$\mathcal{SS}$ Seagate

. . . .

Barracuda 9FC

. . . .

Fibre Channel

. . . .

Disc Drive

. . . .

ST19171FC

. . . .

Installation Guide

. . . .

Contents

Preface

This manual contains information for users of the Seagate ST19171FC (Fibre Channel interface) Barracuda disc drives. It provides technical support information, performance specifications, installation instructions, and a troubleshooting section. Additional information is available in the Barracuda 9FC Product Manual (part number 83329100). Contact your Seagate sales representative if you need to order this publication.

Electrostatic discharge protection

Caution. Removal of circuit boards by personnel not performing depot repair will damage components and may void the warranty.

All drive electronic assemblies are sensitive to static electricity, due to the electrostatically sensitive devices used within the drive circuitry. Although some devices such as metal-oxide semiconductors are extremely sensitive, all semiconductors, as well as some resistors and capacitors, may be damaged or degraded by exposure to static electricity.

Electrostatic damage to electronic devices may be caused by the direct discharge of a charged conductor or by exposure to the static fields surrounding charged objects. To avoid damaging drive electronic assemblies, observe the following precautions when installing or servicing the drive:

• Ground yourself to the drive whenever the drive electronics are or will be exposed. Connect yourself to ground with a wrist strap (Seagate part number 12263496). Connection may be made to

any grounded metal assembly. As a general rule, remember that you and the drive electronics must all be grounded to avoid potentially damaging static discharges.

- Do not remove any circuit boards from the drive.
- Never use an ohmmeter on any circuit boards.
- When installing the drive on a carrier or tray, discharge the static electricity from the carrier or tray prior to inserting it into the system.

Important safety information and precautions

Caution. Use forced-air ventilation when bench-testing the drive to ensure proper cooling of drive components.

Use proper safety and repair techniques for safe, reliable operation of this unit. Service should be done only by qualified persons.

This manual and labels on the unit may contain warnings and cautions that must be carefully read and followed to minimize or eliminate the risk of personal injury. The warnings point out conditions or practices that may endanger you or others. The cautions point out conditions or practices that may damage the unit, possibly making it unsafe for use.

These warnings and cautions are not exhaustive. We cannot possibly know, evaluate, and advise you of all the ways in which maintenance might be performed or the possible risk of each technique. Consequently, we have not completed any such broad evaluation. If you use a non-approved procedure or tool, first ensure that the method you choose will not risk either your safety or unit performance.

Always observe the following warnings and precautions:

• Perform all maintenance by following the procedures in this manual.

• Follow all cautions and warnings in the procedures.

• Use sound safety practices when operating or repairing the unit.

• Use caution when troubleshooting a unit that has voltages present. Turn off power to the unit before servicing it.

• Ensure that the internal temperature of the rack or cabinet does not exceed the limits defined for the drive when the drive is mounted in an equipment rack or cabinet. When units are stacked vertically, pay special attention to the top where temperatures are usually highest.

• Follow the precautions listed above in "Electrostatic discharge protection."

• Do not remove any circuit boards from the drive chassis. Return the entire drive for depot repair if any circuit board is defective. Removal of circuit boards by personnel not performing depot repair will damage components and may void the warranty.

As a component, the drive is designed to be installed and operated in accordance with UL1950, IEC950, CSA C22.2 950-M89, VDE0805 and EN60950.

Seagate takes all reasonable steps to ensure that its products are certifiable to currently accepted standards.

Typical applications of these disc drives include customer packaging and subsystem design. Safety agencies conditionally certify component assemblies, such as the Barracuda disc drive, based on their final acceptability in the end-use product. The

subsystem designers are responsible for meeting these conditions of acceptability in obtaining safety-regulatory agency compliance in their end-use products and for certifying where required by law. A necessary part of meeting safety requirements is the provision for overcurrent protection on drive SELV supply voltages.

This unit is a component part and as such is not meant to comply with FCC or similar national requirements as a stand-alone unit. Engineering radiated emissions test results are available through the Seagate Safety Department to assist the subsystem designer.

