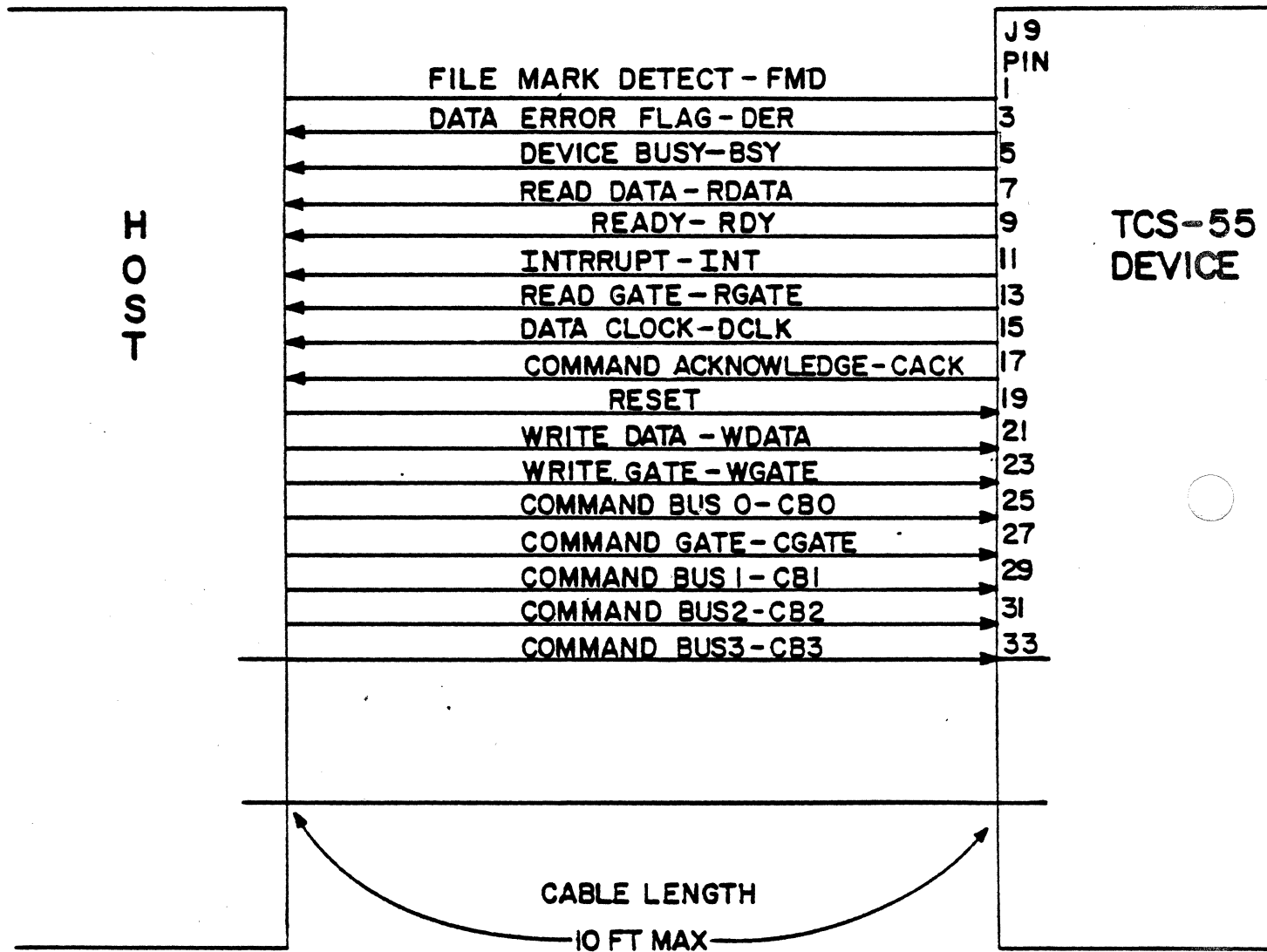
311F E. Park St., Dept. 1205,  
Moonachie, NJ  
Phone: 201-641-3650

