The 0662 Models S12, S1D, SW1, and SWD provide 1.05 GB in a 1" high, 3.5" form factor. Using industry leading areal density 1.05 GB is achieved using only three disks and two data zones. This leads to exceptional performance and reliability.

APPLICATIONS

- Technical/commercial workstations
- Network servers
- Mass storage arrays
- High end personal computers

FEATURES

- Formatted capacity (at 512 bytes/sector)
- S12 - fast 10 MB/s SCSI-2 50 pin single ended.
  S1D - fast 10 MB/s SCSI-2 50 pin differential.
  SW1 - fast and wide 20 MB/s SCSI-2 68 pin single ended.
  SWD - fast and wide 20 MB/s SCSI-2 68 pin differential.
- 5.0/6.0 MB/s media data rate.
- Rotational speed 5400 rpm.
- 2 recording zones.
- Average seek time 9 ms.
- Magneto resistive heads.
- PRDF data channel (partial response maximum likelihood with digital filter)
- 512 KB multi-segmented data buffer.
- Drive supported SCSI bus terminator power.
- Industry standard mounting.
- Low command overhead.
- ECC on the fly.
- 3 disk design.
- 1 inch high form factor.
- Read ahead caching.
- Write cache supported.
- Predictive failure analysis.

BENEFITS

- Popular capacity point.
- Range of SCSI interfaces to suit application. High interface data rate
- Exceptionally high data rate across entire disk surface.
- Fast access to data.
- Industry leading areal density 354/319 Mb/sq in.
- Robust data channel for improved data integrity.
- Fast data retrieval in multi-tasking environments.
- Easy integration across multiple platforms.
- Easy installation.
- Improved data throughput.
- Industry leading reliability.

ELECTRICAL CONNECTOR LOCATIONS

The electrical connectors are located as shown in Figure 1 and Figure 2. The front jumper pin locations are shown in Figure 3 and Figure 4. The bottom jumper pin locations are shown in Figure 5.

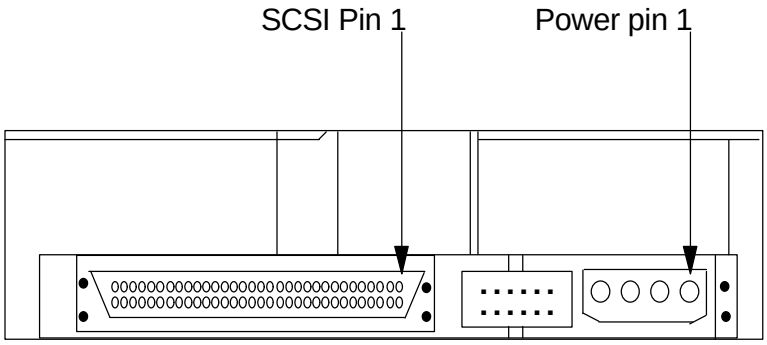
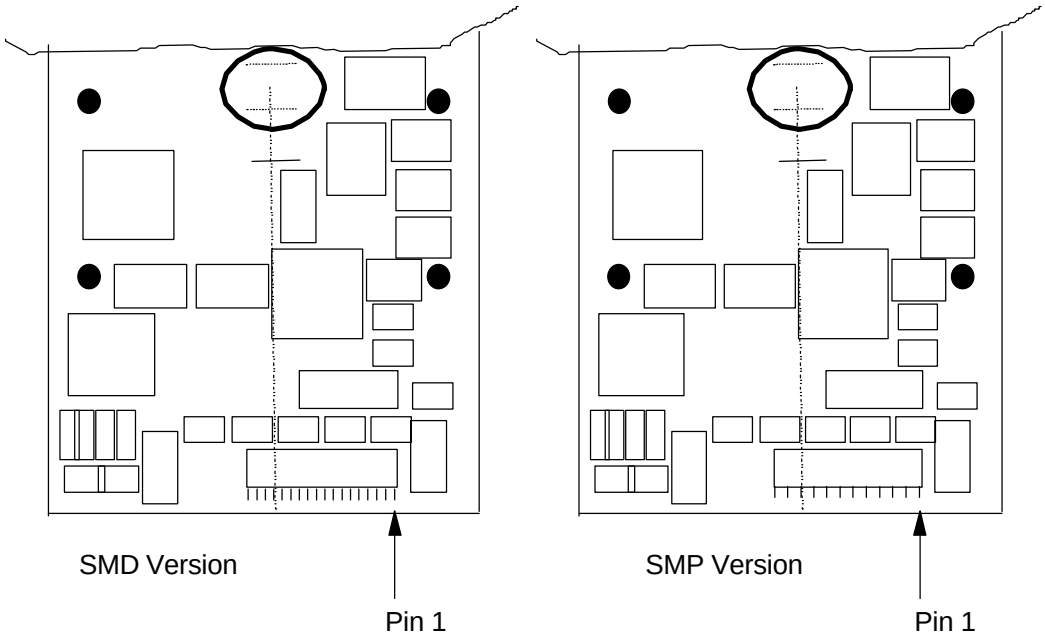


