PARALAN®

USER'S MANUAL

SRD Series
SCSI Replacement Drives

LIMITED WARRANTY

Paralan Corporation (Paralan) warrants this product (Product) to be free of defects in material and workmanship for an initial period of two (2) years from date of delivery to the original purchaser (Purchaser) from Paralan.

Repair or Replacement. Paralan's obligation under this warranty is limited to replacing or repairing, at its option and at its facilities, any of the Products (except expendable parts thereof) that within the warranty period are returned to Paralan and that are found by Paralan to be defective in proper usage. Repair parts and replacement Products will be either new or reconditioned, at Paralan's sole discretion and furnished on an exchange basis with any replaced parts or Products becoming the property of Paralan. In the event that Paralan determines, in its sole discretion, that the returned Product is not defective, Purchaser shall pay a testing and handling fee of seventy-five US Dollars ($75.00) per unit tested. Products returned must be delivered to Paralan's facility, or to an authorized Paralan service representative, with all included parts and accessories as originally shipped, along with proof of purchase and a Return Merchandise Authorization (RMA) number. The RMA number is obtained, in advance of shipment, from Paralan's Customer Service Department and is valid for thirty (30) days. Purchaser will be responsible and liable for any missing or damaged parts.

Non-Paralan Products or Parts. Paralan is not liable for any defects in material or workmanship of any products or parts which Paralan does not design or manufacture, including but not limited to power supplies and cables. However, Paralan will honor the original manufacturer's warranty for these products or parts. In the event that Paralan determines that any defect is not related to a Paralan manufactured Product, at Purchaser's request Paralan shall repair or replace the defective parts at Purchaser's cost and deliver the defective parts to Purchaser.

Abuse or Misuse. This limited warranty shall not apply if the Product has been misused, carelessly handled, defaced, modified or altered, or if unauthorized repairs have been attempted by others. Any such damage shall not be considered a defect.

Costs of Shipping. In order to obtain warranty service, the Product must be delivered to Paralan's facility, or to an authorized Paralan service representative. The RMA number must be clearly marked on the exterior of the original shipping container or equivalent. Purchaser agrees to pre-pay shipping charges one way, and to either insure the Product or assume the liability for loss or damage during transit. In the event that Paralan determines that a Paralan Product is defective, Paralan will pre-pay transportation charges back to Purchaser.

Limitation of Implied Warranties . THE FOREGOING WARRANTIES ARE IN LIEU OF ALL WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND OF ANY OTHER OBLIGATION ON THE PART OF PARALAN.

LIMITATION OF LIABILITY. PARALAN SHALL NOT BE LIABLE TO PURCHASER, TO ITS CUSTOMERS OR TO ANY OTHER PERSON FOR ANY INJURY OR DAMAGE TO PERSONS OR PROPERTY, OR FOR ANY LOSS OF OR INJURY TO BUSINESS, EARNINGS, PROFITS OR GOODWILL SUFFERED BY ANY PERSON, INCLUDING PURCHASER AND ITS CUSTOMERS, CAUSED DIRECTLY OR INDIRECTLY BY THE PRODUCTS SOLD PURSUANT TO THIS AGREEMENT; AND IN NO EVENT SHALL PARALAN BE LIABLE FOR ANY INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES SUFFERED BY PURCHASER, ITS CUSTOMERS OR ANY OTHER PARTY, WHETHER SUCH LIABILITY ARISES FROM A CLAIM BASED ON CONTRACT, WARRANTY, TORT OR OTHERWISE, EVEN IF PARALAN SHALL HAVE BEEN ADVISED OF THE POSSIBILITY OF THE SAME. ANY PROVISION HEREIN TO THE CON-TRARY NOTWITHSTANDING, IN NO EVENT SHALL PARALAN'S LIABILITY EXCEED THE ACTUAL AMOUNT PAID BY PURCHASER TO PARALAN FOR SUCH PRODUCTS.