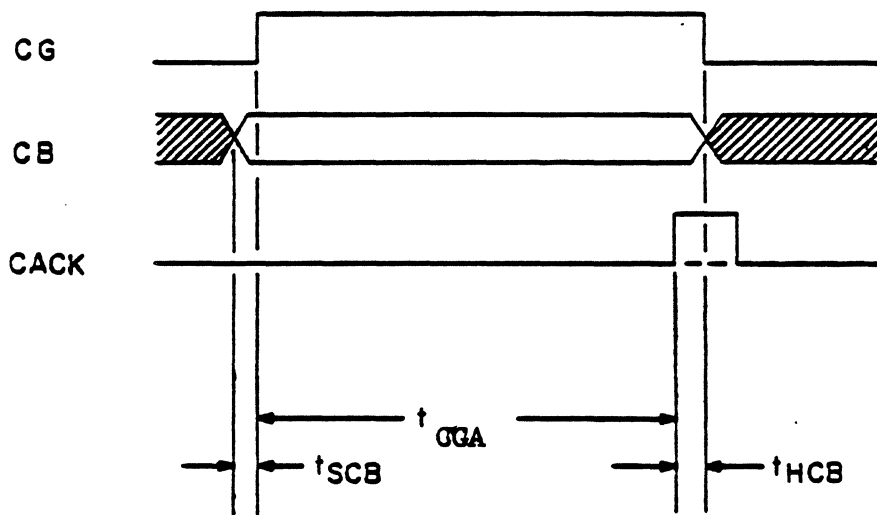
"DYNAGE" INC.

1333 Blue Hills Ave.  
Bloomfield, Conn. 06002  
Phone: 203-243-0315

"REACOR" INC.

718 Lingco Dr.  
Richardson, TX 75081  
Phone: 214-231-7218

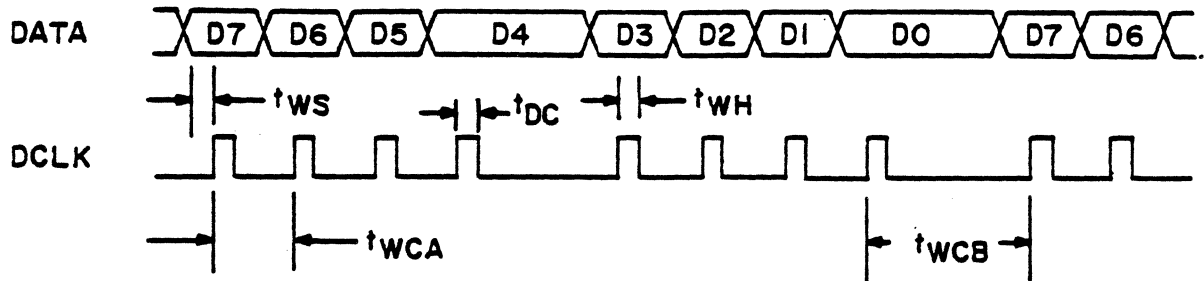




<u>PARAMETER</u>	<u>MIN.</u>	<u>MAX.</u>
$t_{SCB}$ - Command Bus Set-up	0	
$t_{CGA}$ - Command Gate Acknowledge		400 $\mu$ S *
$t_{HCB}$ - Command Bus Hold	0	5 $\mu$ S