Figure 1 Electrical Connectors 68 PIN SCSI (REAR VIEW)

OPTION JUMPER BLOCKS

0662 contains a front jumper block with pins that can be used to access and enable certain features and select the SCSI address of the drive. Figure 6 shows the layout of those pins for the "SMD" version of the electronics circuit board. For the "SMP" version of the electronics circuit board, those functions are split into two groups of pins. The

front block is shown in Figure 7, while the block located on the bottom is shown in Figure 8. 68 pin models also contain a rear option jumper



Option Block locations

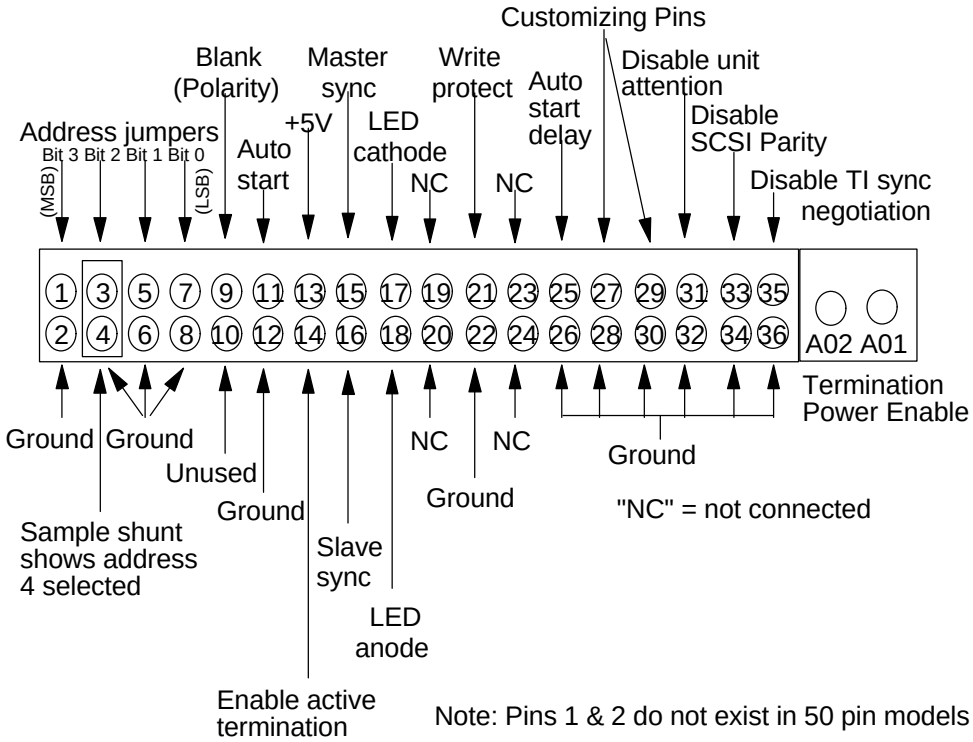


Figure 3 A Front Options Jumper Block for SMD Version

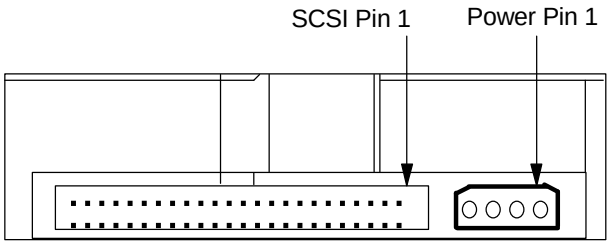


Figure 2 Electrical Connectors (rear view) 50 Pins SCSI

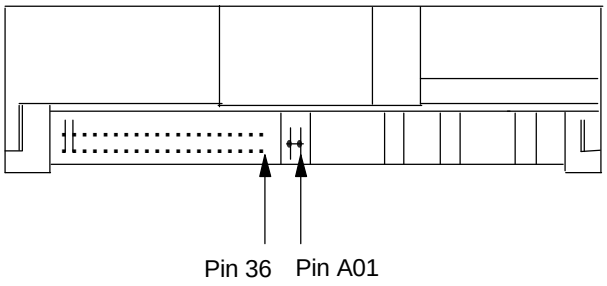


Figure 3 SMD Jumper Pin Location (front view)

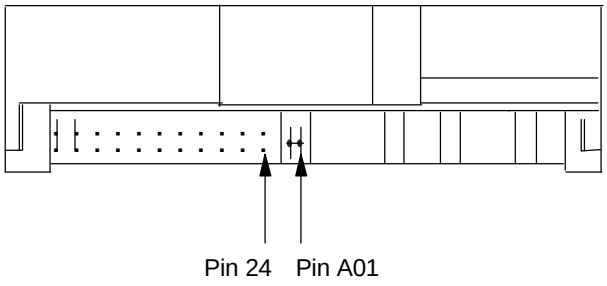


Figure 4 SMP Jumper Pin Locations (front view)