Wichtige Sicherheitshinweise

Vorsicht. Beim Testen des Laufwerks auf dem Prüftisch ist Fremdbelüftung vorzusehen, um eine ausreichende Kühlung der Laufwerkkomponenten sicherzustellen.

Verwenden Sie geeignete Sicherheits- und Reparaturverfahren, um den sicheren, zuverlässigen Betrieb dieser Einheit zu gewährleisten. Reparaturen dürfen nur von qualifiziertem Fachpersonal vorgenommen werden.

Die Verfahren in diesem Handbuch und die Aufkleber auf dem Gerät enthalten Warn- und Vorsichtshinweise. Diese Hinweise sind sorgfältig durchzulesen und zu beachten, um das Risiko von Verletzungen auf ein Mindestmaß zu beschränken oder ganz zu vermeiden. Die Warnhinweise machen auf Situationen oder Praktiken aufmerksam, die Sie oder andere gefährden könnten. Die Vorsichtshinweise machen auf Situationen oder Praktiken aufmerksam, die die Einheit beschädigen können, so daß deren Gebrauch mit Risiko behaftet ist.

Die Warn- und Vorsichtshinweise sind nicht allumfassend! Es ist uns einfach nicht möglich, alle Wartungsmethoden oder die eventuellen Risiken jeder Methode zu kennen, zu beurteilen und Sie entsprechend zu beraten. Aus diesem Grund haben wir auf eine derartige umfassende Beurteilung verzichtet. Falls Sie ein hier nicht beschriebenes Verfahren oder Werkzeug verwenden, stellen Sie zuerst sicher, daß das gewählte Verfahren weder Ihre persönliche Sicherheit noch die Leistung der Einheit gefährdet.

Beachten Sie in jedem Fall die folgenden Warn-und Vorsicht-shinweise:

- Führen Sie alle Wartungsarbeiten entsprechend den Anweisungen in diesem Handbuch aus.
- Beachten Sie alle Warn- und Vorsichtshinweise in diesem Handbuch.
- Treffen Sie beim Betrieb oder bei der Reparatur der Einheit angemessene Sicherheitsvorkehrungen.
- Wenn eine Einheit unter Spannung steht, gehen Sie bei der Fehlerdiagnose besonders vorsichtig vor. Schalten Sie die Einheit aus, bevor Sie mit den Reparaturarbeiten beginnen.
- Wenn das Laufwerk in einem Einbaugestell oder Gehäuse montiert ist, sorgen Sie dafür, daß die Temperatur im Inneren des Gestells oder Gehäuses die für das Laufwerk vorgege-benen Grenzwerte nicht übersteigt. Wenn Einheiten vertikal übereinander betestigt werden, achten Sie besonders auf den oberen Stapelbereich, da dort die Temperatur gewöhnlich am höchsten ist.
- Befolgen Sie die oben unter "Electrostatic Discharge Protec-tion" angegebenen Sicherheitsmaßnahmen.

- Nehmen Sie keine Platinen aus dem Laufwerkgehäuse. Wenn eine Platine defekt ist, muß das gesamte Laufwerk zur Reparatur eingeschickt werden. Die Herausnahme von Platinen durch anderePersonen als die für die werkseitige Reparatur zuständigen kann zu einer Beschädigung der Komponenten und Erlöschen des Garantieanspruchs führen.

- Die vormontierte Kopf- und Festplatteneinheit (HDA) nicht aus dem Laufwerkgehäuse nehmen! Falls die HDA beschädigt ist, schicken Sie das gesamte Laufwerk zur Reparatur ein.

- Die HDA ist nicht vor Ort reparierbar und darf nicht auseinandergenommen werden! Öffnen der versiegelten HDA durch andere Personen als die für die werkseitige Reparatur zuständigen hat eine Beschädigung der Komponenten und Erlöschen des Garantieanspruchs zur Folge.

Als Teilkomponente ist dieses Laufwerk für die Installation und den Betrieb in Übereinstimmung mit UL 1950, IEC950, EN60950, CSA C22.2 950 und VDE0805 vorgesehen.