COMMAND TRANSFER TIMING

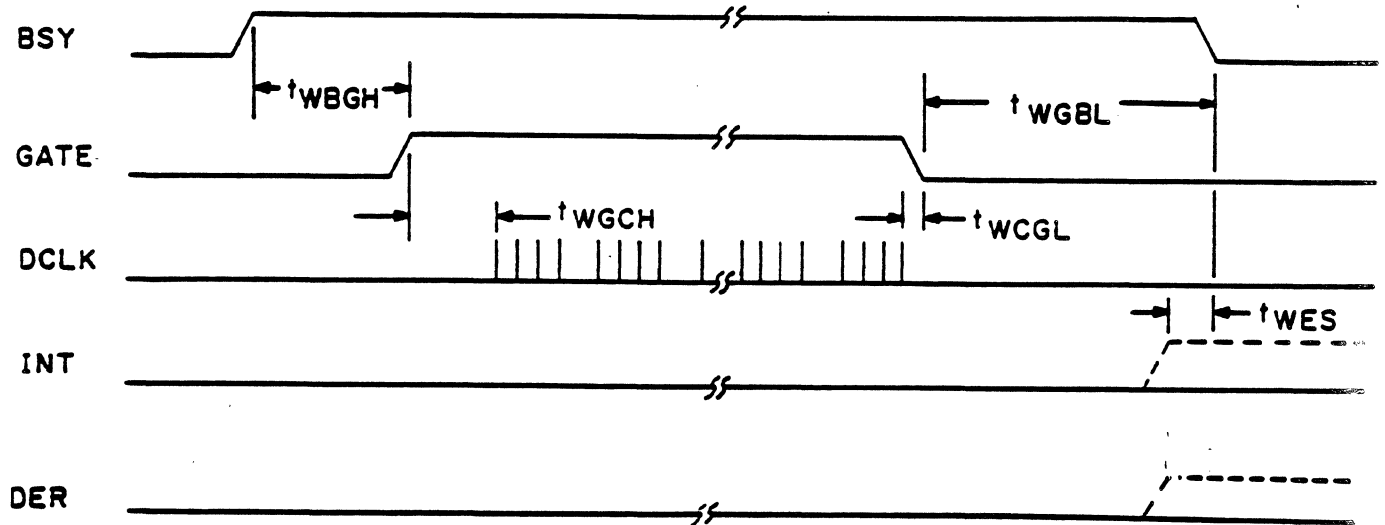
\*Max time specification is valid only if command reinstruct conditions are met. The specification will increase by the positioning time if the command reinstruct occurs during the positioning cycle.



PARAMETER	CONDITION	MIN.	MAX.	UNIT
$t_{WS}$		250		ns
$t_{WCA}$		1.77	1.87	$\mu$ s
$t_{WH}$		350		ns
$t_{WCB}$	During Resync Between Nibyls	89 3.54	93 3.74	$\mu$ s $\mu$ s
$t_{DC}$		505	534	ns

BYTE TRANSFER - WRITE TIMING



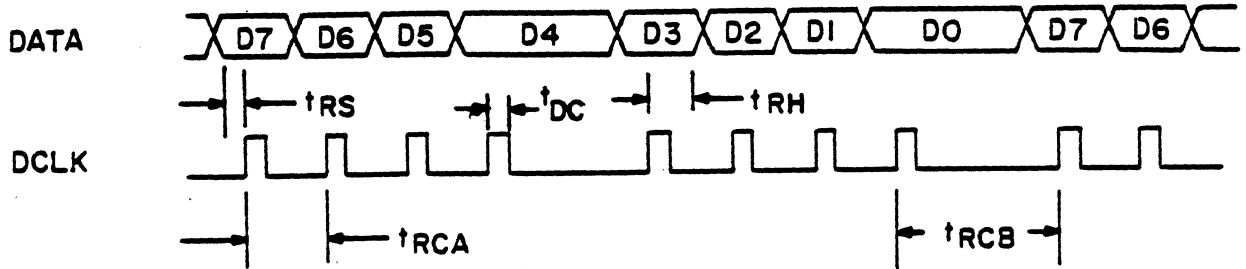


PARAMETER	CONDITION	MIN.	MAX.	UNIT
$t_{WBGH}$		Note 1	10	$\mu s$
$t_{WGBL}$	No Read after Write error		7*	ms
$t_{WGCH}$	From Rest	.25	70	ms
	Strmg. Min. Gap	.25	5.8	ms
	End Of Track	.25	1000	ms
$t_{WCGL}$			.5	$\mu s$
$t_{WES}$		0		$\mu s$

\* IF DER OCCURS BSY REMAINS ASSERTED DURING AUTOMATIC BACKSPACE AND ERASE.