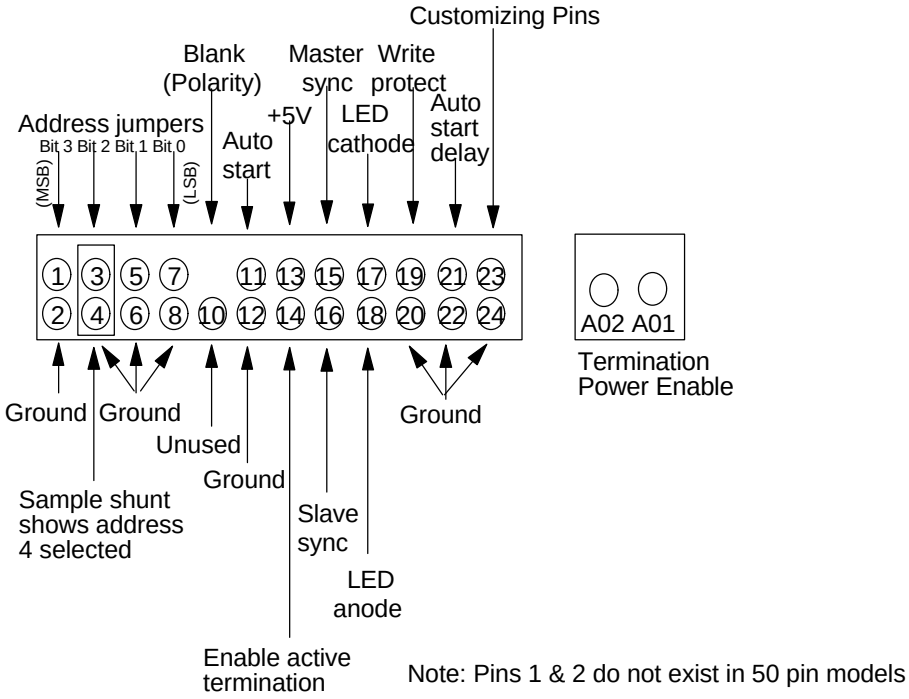


Figure 4 A Front Options Jumper Block for SMP Versions

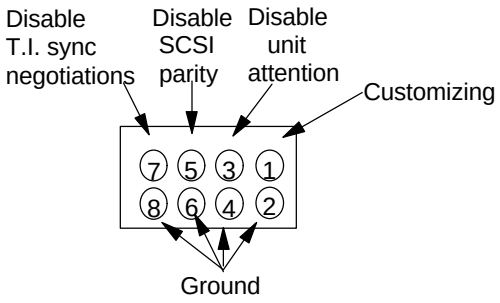


Figure 6 Bottom Options Jumper Block for SMP Versions

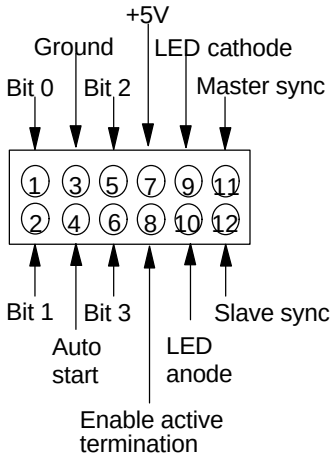


Figure 7 FRONT Options Jumper Block for "SMP" Versions

50 Pin Models				68 Pin Models				
Address	Bit0	Bit1	Bit2	Address	Bit0	Bit1	Bit2	Bit3
0	off	off	off	0	off	off	off	off
1	on	off	off	1	on	off	off	off
2	off	on	off	2	off	on	off	off
3	on	on	off	3	on	on	off	off
4	off	off	on	4	off	off	on	off
5	on	off	on	5	on	off	on	off
6	off	on	on	6	off	on	on	off
7	on	on	on	7	on	on	on	off
				8	off	off	off	on
				9	on	off	off	on
				10	off	on	off	on
				11	on	on	off	on
				12	off	off	on	on
				13	on	off	on	on
				14	off	on	on	on
				15	on	on	on	on

Figure 10 Address Determination for the 50 and 68 Pin SCSI Models

Note: In the address determination tables above "off" means the jumper is not in place and "on" means that the jumper is in place.

OPTION JUMPER BLOCKS

AUTO START (& DELAY) PINS

The Auto Start and Auto Start Delay pins control when and how the drive can spin up and come ready. When configured for Auto-Startup, the motor spins up after power is applied without the need of a SCSI Start Unit command. For no Auto-Start, a SCSI Start Unit command is required to make the drive spin and be ready for media access operations. When in Auto-Start mode, the drive will delay its start time by a period of time multiplied by its own SCSI address. The table below shows whether or not Auto-Start mode is active and the delay periods, where applicable, for all combinations of the pins.

Auto Start Delay	*Auto Start*	*Auto Start Mode?*	*Delay Multiplier (sec)*
off	off	No	NA
off	on	Yes	0
on	off	Yes	10
on	on	Yes	4

LED PINS

The LED pins can be used to drive an external Light Emitting Diode. Please refer to the LED pin section of the 0662 Interface Specification for a detailed functional description of this pin.

Up to 33 mA +/- 5% of TTL level LED drive capability is provided.

Note: This set of pins can be used to drive an LED located in a bezel connected to the front of the drive or to an external LED in systems where the front of the drive cannot be easily seen.