Seagate ist ständig bemüht, die Zulassungsfähigkeit von Seagate-Produkten im Rahmen der gegenwärtig geltenden Standards zu gewährleisten. Zu den typischen Anwendungen dieser Festplattenwerke zählen Systemeinbau durch den Kunden und die Konstruktion von Untersystemen. Sicherheitsbehörden gewähren eine bedingte Zulassung für Komponenten wie das Barracuda-Festplattenlaufwerk vorbehaltlich der endgültigen Zulasssung im Endprodukt. Designer von Untersystemen sind dafür verantwortlich, die Voraussetzungen für die Einhaltung sicherheits- oder aufsichtsbehördlicher Vorschriften in ihren Endprodukten und - falls gesetzlich vorgeschrieben - für die Zulassung zu schaffen. Eine Grundvoraussetzung zur Ein-

haltung der Sicherheitsanforderungen ist die Bereitstellung eines Überlastschutzes für die SELV-Versorgungsspannungen des Laufwerks.

Dieses Gerät ist eine Baugruppe und unterliegt als solche nicht den Anforderungen der FCC oder ähnlicher nationaler Behörden für eigenständige Geräte. Technische Testergebnisse zu elektromagnetische Strahlung sind für Designer von Untersystemen auf Anfrage von der Seagate-Sicherheitsabteilung erhältlich.

Technical support services

Seagate Technology provides technical support literature and diagnostic utilities to authorized distributors. Please contact your dealer for technical support and installation troubleshooting. Product technical support is available for all Seagate products by calling the SeaFAX™, SeaFONE™, SeaTDD™, or Sea-BOARD™ services. These are toll calls if you dial from outside of the number's local dialing area. Seagate also has a forum on CompuServe and an internet site.

SeaFAX: USA 1-800-SEAGATE;
England 44-1-62-847-7080; Australia 61-2-756-5170

Use a touch-tone telephone to access Seagate's automated FAX system and select technical support information by return FAX. This service is available 24 hours a day, 7 days a week.

CompuServe forum

Online support for Seagate products is available on CompuServe. This includes an extensive question and answer message base, downloadable utilities, and documentation files in Adobe™ Acrobat™ format which you can download and view from your own computer. Type "Go Seagate" to access this service.

Internet site: www.seagate.com; ftp.seagate.com

Support services, product information, and much more is provided on this web site.

SeaFONE: 1-800-SEAGATE

Technical support specialists are available from 8:00 A.M. to 5:00 P.M. PST, Monday through Friday. Recorded technical information on selected Seagate products is provided while you

are on hold. Recordings are accessible 24 hours a day, 7 days a week.

SeaTDD: (408) 438-5382

TDD is a telecommunication device for the deaf where two people can communicate using a keyboard connected to the phone line. A TDD device is required to access this service. You can send questions or comments 24 hours a day. One-on-one exchanges with a technical support specialist are available from 8:00 A.M. to 5:00 P.M. PST, Monday through Friday.

SeaBOARD

The Seagate Technical Support Bulletin Board System (BBS) is available 24 hours a day, 7 days a week. A modem is required to access this service. The communications software must be set for eight data bits, no parity, and one stop bit (8N1). These operate at 300 to 9600 baud. With this service you can access:

- Specifications and jumper configurations
- Reprints of documentation
- Utilities that you can download to your own computer

SeaBOARD location	Modem number
USA, Mexico, Latin America	(408) 438-8771
England	44-1-62-847-8011
Germany	49-89-140-9331
Singapore	65-292-6973
Australia	61-2-756-2359
Canada	(416) 856-5581
France	(+33 1) 48-25-35-95
Korea	82-2-556-7294
Thailand	662-531-8111

General description

Barracuda 9FC disc drives are high-speed, random-access digital-data storage devices designed to be used within a Fibre Channel host system.

