

## RZ Series Disk Drive

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### Installation Guide

**Model RZ35**

**Model RZ26**

**Model RZ27**

**Model RZ28**

Order Number: EK-DRZ01-IG. B01

**July, 1993**

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## 1 Introduction

This installation guide contains the information you need to configure and install the Digital Storage Products SCSI disk drives, models RZ35, RZ26, RZ27, and RZ28.

The RZ35 disk drive is a 3.5 inch model with a formatted capacity of 852 megabytes, and a single-ended SCSI-2 interface.

The RZ26 disk drive is a 3.5 inch model with a formatted capacity of 1,050 megabytes and a single-ended (S) SCSI-2 interface.

The RZ27 disk drive is a 3.5 inch model with a formatted capacity of 1.6 gigabytes and a single-ended (S) SCSI-2 interface.

The RZ28 disk drive is a 3.5 inch model with a formatted capacity of 2.1 gigabytes and a single-ended (S) SCSI-2 interface.

Be sure to read this installation guide thoroughly (including all caution and warning notes) before unpacking or handling the drive, or attempting installation.

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### CAUTION

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Handle the disk drive with care. Observe antistatic precautions. Static electricity can damage integrated circuits. Always use a properly grounded wrist strap and antistatic pad when removing the disk drive from its antistatic bag and handling it outside the bag.

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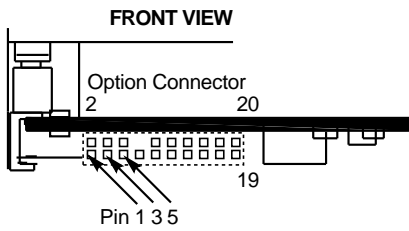
## **2 SCSI Address and Options Selections**

The RZ series disk drives have option connectors for setting the SCSI address and various operating options. These operating options are described in the following sections. The connector is normally used in conjunction with jumpers which are supplied. The jumpers are placed in the connector to select the desired SCSI address and operating options.

The connector and various jumper placements are shown in the figures that follow.

### SCSI Bus Address Selection

Three pairs of pins on the option connector set the disk drive's address on the SCSI bus. The drive accepts addresses 0 through 7. You must assign a unique address to each device on a SCSI bus. Typically, the first drive on the bus is assigned address 0, the second drive address 1, and so on. SCSI address 7 is usually reserved for the host adapter.



ID JUMPER SETTINGS			
SCSI ID	Pins 1,2	3,4	5,6
0	□	□	□
1	■	□	□
2	□	■	□
3	■	■	□
4	□	□	■
5	■	□	■
6	□	■	■
7	■	■	■

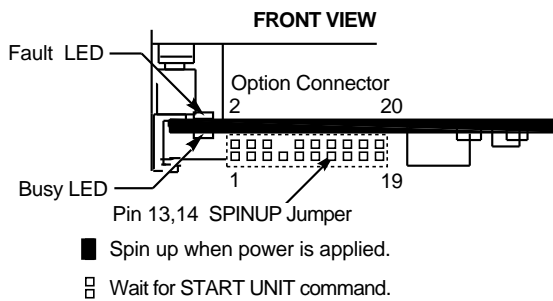
### Spin Up Option Selection

The disk drive spins up when you install a jumper across pins 13 and 14 of the option connector and apply power. Without the jumper, the drive waits for a **START STOP UNIT** command before spinning up.

The disk drive spins down when power is removed, when a fault condition is detected, or in response to the **START STOP UNIT** command.

### LED Indicators

The disk drive has two surface-mounted LED indicators: Busy (BSY) which is green and Fault (FLT) which is amber.



The BSY LED indicates that the drive is working on a SCSI command. It is not equivalent to the SCSI BSY signal. The FLT LED indicates a drive fault condition.

It is normal for both LEDs to light briefly upon application of power.



### **Spindle Synchronization**

Use Pin 19 of the option connector to connect the drive for optional synchronized spindle operation. The drive operates either as a Master, generating a reference signal on Pin 19, or as a Slave, receiving a reference signal on Pin 19 from another drive or other source. Master or Slave operation modes are set through the SCSI interface.





The drive always maintains local speed regulation when no reference signal is applied.

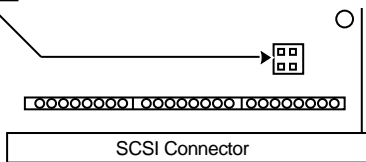
Refer to the technical manual for more detail.

### 3 SCSI Bus Termination

The RZ35/26 disk drive provides termination power to its own terminator resistor packs (if installed) and/or to the SCSI bus. Alternatively, the drive's terminator resistor packs can be powered from the SCSI bus. The figure below shows the proper jumper arrangements for each terminator power configuration. In all cases, the drive's terminator resistor packs are to be installed **ONLY** if the drive is at the end of the SCSI bus.