Note: 68 pin SCSI models have two sets of pins, a set on the front and a set on the back, that are connected to the same LED driver circuit. The combined drive capability is stated above.

WRITE PROTECT PINS

If the Write Protect pin is jumpered to ground, the drive will inhibit SCSI commands that alter the customer data area portion of the media from being performed. See the 0662 Interface Specification for functional details.

DISABLE T.I. SYNC. NEGOTIATION PINS

If a Disable Target Initiated Synchronous Negotiation pin is grounded then an Initiator is required to start a negotiation handshake if

Synchronous SCSI transfers are desired. Please refer to the 0662 Interface Specification for more details on this feature.

DISABLE SCSI PARITY PINS
Grounding this pin will disable SCSI Parity checking.

DISABLE UNIT ATTENTION PINS
Grounding this pin will disable the drive from building Unit Attention Sense information for commands immediately following a Power On Reset (POR) or SCSI Bus Reset. Any pending Unit Attention conditions will also be cleared at POR or SCSI Reset times.

CUSTOMIZING PINS
The customizing pins and their associated jumper pins are currently reserved for future use. They are for features specific to particular host systems that must be in effect immediately after power is applied to the drive. Please contact your Technical Support Representative for functional details on using system specific required features that these pins could possibly be used for.

DATA ORGANIZATION

CAPACITY

Models S12, S1D, SW1, SWD

bytes/ logical block	gross sectors/ track		formatted capacity (bytes)	logical blocks/ file
512	108	90	1,052,175,360	2,055,030
520	106	89	1,050,101,000	2,019,425
524	105	88	1,047,386,920	1,998,830

User drive capacity for several common block sizes

*Notch**	No 1	No 2
Total cylinders (total cyl)	3016	1120
User cylinders (user cyl)	3002	1117
Band 1 user cylinders (b1ucyl)	1998	746
Band 2 user cylinders (b2ucyl)	1004	371
Tracks/cylinder (trk/cyl)		
Models S12, S1D, SW1, SWD 5		
Gross bytes/track (gb/trk)	66667	55556
Overhead bytes/sector (ob/set)	104.4	101.5
User bytes/sector (ub/set) 512-744 (even number of bytes only)		

Sectors/logical block (set/1ba) 1 (for 512 is less than or equal to ub/1ba is less than or equal 744)
User bytes/logical block (ub/1ba) 512-744 (see note below**)
(numbers of bytes evenly divisible by 2 only)

	No 1	No 2
Band 1 spares/cylinder (b1spr/cyl)		
Models S12,S1D, SW1, SWD	15	15
Band 2 spares/cylinder (b2spr/cyl)		
Models S12, S1D, SW1, SWD	20	20
Last cylinder extra spares (1cspr)		
Models S12, S1D, SW1, SWD	40	

Notes:* The recording band located towards the outer diameter (OD) is referred to as Notch No 1 while the recording band located towards the inner diameter (ID) is called Notch No 2.

*Note**:* Support for other block lengths. It is intended to provide a new release of code to support block lengths of less than 512 bytes and greater than 712 bytes. Please contact technical support for details.

MODE SELECT OPTIONS

Certain parameters are alterable using the SCSI "Mode Select" command. This allows certain drive characteristics to be modified to optimize performance on a particular system. Refer to the 0662 SCSI Functional Specification for a detailed definition of Mode Select parameters.

The changeable parameters are:

Block Descriptor
- Number of Blocks
- Block length

Page 0
- QPE (Qualify Post Error)
- UQE (Untagged Queuing Enable)
- DWD (Disable Write Disconnect)
- ASDPE (Additional Save Data Pointer Enable)
- CMDAC
- RPFAE (Report Predictive Failure Analysis Error)
- CPE (Concurrent Processing Enable)
- TCHD (Thermal Compensation Head Control Bit)
- TCC (Thermal Compensation Control Bit)
- DSN (Disable Synchronous Negotiations)

FRDD (Format and Reassign Degraded Disable)
DPSDP (Data Phase Save Data Pointer)
WPEN (Write Protect Enable)
CAEN (Command Aging Enable Bit)
LITF (Limit Idle Time Function)
QEMC (Queue Error Management Control)
DRD (Disable Read Disconnect)
LED Mode - allows user to choose function of LED pins

Page 1
AWRE (Automatic Write Reallocation Enable)
ARRE (Automatic Read Reallocation Enable)
TB (Transfer Block)
RC (Read Continuous)
PER (Post Error)
DTE (Disable Transfer on Error)
DCR (Disable Correction)
Read Retry Count

Page 2
Read Buffer Full Ratio
Write Buffer Empty Ratio
Maximum Burst Size
DTDC (Data Transfer Disconnect Control)
RPL (Rotational Position Locking)

Page 4
Rotational Offset

Page 7
PER
DCR

Page 8
WCE (Write Cache Enable)
MF (Multiplication Factor)
RCD (Read Cache Disable)
Demand Read Retention Priority
Write Retention Priority
Disable Pre-fetch Transfer Length
Maximum Pre-fetch
Maximum Pre-fetch Ceiling
Number of Cache Segments

Page A
Queue Algorithm Modifier
QErr (Queue Error Management)
DQue (Disable Queueing)

Page C
Active Notch

OPERATING ENVIRONMENT

The drive operates within its' performance limits when the following environment is maintained. Product life calculations are based on the nominal environment for a typical application.