The drive is a component for installation in an enclosure designed for the drive. The disc drive must receive adequate cooling (refer to "Providing adequate cooling") and it must be sufficiently grounded and shielded from emissions. The Barracuda 9FC Product Manual (part number 83329100) contains guidelines for a properly designed enclosure.
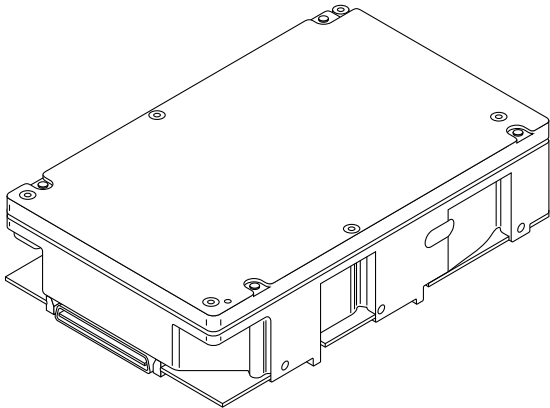

Figure 1.   Barracuda 9FC disc drive

Characteristics	**ST19171FC**	
Interface	Fibre Channel	
Capacity		
Unformatted	11.7 Gbytes	
Formatted	9.1 Gbytes	
Recording		
Cylinders (user)	5,273	
Read/write data heads	20	
Avg bytes/track (unformatted)	102,000	
Seek time		
Average read	8.0 msec	
Average write	9.5 msec	
Disc rotation		
RPM	7,200	
Average latency	4.17 msec	
Data transfer rate		
Maximum instantaneous	106.3 Mbytes/sec.	
DC power requirements ($\pm$5V)[1]	+5V	+12V
Maximum start current	1.185A	2.180A
Maximum operating current	1.289A	1.105A
Average idle current	1.203A	0.896A

---

1. For more detailed power information, refer to the ST19171FC Product Manual, publication number 83329100.

Installing the ST19171FC drive

To install a ST19171FC drive, simply plug the drive directly into your system's Fibre Channel backpanel 40-pin single connector attachment (FC-SCA). There are no jumpers or terminators on the drive, and power is supplied through the connector. Table 1 on page 21 lists the pin descriptions of the 40-pin FC-SCA.

Read the following general information topics to ensure your drive is installed properly:

• Providing adequate cooling
• Mounting the drive
• Formatting the drive

Providing adequate cooling

The enclosure design must ensure adequate cooling for the drive. The maximum ambient temperature is $50^{\circ}C$ ($122^{\circ}F$). The maximum allowable head and disc assembly (HDA) case temperature is $60^{\circ}C$ ($140^{\circ}F$).

The drive's product manual (83329100) describes how to evaluate the air-flow design. The evaluation consists of ensuring that the temperatures of certain critical components remain within acceptable limits during drive operation.

We recommend orienting the drive or directing the air flow in a way that creates the least amount of air-flow resistance while providing air flow above the circuit boards and around the head and disc assembly (HDA). Also, choose the shortest possible path between the air inlet and exit. This minimizes the distance traveled by air that is heated by the drive and by other nearby heat sources.

Figure 2 shows one design approach with one or more fans used to generate air flow. The air-flow pattern can be created by the fans either pushing or drawing air. The overall flow pattern must be directed from side to side in most FC-SCA systems.

Kühlung des Systems

Die Gehäusekonstruktion muß eine ausreichende Kühlung des Laufwerkes gewährleisten. Die Umgebungstemperatur darf maximal 50ºC betragen.

Die Produkthandbuch Barracuda 9FC (Dokument 83329100) enthalten Anweisungen zur Beurteilung der Luftstromkonstruktion. Die Beurteilung muß sicherstellen, daß sich die Gehäusetemperatur bestimmter kritischer Komponenten bei Laufwerkbetrieb innerhalb zugelassener Grenzen hält.

Wir empfehlen, das Laufwerk so zu orientieren oder den Luftstrom so zu lenken, daß der geringste Luftstromwiderstand erzeugt wird und gleichzeitig ein Luftstrom über den Platinen und um die Kopf- und Festplatteneinheit (HDA) gegeben ist. Wählen Sie einen möglichst kurzen Weg zwischen Lufteinlaß und -auslaß. Dadurch wird die Strecke, die die vom Laufwerk und anderen nahegelegenen Hitzequellen aufgewärmte Luft zurücklegt, auf ein Minimum beschränkt.