BOTTOM VIEW

-  Drive provides termination power to the drive's terminator resistor packs (if installed).
-  SCSI bus provides termination power to the drive's terminator resistor packs (if installed).
-  Drive provides termination power to the drive's terminator resistor packs (if installed) and to SCSI bus.
-  No drive power provided to SCSI TERMPWR.  
No power to drive terminator resistor packs.  
**Resistor packs must be removed.**



(Single-Ended only)

The following figure shows the proper placement of the terminator resistor packs on the RZ35/26 drive model.

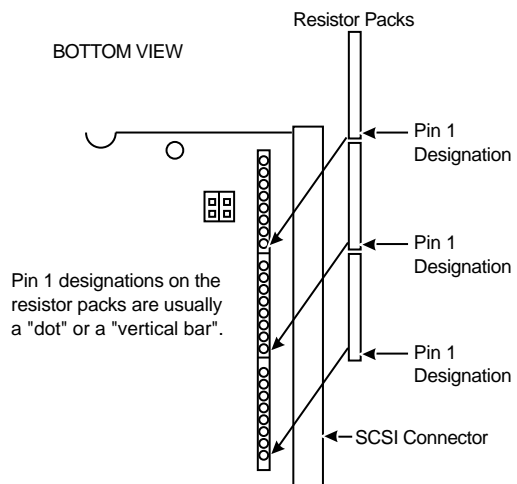
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**NOTE**

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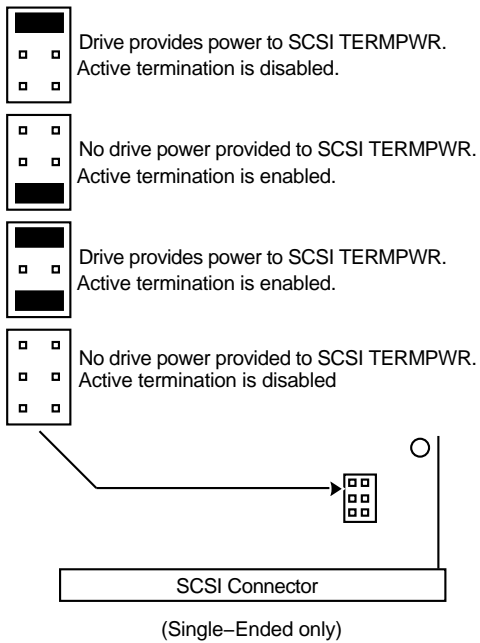
S (single-ended) units use 8-pin packs.

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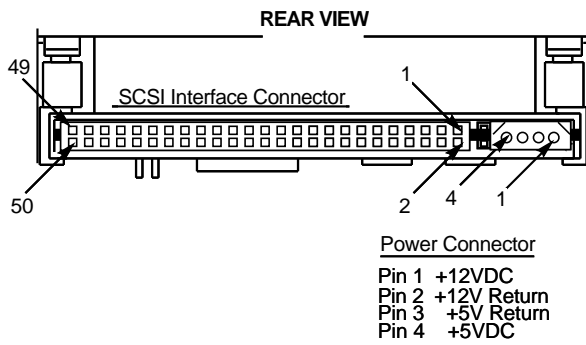
For the RZ27/28 drives, the installation of the TERMPWR jumper causes the drive to supply termination power to the SCSI bus. Installing the terminator ENABLE jumper actuates the on-board active termination circuits. The figure that follows shows the proper jumper arrangements for each terminator power configuration.

BOTTOM VIEW



## 4 Power Connections and Requirements

Each disk drive requires +5 and +12 volt DC which is supplied from an external source by means of the 4-pin power connector of the drive.



The following table provides the disk drive voltage regulation specifications.

Specification	Voltage	Tolerance
Voltage & Regulation	+5Vdc	+/- 5%
	+12Vdc	+/- 5% (+/- 6% during spin-up)
Ripple & Noise	+5Vdc	<75mv p-p
	+12Vdc	<200mv p-p
RZ28		<150mv p-p

The following table provides the disk drive current and power specifications.

Specification	RZ35/26	RZ27	RZ28
	Typical/Maximum		
+5Vdc Current	.71/.85A	.78/.86A	.91/1.05A
+12Vdc Current			
Spin-up	2.29/2.55A	2.65/2.89A	2.58 /2.75A
Idle	.64/.74A	.63/.69A	.45/53A
Random seeks (1-block reads)	.85/.96A	.91/.96A	.72/.75A
Total Power			
Idle	11.23 /13.79W	11.46 /13.21W	9.95 /12.19W
Random seeks (1-block reads)	13.75 /16.56W	14.82 /16.61W	13.19 /14.96W

**Note**

Maximum values above include 5% high supply voltage.