Humidity:

Operating	5% to 90% noncondensing
Storage	5% to 95% noncondensing
Shipping	5% to 100%

(applies at a packaged level)

Wet Bulb Temperature:

Operating	80% degrees F (26.7 degrees C) maximum
Shipping/Storage	85% degrees F (29.4 degrees C) maximum

Elevation:

Operating	-1000 to 10000 feet (-304 to 3048 meters)
Shipping/Storage	-1000 to 40000 feet (-304 to 12,192 meters)

Temperature:

Operating ambient	41 to 131 degrees F (5 to 55 degrees C)
Operating casting temperature	41 to 140 degrees F (5 to 60 degrees C)
Shipping	-40 to 149 degrees F(-40 to 65 degrees C)
Storage	34 to 149 degrees F(1.1 to 65 degrees C)

Temperature Gradient

Operating	18 degrees F (10 degrees C) per hour
Shipping/Storage	below condensation

These temperature limits are extremely important and must not be exceeded at the worst cast drive and system operating conditions with the drive randomly seeking, reading, and writing.

DC POWER REQUIREMENT LIMITS

The following voltage specifications apply at the drive power connector. There are no special power on/off sequencing requirements.

+12 Volt Supply
  +/- 5% (during run)
  -7.0% +5.0% (during spin-up)
+5 Volt Supply
  +/- 5.0% (during run and spin-up)

Power Supply Current +5 VDC	*Notes*	*Population Mean*	*Population Stand Dev*
Power up	Minimum voltage slew rate = 4.5 V/sec		
Idle average		0.679 Amps	.0066 Amps
R/W average		0.961 Amps	.0079 Amps
R/W pulse	Base-to-peak	.392 Amps	.0157 Amps

Power Supply Current +12 VDC	*Notes*	*Population Mean*	*Population Stand Dev*
Power up	Minimum voltage slew rate = 7.4 V/sec		
Idle average		.324 Amps	.0087 Amps
Seek average	1 op/sec	.00517 Amps	.00017 Amps
Seek peak		1.479 Amps	.0297 Amps
Spin-up	1.5 sec max	1.579 Amps	.105 Amps

5 Volt Current is given with termination power provided by the using system.

The idle average and seek peak should be added together to determine the total 12 volt peak current.

The current at start is the total 12 volt current required (ie, the motor start current, module current and voice coil retract current.)

MODELS

The 0662 disk drive is available in various models:

Model No	*No of SCSI Connector*	*SCSI Electrical*	*No of data heads*

	Pins	*Signal Type*	
S12	50	SE	5
SW1	68	SE	5
SWD	68	DF	5

Note: "SE" stands for Single Ended, while "DF" stands for Differential.

50 50 pin SCSI connector
The 50 pin SCSI connector model offers an 8 bit SCSI bus using the SCSI "A" connector.
68 68 pin SCSI connector
The 68 pin SCSI connector model offers an 8/16 bit SCSI bus using the SCSI "P" connector.

RIPPLE

Externally generated ripple
as seen at drive power connector

Voltage	*Maximum*	*Notes*
+5 VDC	150 mV peak-to-peak	0-20 MHz
+12 VDC	150 mV peak-to-peak	0-20 MHz

During drive start up and seeking, 12 volt ripple is generated by the drive (referred to as dynamic loading). If several drives have their power daisy chained together then the power supply ripple plus other drive's dynamic loading must remain within the regulation tolerance window of +/- 5%. A common drive supply with separate power leads to each drive is a more desirable method of power distribution.

HOT PLUG/UNPLUG SUPPORT

Power supply and SCSI bus hot plug and unplug is allowed. There is no special sequence required for connecting 5 volt, 12 volt, or ground. During a hot plug-in event the drive being plugged with draw a large amount of current at the instant of plug-in. This current spike is due to charging the bypass capacitors on the drive. This current pulse may cause the power supply to go out of regulation. If this supply is shared by other drives then a low voltage power on reset may be initiated on those drives. Therefore the recommendation for hot plugging is to have one supply for each drive. Never daisy chain

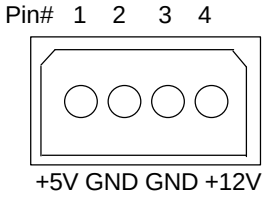
the power leads if hot plugging is planned. Hot plugging should be minimized to prevent wear on the power connector.

Hot plugging the SCSI bus may cause glitches on the bus. To minimize the chance of glitching, it is recommended to plug in the SCSI bus before the power is applied.

During hot plugging, the supplies must not go over the upper voltage limit. This means that proper ESD protection must be used during the plugging event.

ELECTRICAL INTERFACE SPECIFICATIONS

POWER CONNECTOR
The DC power connector used in 0662 is a Molex 8981-4V6. It is designed mate with a Molex 8981-4P4 crimp connector, or a Molex A-70156-2000 insulator displacement connector, or their equivalent. Pin assignments shown in Figure 9.