Abbildung 2 zeigt zwei Konstruktionsmöglichkeiten, bei denen ein oder mehrere Lüfter den Luftstrom erzeugen. Der Luftstromverlauf wird durch die Lüfter gesteuert, die entweder Luft einblasen oder abziehen. Generell kann der Luftstrom entweder von vorne nach hinten oder von hinten nach vorne verlaufen.
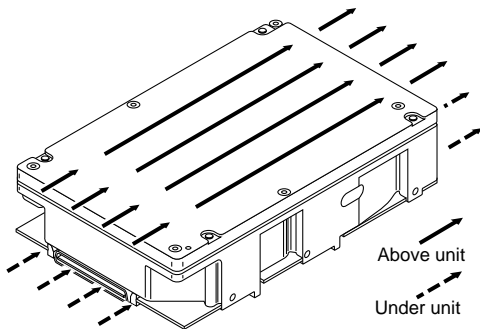
Note. Air flows in the direction shown (back to front) or in reverse direction (front to back)
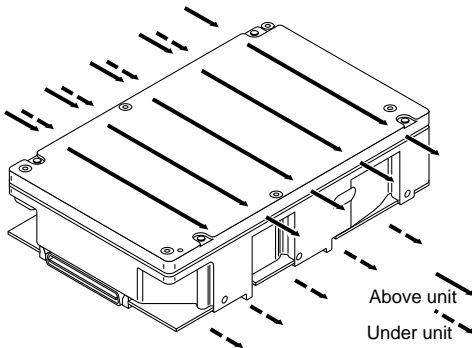
Note. Air flows in the direction shown or in reverse direction (side to side)

Figure 2. Suggested air flow

Abbildung 2. Empfohlener Luftstromverlauf

Mounting the drive

Do not touch the connector pins or any components on the control board without observing static-discharge precautions. Always handle the drive by the frame only.

Mount the drive to the host system's chassis using four 6-32 UNC screws. Two mounting holes are in each side of the drive and there are four mounting holes in the bottom of the drive. See Figure 3.

The maximum length that the screws should extend into the chassis mounting holes is 0.15 inch (3.81 mm), measured from the outer surface of the chassis. Tighten the screws down evenly. Do not over-tighten or force the screw if it does not seem to screw in easily.

Installation des Laufwerkes

Beachten Sie beim Handhaben und Anfassen der Anschlußstifte und Komponenten die Vorsichtsmaßnahmen zur Verhinderung statischer Aufladung. Fassen Sie das Laufwerk nur am Rahmen an.

Befestigen Sie das Laufwerk mit vier 6-32-UNC-Schrauben am Gehäuse des Host-Systems. Die beiden Seiten des Laufwerkes sind mit jeweils zwei Befestigungslöcher versehen, die Unterseite des Laufwerkes weist vier weitere Befestigungslöcher auf. Siehe Abbiludung 3.

Gemessen von der Außenfläche des Gehäuses dürfen die Schrauben maximal 3,81 mm in die Befestigungslöcher des Gehüuses hineinragen. Die Schrauben müssen gleichmäßig, jedoch nicht zu fest, angezogen werden. Wenn sich eine