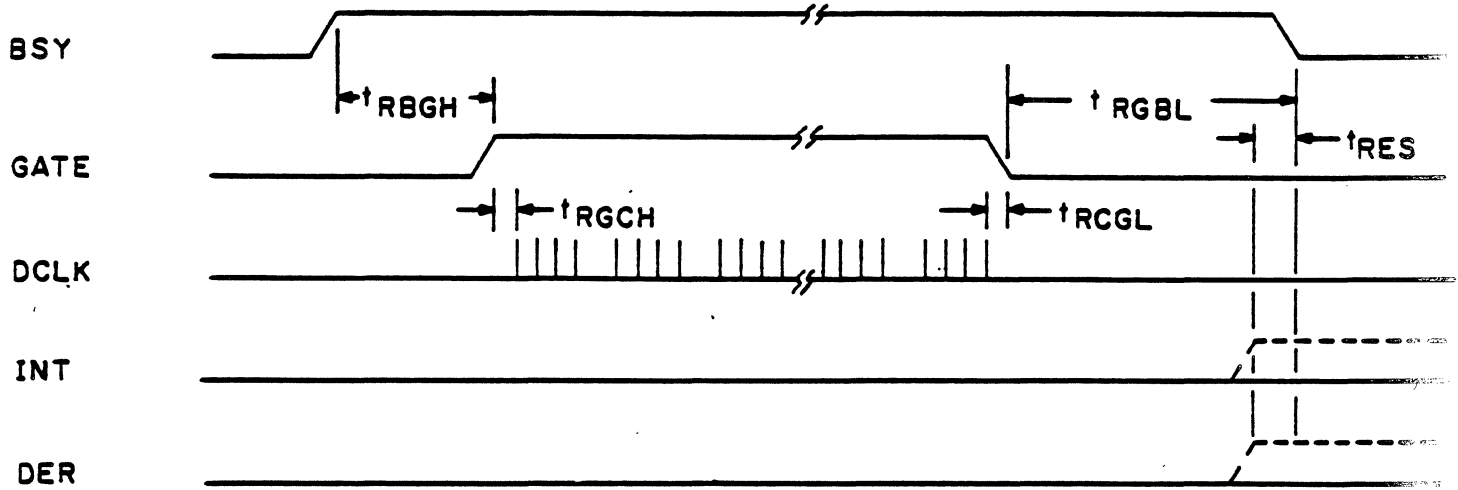
NOTE 1: GATE MAY BE ASSERTED CONCURRENT WITH WRITE GATE.

WRITE DATA



PARAMETER	CONDITION	MIN.	MAX.	UNIT
$t_{RS}$		350		ns
$t_{RH}$		750		ns
$t_{RCA}$		1.56	2.12	$\mu$ s
$t_{DC}$		390	530	ns
$t_{RCB}$	Between nibyls during resync	3.12 78	4.24 106	$\mu$ s $\mu$ s

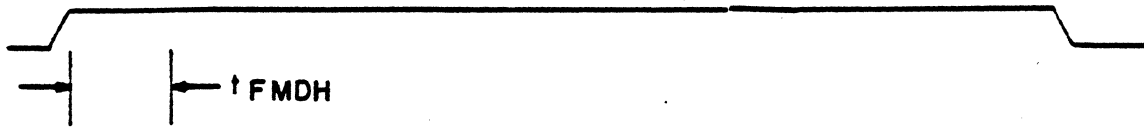
BYTE TRANSFER - READ TIMING



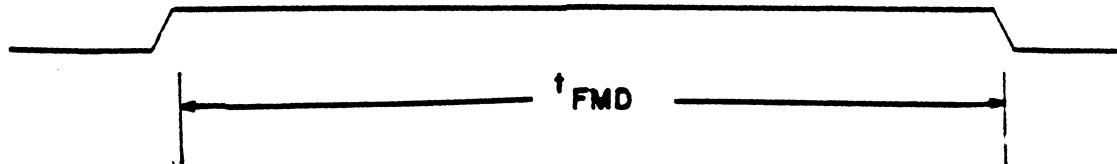
PARAMETER	CONDITION	MIN.	MAX.	UNIT
$t_{RBGH}$	From Stop	.25	70	MS
	Streaming Min. Gap	.25	12	MS
	End Of Track	.25	1000	MS
$t_{RGBL}$	No Read Error	1.5	3.0	MS
$t_{RES}$		0		$\mu$ s
$t_{RGCH}$		800	1000	ns
$t_{RGCL}$			50 $\mu$ s	$\mu$ s