›in assignments

:TORS
es that support either 50 or 68 pin SCSI connectors and either single-ended or differential driver/receiver alternatives.

50 PIN SIGNAL CONNECTOR
50 pin models uses a Hirose MIF62B-54PB-2.54 DS (02) connector on the "SMD" version of the electronics circuit board and a Hirose M1F62C-54PB-2.54DS the "SMP" version of the electronics. They are both compatible with the ANSI SCIS-2 "A" connector specifications. It is limited to 8 bit data transfers only. Refer to Figure 2 for a rear view of the 50 pin model connector.

68 PIN SIGNAL CONNECTOR
58 pin models use an AMP92-8012-16-1 connector that is compatible with the ANSI SCSI-3 "P" connector specifications. It can transfer data in

both 8 bit (narrow) and 16 bit (wide) modes.

Note: that the "P" connector is not mechanically compatible with the 50-pin "A" connector as defined in the ANSI SCSI-2 standard. Therefore system cables used with 50 pin products cannot be plugged directly into 68 pin models. Despite the difference in connector, the differential 68 pin models are electrically compatible with differential 50 pin models and other 50 pin differential SCSI products and therefore can coexist on the same bus. In order to do so, the differences in connector types would need to be accounted for in the cable. The same can be said for connecting 68 and 50 pin single-ended models to the same bus. But differential and single-ended models do not work connected to the same bus.

SCSI BUS CABLE

Single-ended models permit cable lengths of up to 6 meters (19.68 feet). It should be noted, however, that users who plan to use "Fast" data transfers with single-ended models should follow all of the SCSI-3 guidelines for single-ended "Fast" operations. This may include a cable length of less than 6 meters.

Differential models permit cable lengths of up to 25 meters (82.02 feet). Cables must meet the requirements for differential cables as set forth in the ANSI SCSI-2 standard under "Cable Requirements - Differential Cable."

The SCSI-2 standard states that any stub from main cable must not exceed 0.1 meters for single-ended cables and 0.2 meters for differential cables *0662* has a maximum internal stub length of 0.053 meters on all SCSI signals To remain compliant with the standard, the SCSI bus cable must not add more than 0.047 meters additional stub length to any of the single-ended SCSI signals or .147 meters to any differential SCSI signals.

SCSI BUS TERMINATORS

Single-ended models have internal SCSI bus active terminators that can be enabled by installing a jumper between pins 13 and 14 of the Front Option Jumper Block or pins 7 and 8 of the Rear Block on 68 SCSI pin models. (Refer to Figure 3A, Figure 4A, and Figure 7). The using system is responsible for making sure that all required signals are terminated at both ends of the cable.

Differential models do not have internal SCSI bus terminators. Some terminator possibilities are shown below.

50 Pin Model *68 Pin Model*

Terminators *Terminators*

Data Mate DM550-05-0 Data Mate DM2050-01-68D
Data Mate DM1050-02-0

Differential SCSI Terminators

SCSI BUS TERMINATOR POWER
Termination power is optionally provided for systems that desire to use it. In order to use the termination power, the user needs to install a jumper between pins A01 and A02 of the TermPower Block. (Refer to Figure 6 and Figure 7). The jumper should only be installed on one device, which should be the last device on the SCSI bus (ie, the drive that is physically closest to a terminator). 68 pin models can source up to 2.0 Amps of current at 5.0 Volts (plus or minus 5%) for termination power. 50 pin models can source up to 1.5 Amps of current at 5.0 Volts (plus or minus 5%) for termination power.

SCSI BUS TERMINATION POWER SHORT CIRCUIT PROTECTION
The ANSI SCSI-2 specification recommends for devices that optionally supply TERMPWR, to include current limited protection for accidental short circuits. It also recommends that the maximum current available for TERMPWR should not exceed 5 Amps, UL has a different requirement that they call the 8 Amp rule. This rule states that when a power source leaves an enclosure (like SCSI TERMPWR in the SCSI cable), it must trip 8 Amps of current within 1 minute.

0662 uses a resettable "Positive Temperature Coefficient" (PTC) resistor for TERMPWR short circuit protection. These devices will trip when they are over-heated due to excess current flowing through them. When the over current condition (ie, current surge due to a hot plug or intermittent short, or a solid short circuit) is removed, the device can automatically reset, allowing TERMPWR to again be sourced from this device.

0662 complies with the 8 Amp UL requirement. For systems that prefer to with the SCSI-2 5 Amp recommended TERMPWR limit, the 5 Volt power supplied *0662* should be limited to prevent TERMPWR from exceeding 5 Amps. This would prevent a current surge in excess of 5 Amps that may occur in the event of a short circuit, before the PTC device can actually trip.