Ship to: Paralan Corp. 4655 Ruffner Street San Diego, CA 92111

USER'S MANUAL FOR PARALAN'S SRD SERIES DRIVES

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

For continued compliance, SRD-xxx customers are responsible for ensuring compliance with their enclosure.

USER'S MANUAL FOR PARALAN'S SRD SERIES DRIVES

PARALAN CORPORATION

4655 Ruffner Street
San Diego, CA. 92111
TEL: (858)560-7266
FAX: (858)560-8929
E-MAIL: scsi@paralan.com
Copyright 2010 Paralan Corporation
All Rights Reserved

PRINTED IN THE UNITED STATES OF AMERICA

NOTICE:

USER'S MANUAL FOR PARALAN'S SRD SERIES DRIVES

TABLE OF CONTENTS

USER'S MANUAL FOR PARALAN'S SRD SERIES DRIVES

1. INTRODUCTION

Paralan's SRD-xxx Narrow SCSI Replacement Drive uses an industry standard state of the art 2.5" SATA drive and converts it into a 3.5" Narrow Single Ended SCSI drive. As SCSI drives become hard to get and grow in expense, Paralan's SCSI Replacement Drive will still be readily available at a reasonable price. Replace your old and or failing SCSI drives with Paralan's SCSI Replacement Drives. Use the best that SATA has to offer for your SCSI storage. SCSI may be old, but your storage will be new.

1.1 DEFINITIONS

SRD-xxx: The xxx is the unformated capacity of the hard drive installed.

1.2 DESCRIPTION

Paralan Model SRD-xxx Narrow SCSI Replacement drives use an industry state of the art 2.5" SATA drive and converts it to a 3.5" Narrow Single Ended SCSI Drive.

Complete specifications and a product overview are available under "Support" on the Paralan website:

http://www.paralan.com/support.html

Rear view of the drive

4

2. HANDLING AND STATIC-DISCHARGE PRECAUTIONS

After unpacking, and before installation, the drive may be exposed to potential handling and electrostatic discharge (ESD) hazards. Observe the following standard handling and static-discharge precautions:

Caution:

Keep the drive in the electrostatic discharge bag (ESD) until you are ready for installation to limit the drive's exposure to ESD.

Before handling the drive, put on a grounded wrist strap, or ground yourself frequently by touching the metal chassis of a computer that is plugged into a grounded outlet. Wear a grounded wrist strap throughout the entire installation procedure.

Handle the drive only by its edges or frame.

The drive is fragile--handle it with care. Do not press down on the drive top cover.

Always rest the drive on padded, antistatic surface until you mount it in the computer.

Do not touch the connector pins or the printed circuit board.

Do not remove the factory installed labels from the drive or cover them with additional labels. Removal voids the warranty. Some factory installed labels contain information needed to service the drive. Other lables are used to seal out dirt and contamination.

3. SPECIFICATIONS

INTERNAL DRIVE
　　　Supports 2.5" SATA I and SATA II HDDs

ENVIRONMENTAL:

Rel. Humidity	0 - 95% non-cond.
Oper. Temperature	0 - 50 degrees C
Storage Temperature	-25 - +75 degrees C

AGENCY APPROVALS:
　　　UL, CSA, TUV/VDE, CE

EMI/RFI
　　　MEETS FCC Class A, CE

SRD-xxx PHYSICAL DIMENSIONS:

Depth	5.7 in. (146 mm)
Width	4 in. (101 mm)
Height	1 in. (25 mm)

CONNECTIONS:

SRD-xxx	SCSI-2 50-pin non-shielded, low-density, SCSI device connector (A-Cable)

COMMUNICATION:

SRD-xxx Parallel Trans.	Limited by device transmission rates and cable lengths. Can transmit and accept 20 MBYTE/SEC SCSI signals.
Protocols	ANSI X3T10 SCSI Standards Committee SCSI-2 specifications.