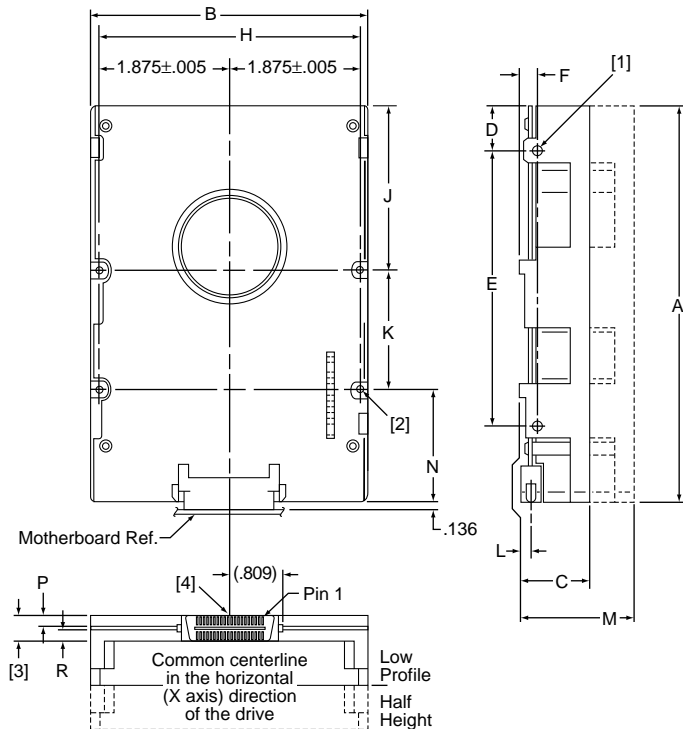Schraube nicht ohne Widerstand einschrauben läßt, sind die Gewinde nicht korrekt aneinander ausgerichtet.

Figure 3. DImensions

Abbildung 3: Laufwerkabmessungen

Notes:

[1] Mounting holes three on each side, 6-32 UNC. Max screw
    length into side of drive is 0.15 in. (3.81 mm).

[2] Mounting holes four on bottom, 6-32 UNC.
    Max screw length into bottom of drive is 0.15 in. (3.81 mm).

[3] Keep-out zone for any components on backplane.

[4] Connector is centered on module and flush with end of base.

	Inches	Millimeters
A	5.760 max	146.304 max
B	4.010 max	101.854 max
C	1.026 max	26.06 max
D	.620 ref	15.748 ref
E	4.000 ± 0.010	101.60 ± .25
F	.250 + 0.010	6.35 + .25
	− 0.005	− .12
H	3.750 ± 0.010	95.25 ± .25
J	2.370 ± 0.010	60.20 ± .25
K	1.750 ± 0.020	44.45 ± .50
L	0.181 + 0.018	4.59 + .45
	− 0.013	− .33
M	1.646 max	41.80 max
N	1.625 ± 0.020	41.28 ± .50
P	.1215 max	3.08 max
R	.1215 max	3.08 max

Inserting the drive

Most systems provide a way to insert the drive using a carrier or tray which allows the drive to be hot-plugged into the system's Fibre Channel 40-pin single connector attachment (FC-SCA). Refer to your system documentation about the method they provide and follow their instructions.

When installing the drive on a carrier or tray, discharge the static electricity from the carrier or tray prior to inserting it into the system.

Formatting the drive

Warning. Formatting a drive erases all user data. Be sure that you understand this principle before formatting any hard disc drive (it is not necessary to format a drive which has previously been used to store data).

1. Supply DC power to the drive (power is supplied to the drive through the 40-pin FC-SCA).

2. Format the disc drive. This drive is designed to operate with a variety of operating systems. Refer to your system and Fibre Channel controller manual for information about selecting and formatting the drive.

Enabling write cache

Write caching is a feature that allows the drive to transfer write data to its own cache, tell the controller that the task is complete, and then actually complete the write at a later time. This improves write performance by freeing the CPU to go on to its next command.

Warning. Information can be lost if you enable write cache and there is a system failure (for example, power failure) before the data has actually been physically written to the disc.

OEM drives are shipped with write cache disabled by default to enhance data integrity. If you want to enable the write cache, refer to your system's drive controller and software utility documentation. Seagate provides an ASPI utility that you can use in a PC compatible system to enable the write cache. It is available on Seagate's CompuServe forum and on the Seagate BBS (refer to "Technical support services" on page 8).

Connecting remote LEDs

You can connect remote LEDs using J6 (see Figure 4).