RECOMMENDATIONS FOR SCSI BUS NOISE REDUCTION
The SCSI committee has spent a large amount of resource looking into what needs to be done to assure SCSI devices will work as specified in the SCSI-2 standard. As a result of this, the committee is recommending the

following approach:

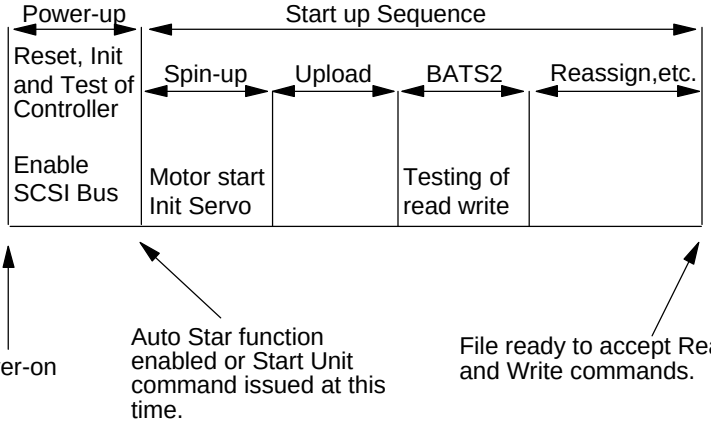
- Use regulated 110 ohm terminator
- Use AWG 28 polyolefin shielded cables
- Make sure data and parity are on the outer ring of the cable and that REQ and ACK are in the core of the cable.

START AND STOP TIMES

Time	*Nominal*	*Maximum*
Power Up	2.0 sec	2.4 sec
Start-up	15 sec	1 min
Spin-up	6.7 sec	15 sec
Stop Time	9.0 sec	12.5 sec

Note: BATS is the abbreviation for Basic Assurance Tests. Start-up sequence spins up the spindle motor, uploads code, performs BATS2 (verifies read/write hardware), resumes "Reassign in Progress" operations, and more. For more information on on the start-up sequence, refer to the 0662 Interface Specification.

Bring-up Sequence Times and Stop Time



ver on
ued the

MECHANICAL SPECIFICATION

WEIGHT

Approximately 1.0 pounds (0.46 kilograms)

DIMENSIONS

	U.S.	*S.I. Metric*
Height	1.00 in	25.4 mm
Width	4.00 in	101.6 mm
Depth	5.75 in	146.0 mm

CLEARANCES

A minimum of 2 mm clearance should be given to the bottom surface except for a 10 mm diameter area around the bottom mounting holes. For proper cooling it is suggested that a clearance of 6 mm be provided under the drive and on top of the file.

Note: The top of the drive will not exceed the height dimension by more than 2 millimeters during a nonoperating shock.

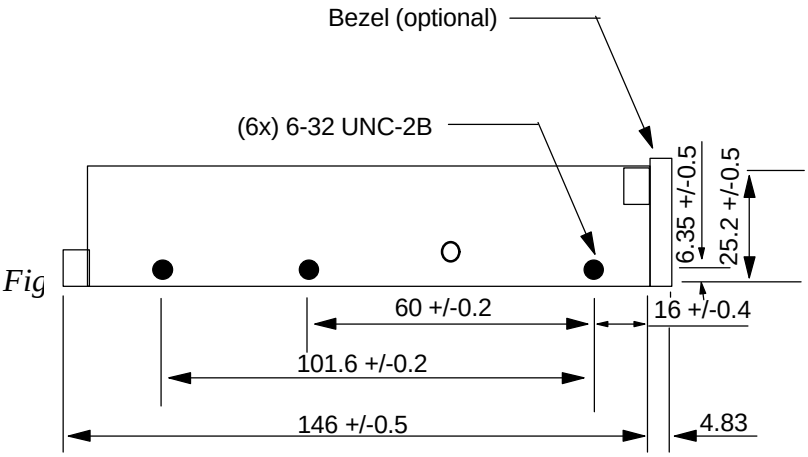
MOUNTING

The drive can be mounted with any surface facing down.

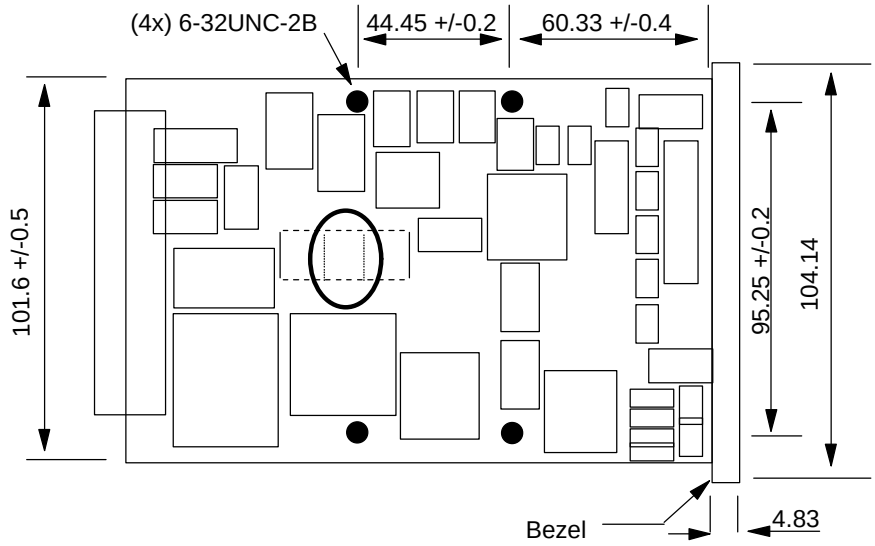
The drive has both side and bottom mounting holes. Refer to figures 12 and 13 for the location of these mounting holes for each configuration.