SHIPPING WEIGHT	3 lbs
UNIT WEIGHT	0.75lbs

4. SCSI CONNECTOR

4.1 SRD SCSI CONNECTOR PINOUTS

The following is the SRD-xxx 50 pin non-shielded low-density SCSI device connector from SCSI-2 (A-Cable):

SINGLE ENDED					
Pin	Signal		Pin	Signal	
1	GROUND		2	-DB0	
3	GROUND		4	-DB1	
5	GROUND		6	-DB2	
7	GROUND		8	-DB3	
9	GROUND		10	-DB4	
11	GROUND		12	-DB5	
13	GROUND		14	-DB6	
15	GROUND		16	-DB7	
17	GROUND		18	-PARITY	
19	GROUND		20	GROUND	
21	GROUND		22	GROUND	
23	RESERVED		24	RESERVED	
25	OPEN		26	TERMPWR	
27	RESERVED		28	RESERVED	
29	GROUND		30	GROUND	
31	GROUND		32	-ATN	
33	GROUND		34	GROUND	
35	GROUND		36	-BSY	
37	GROUND		38	-ACK	
39	GROUND		40	-RST	
41	GROUND		42	-MSG	
43	GROUND		44	-SEL	
45	GROUND		46	-C/D	
47	GROUND		48	-REQ	
49	GROUND		50	-I/O	

NOTE: The single ended connector's odd pins are ground except for pin 25 which is left open, with pin 23 and pin 27 Reserved. Many SCSI-2 devices have the Reserved pins grounded.

5. SRD-xxx SCSI Command Set Actions

The SRD-xxx supports the standard SCSI command set for narrow single ended SCSI drives. Some of the commands are passed to the SATA drive to handle, while others are handled by the SRD-xxx firmware and hardware. The following table is a list of the SCSI commands and how the SRD-xxx handles them.

Command	Op Code	SATA Action	Remarks
Test Unit Ready	00h	N	Returns check conditon after reset
Rezero	01h	N	Always retuns status good
Request Sense	03h	N	
Format Unit	04h	Y	Writes 0x00 to first 524,288 blocks
Reassign Blocks	07h	N	
Read(6)	08h	Y	
Write(6)	0Ah	Y	
Seek(6)	0Bh	Y	Sends "seek 70h" to HDD
Inquiry	12h	Y	Sends "Identify ECh" to HDD for information
Inquiry (EVPD=1,Page=83h)	12h	N	Responds withe the SRD bridge Info.
Inquiry (EVPD=1,Page=80h)	12h	Y	Sends "Identify ECh" to the HDD, get serial number
Mode Select(6)	15h	Y	
Reserve	16h	N	
Release	17h	N	
Mode Sense(6)	1Ah	Y	
Start/Stop Unit	1Bh	Y	
Send Diagnostic	1Dh	N	Always retuns status good
Prevent/Allow Medium Removas	1Eh	N	Alwasy returns status good
Read Capacity	25h	Y	Sends "Identify device ECh" to the HDD, gets capacity
Read(10)	28h	Y	
Write(10)	2Ah	Y	
Seek(10)	2Bh	Y	Sends "seek 70h" to HDD
Write and Verify	2Eh	Y	
Verify	2Fh	Y	Sends "Read and Verify" to HDD
Synchronize Cache	35h	Y	Sends "Flush cache Eyh/EAh" to HDD
Read Defect Data	37h	N	
Write Buffer	3Bh	N	
Write Buffer (CDB1=0x11)	3Bh	N	
Write Buffer (CDB1=0x17)	3Bh	N	
Read Buffer	3Ch	N	
Read Buffer (CDB1-0x17	3Ch	N	
Mode Sense(10)	5Ah	Y	
Report LUNs	A0h	N	

6. TROUBLE SHOOTING

The SRD-xxx series SCSI Replacement Drives are factory set for ID0, with the internal SCSI terminator ON and powered internally. If the SRD-xxx is to be connected to the middle of the SCSI bus then the termination enable jumper must be removed.