Connect the anode (usually the longer LED connector) to the +5V pin, and the cathode to the appropriate LED output pin. For example, if you want to attach an LED which lights up when the drive is active (reading or writing), connect the LED's anode connector to J6 pin 8 and the cathode to J6 pin 11.
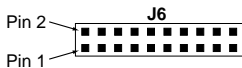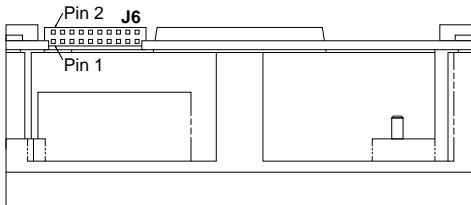
Port A Bypass LED [1]	
Port B Bypass LED [1]	
Fault LED [2]	
Reserved	
Active LED [2]	
+5V	
Ground [3]	
Active LED [1]	

[1] The drive has a 2.2K ohm resistor in series with this LED driver. Connect the minus side of an external high-efficiency LED (i.e. 2ma) to this pin. Connect the plus side of the LED to +5V.

[2] An external current limiting resistor is required when connecting an LED to this pin. The minus side of the resistor/LED combination is connected to this pin. Connect the plus side to +5V. This pin connects in parallel with the signal of the same name in the J1 interface connector.

[3] Jumper storage location is across pins 2 and 4 (horizontally).

Figure 4. LED indicator connector (J6)

Table 1:   FC-SCA pin descriptions

Pin/contact	Signal name	Signal type
1*	–EN bypass port A	TTL output
2*	12 Volts	
3*	12 Volts	
4*	12 Volts	
5*	Reserved NC	
6*	Reserved NC	
7*	Active LED out	Open collector out
8*	Reserved NC	
9*	RMT_start	TTL input
10*	DLYD_start	TTL input
11*	–EN bypass port B	TTL output
12*	SEL_6	TTL input
13*	SEL_5	TTL input
14*	SEL_4	TTL input
15*	SEL_3	TTL input
16*	Fault LED out	Open collector out
17*	Reserved NC	TTL input
18*	Reserved NC	
19*	5 Volts	
20*	5 Volts	
21	12 Volts charge	
22	Ground	
23	Ground	
24*	+CH1_in	Diff. PECL input pair
25*	–CH1_in	

Pin/contact	Signal name	Signal type
26	Ground	
27*	+CH2_in	Diff. PECL input pair
28*	−CH2_in	
29	Ground	
30*	+CH1_out	Diff. PECL output pair
31*	−CH1_out	
32	Ground	
33*	+CH2_out	Diff. PECL output pair
34*	−CH2_out	
35	Ground	
36	SEL_2	TTL input
37	SEL_1	TTL input
38	SEL_0	TTL input
39	Reserved NC	
40	5 Volts charge	

*Short pins in the mating backpanel connector.

Troubleshooting

Before calling Seagate Technical Support, please read the possibilities discussed below. The suggestions presented here will resolve the majority of installation problems.

General installation troubleshooting

- **Check system compatibility.** This is a Fibre Channel (FC) device. Check your system documentation to ensure that it supports FC devices.
- **Check the physical attachment.** Ensure that the drive is properly mated with the backpanel Fibre Channel single connector attachment (FC-SCA).
- **Check to ensure that drive is receiving power.** Insert the drive into your system. Listen carefully for the sound of the drive motor spinning up. If the drive motor does not spin up, check the power supply. If your power supply is functioning properly, but the drive does not spin up, contact the company from which you purchased the drive.
- **Check your system or backpanel documentation to ensure you have set options in accordance with the manufacturer's recommendations.** All device options, including addresses, are set at the backpanel within the host system or through system software. Check your host system documentation about how to set these options in your particular system.

Free Manuals Download Website

http://myh66.com

http://usermanuals.us

http://www.somanuals.com

http://www.4manuals.cc

http://www.manual-lib.com

http://www.404manual.com

http://www.luxmanual.com

http://aubethermostatmanual.com

Golf course search by state

http://golfingnear.com

Email search by domain

http://emailbydomain.com

Auto manuals search

http://auto.somanuals.com

TV manuals search

http://tv.somanuals.com