READ DATA

BSY

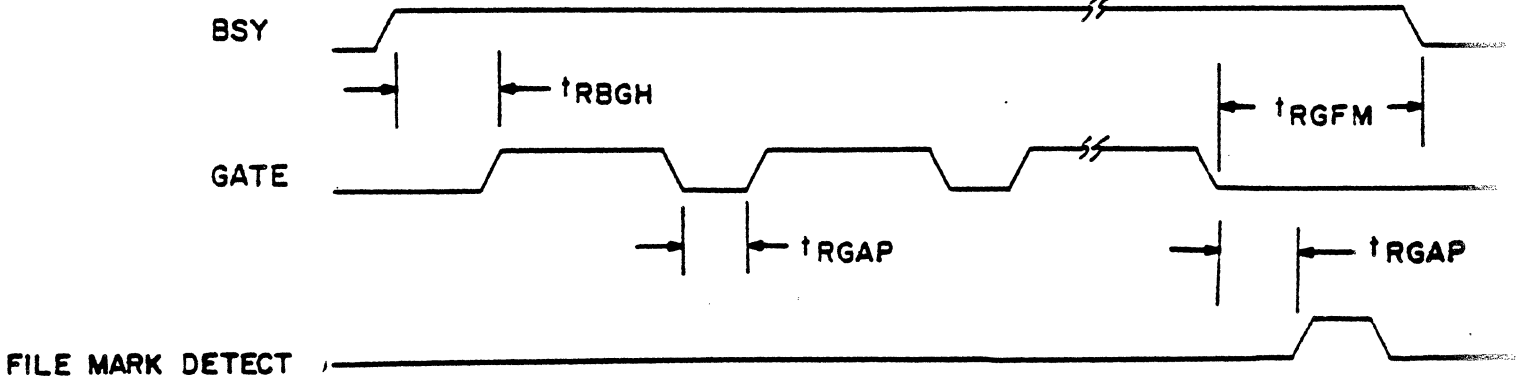


LE MARK DETECT



PARAMETER	CONDITION	MIN.	MAX.	UNIT
$t_{FMDH}$	From Stop	.25	70	MS
	Streaming Min. Gap	.25	12	MS
	End Of Track	.25	1000	MS
$t_{FMDL}$		535	550	US
$t_{FMD}$		6.3	7.7	MS

FILE MARK DETECT



PARAMETER	CONDITION	MIN.	MAX.	UNIT
$t_{RBGH}$	From Rest		70 ms	ms
	Streaming		12 ms	ms
	Minimum gap		1 sec.	seconds
$t_{RGFM}$	End of track		1 sec.	seconds
		16	20	ms
$t_{RGAP}$	Minimum gap	9 ms		

SEARCH FILE / READ FILE

SENTINEL INTEGRATION UTILIZING  
PURCHASED CONTROLLERS

General

1. Consult power supply vendor list for power supply procurement.
2. Purchase or fabricate proper cabling.

LSI-11

1. Consult controller house vendor list for controller.
2. Purchase or fabricate proper cabling.
3. Connect and operate with DEC Standard software per instructions from controller house.

SASI

1. Consult controller house vendor list for controller.
2. Purchase or fabricate proper cabling.
3. Design or purchase SASI adapter to link SCSI bus to Host bus.
4. Write or purchase device software handlers using protocol outlined in controller house specification.

CONTROLLER VENDORS

Single Controllers

Sentinel to LSI-II (DEC Standard Software)

Alloy Engineering  
Computer Products Division  
12 Mercer Road  
Natick, Mass. 01760  
(617) 655-3900  
Model # LSI50

CONTACT: Nigel Spicer

Sentinel to SASI

ICC  
3001 Red Hill Avenue  
Costa Mesa, CA 92626  
(714) 557-5292  
Model # 8033

CONTACT: Paul Peterson/Jim Stephens/Bob Colter

Dual Controllers

Sentinel/Finch/SA1000 to SASI

- OMTI  
2165 S. Bascom  
Campbell, CA 95008  
(408) 377-1521  
Model # 10H

CONTACT: Dick Gunderson

ICC  
3001 Red Hill Avenue  
Costa Mesa, CA 92626  
(714) 557-5292  
Model # 8035

Sentinel/Finch to SASI

DTC  
2775 Northwestern Parkway  
Santa Clara, CA 95051  
(408) 496-0434  
Model # 620

CONTACT: Mike Kirby

CONTROLLER VENDORS

Dual Controllers

Sentinel/Finch to LSI II (DEC Standard Software)

System Support Services  
57 Woodham Lane  
New Haw, Weybridge  
Surrey KT15 3ND  
U.K.  
44 932 - 55932 from U.S.

CONTACT: Ralph Warren