6.1 LVD SCSI CONTROLLERS

When using LVD capable SCSI controller cards like the Adaptec AHA-29320 series, if the SRD-xxx is not recognized by the system, please check the SCSI controller card settings. In most cases, LVD controller cards will change their settings to accommodate narrow SCSI devices on the bus, but there are some features that LVD has that may affect operations which may need to be turned off. Turn off packet communications, and in some cases turn off domain validation. Also LVD is able to operate over longer SCSI cable lengths. When a SRD-xxx is used with a LVD SCSI controller, make sure to limit the cable lenth to under 20 feet if operating Asynchronously, or 9 feet if running faster than Asynchronous. Contact Paralan Corporation if there are still problems.

6.2 SCSI CABLES

Verify that the total length used on the SCSI segment that has the SRD-xxx is no longer than 9 feet if the SCSI communications is set for faster then Asynchronous. Some early models of Spark workstations should not have the cable segment longer than 5 feet. Contact Paralan Corporation if there are any questions or if there is a need for SCSI cables in your system.

Paralan Corporation
4655 Ruffner Street
San Diego, CA 92111
(858) 560-7266 Fax: (858) 560-8929
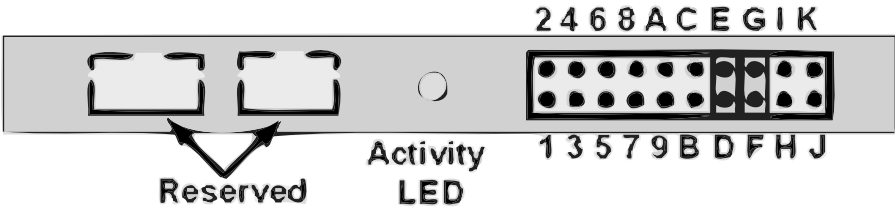www.paralan.com e-mail: scsi@paralan.com

7. EXAMPLE LABLE AS USED ON THE SRD-250

PARALAN SCSI Replacement Drive
250 Gigabytes

SRD-250-0001 | Using Seagate Momentus Series SATA

Factory Settings:
SCSI ID = 0 (pins 1 - 6 open)
Delay Start = OFF (pins 7 - 8 open)
Write Protect = OFF (pins 9 - A open)
Parity = ON (pins B - C open)
Terminator = ON (pins D - E Connected)
Term Powered = Internally (pins F - G Connected)
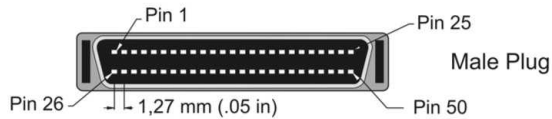HDD+ LED Connect: H=GND, I=+ Output
HDD- LED Connect: J=GND, K=- Output

2 4 6 8 A C E G I K

1 3 5 7 9 B D F H J
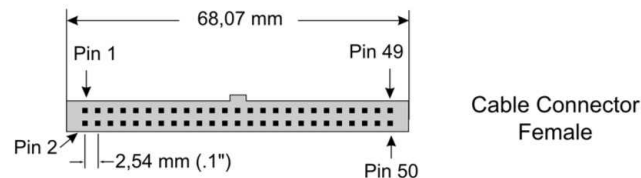
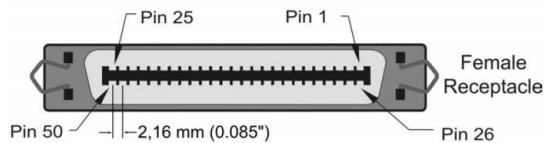Reserved   Activity LED

Assembled and Tested in the USA
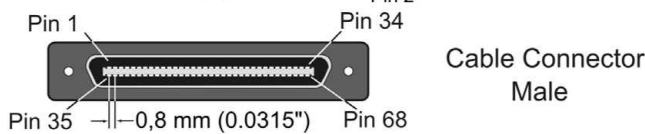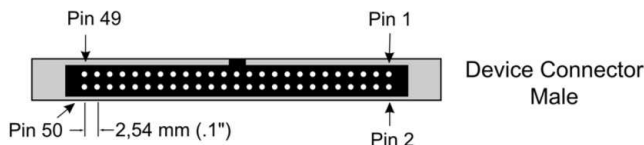
SN:

CE FC

Warranty void if any labels are broken or removed

Pin 1   Pin 25

Male Plug

Pin 26 — ⌐ 1,27 mm (.05 in)   Pin 50

Pin 25   Pin 1

Female
Receptacle

Pin 50 — ⌐ 1,27 mm (.05 in)   Pin 26

50 contact alternative 1
nonshielded connector (A cable)

Pin 1   Pin 25

Male Plug

Pin 26 — ⌐ 2,16 mm (0.085")   Pin 50
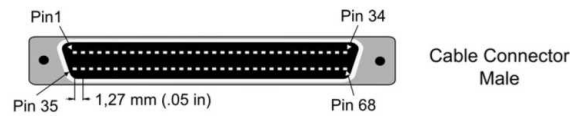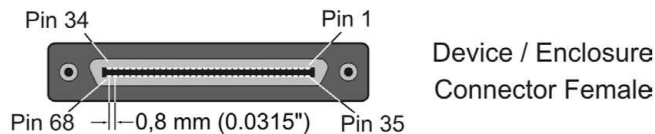
Pin 25   Pin 1

Female
Receptacle

Pin 50 — ⌐ 2,16 mm (0.085")   Pin 26
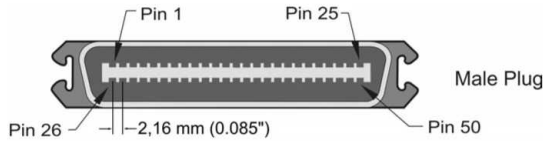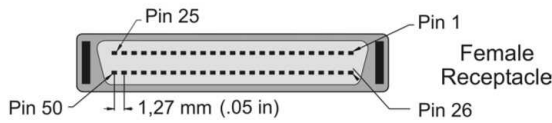
50 contact alternative 2
shielded connector (A cable)

68,07 mm

Pin 1   Pin 49

Cable Connector
Female

Pin 2 — ⌐ 2,54 mm (.1")   Pin 50

Pin 49   Pin 1

Device Connector
Male

Pin 50 — ⌐ 2,54 mm (.1")   Pin 2
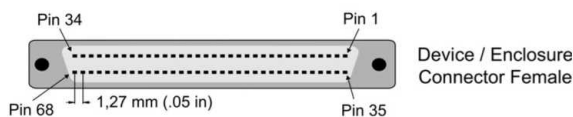
50 contact alternative 2
nonshielded connector (A cable)

Pin 1   Pin 34

Cable Connector
Male

Pin 35 — 0,8 mm (0.0315")   Pin 68

Pin 34   Pin 1

Device / Enclosure
Connector Female

Pin 68 — 0,8 mm (0.0315")   Pin 35

68 contact alternative 4
shielded connector (P cable)

Pin1   Pin 34

Cable Connector
Male

Pin 35 — 1,27 mm (.05 in)   Pin 68

Pin 34   Pin 1

Device / Enclosure
Connector Female

Pin 68 — 1,27 mm (.05 in)   Pin 35

68 contact alternative 3
nonshielded connector (P cable)

Pin 1   Pin 40

Backplane Connector

Pin 41   Pin 80

Pin 40   Pin 1

Device Connector

Pin 80   Pin 41
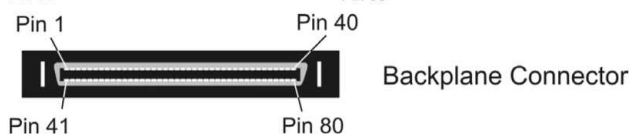
80 contact alternative 4
nonshielded connector (P cable)
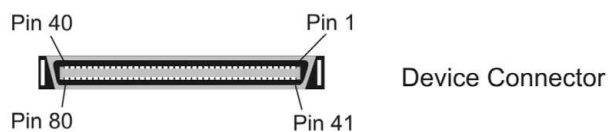
4655 Ruffner Street
San Diego, CA 92111
(858) 560-7266 Fax: (858) 560-8929
www.paralan.com   e-mail: scsi@paralan.com

PARALAN™