## 5 Mounting the Disk Drive

You can mount the disk drive in any position. Allow 0.050 inches of clearance from adjacent surfaces and sufficient slack in all cables, to provide drive motion on its shock mounts relative to the drive frame.

The drive is mounted with four 6-32 screws.

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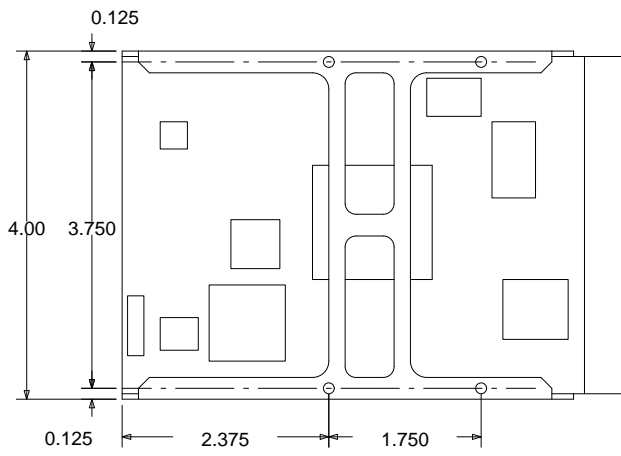
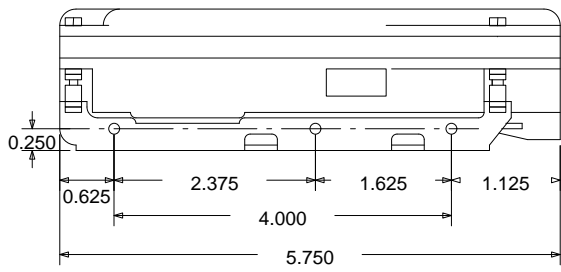
### CAUTION

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The mounting screws should not protrude more than four threads beyond the inside surface of the drive frame. Screws longer than specified can disable the shock mounting process and damage the drive.

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## 6 Summary of Specifications

The following two tables provide the disk drive functional specifications.

<b>Specification</b>	<b>RZ35</b>	<b>RZ26</b>	<b>RZ27</b>	<b>RZ28</b>
Interface	SCSI-2	SCSI-2	SCSI-2	SCSI-2
Formatted storage (Mbytes)	852	1050	1600	2100
Average seek time	9.5 ms	9.5 ms	9.7 ms	9.7 ms
Maximum bits per inch	56,000	56,000	54,100	64,000
Tracks per inch	2,756	2,756	2,756	3,215
Tracks per surface	2,086	2,570	2,599	3,062
Surfaces per drive	14	14	16	16
Sector Capacity (Bytes)	512-520	512-520	512-520	512-520
Transfer rate (Mbytes/s to/from media)	2.6	2.6	2.44-6.25	3.4-6.9
Normal mode synchronous bus transfer rate (Mbytes/s)	5.0	5.0	5.0	5.0
Fast mode synchronous bus transfer rate (Mbytes/s)	10.0	10.0	10.0	10.0
Rotational speed (RPM)	5,363	5,363	5,403	5,403

The following table provides the RZ35, RZ26, RZ27, and RZ28 disk drive environmental specifications.

<b>Specification</b>	<b>Value</b>
Operating temperature	10C to 50C (50F to 122F)
RZ27/28	5C to 55C (41F to 131F)
Nonoperating temperature	-40C to 66C (-104F to 151F)
Relative humidity (Operating)	10% to 90% with maximum wet bulb temperature of 25.6C (78F) and a minimum dew point of 2C (36F), with no condensation
Relative humidity (Nonoperating)	8% to 95%
Altitude operating	2,438m (8,000 ft)
RZ28	3,048m (10,000 ft)
Altitude nonoperating	4,876m (16,000 ft)

**Single-Ended SCSI 50-Pin Connector Pin Assignments**

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
2	-DB (0)	16	-DB (7)	30	GROUND	42	-MSG
4	-DB (1)	18	-DB (P)	32	-ATN	44	-SEL
6	-DB (2)	20	GROUND	34	GROUND	46	-C/D
8	-DB (3)	22	GROUND	36	-BSY	48	-REQ
10	-DB (4)	24	RESERVED	38	-ACK	50	-I/O
12	-DB (5)	26	TERMPWR	40	-RST		
14	-DB (6)	28	RESERVED				

Notes:  
 1. All odd numbered pins (except pins 23,25,27) must be connected to ground.  
 2. Pin 25 should be left open.  
 3. Pin 26 (SCSI\_TERMPWR) is reserved for terminator resistor power source.  
 4. The minus sign indicates an active low signal..