The maximum allowable penetration of the mounting screws is 3.8 mm.

The torque applied to the mounting screws must be 0.8 Newton meters plus or minus 0.1 Newton meters.



Fig



sure is
t not

VIBRATION AND SHOCK

OPERATING/NONOPERATING VIBRATION
Due to the complexity of this subject we recommend that users contact the Distributor to discuss how to perform the required measurements if they believe this to be an area which requires evaluation.

OPERATING SHOCK
The drive will continue to operate, at the stated "Performance", when subjected to a 5 G half sine wave shock pulse of 11 milliseconds duration.

No permanent damage will occur to the drive when subjected to a 10 G half sine wave shock pulse of 11 milliseconds duration.

The shock pulses are applied in either direction in each of three mutually perpendicular axis, one axis at a time.

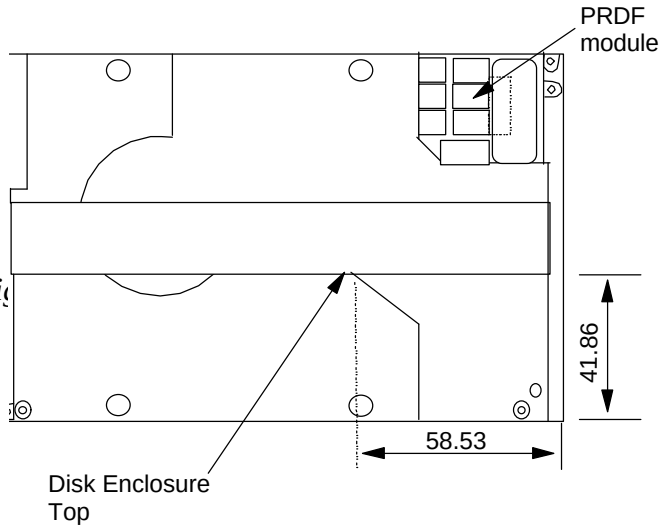
NONOPERATING SHOCK
No damage will occur if the unpackaged drive is not subjected to a square wave shock greater than a "faired" value of 35 Gs applied to all three axis for a period of 20 milliseconds, one direction at a time.

Additionally, no damage will occur if the unpackaged drive is not subjected to an 11 millisecond half sine wave shock greater than 60 Gs applied to all three axis, one direction at a time.

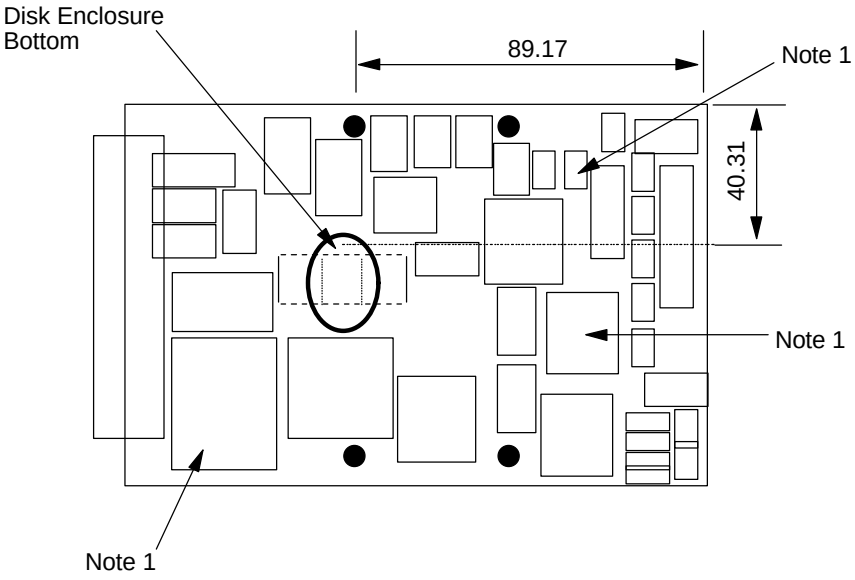
TEMPERATURE MEASUREMENTS

The following is a list of measurement points and their temperatures (maximum and reliability). Maximum temperatures must not be exceeded at the worst case drive and system operating conditions with the drive randomly seeking, reading and writing. Reliability temperatures must not be exceeded at the nominal drive and system operating conditions with the drive randomly seeking, reading and writing.

	Maximum	*Reliability*
Disk Enclosure Top	140 degrees F (60 degrees C)	113 degrees F (45 degrees C)
Disk Encloser Bottom	140 degrees F (60 dgrees C)	113 degrees F (45 degrees C)
PRDF Module	185 degrees F (85 degrees C)	158 degrees F (70 degrees C)
WD33C96 Module	167 degrees F (75 degrees C)	149 degrees F (65 degrees C)
ASERVO Module	167 degrees F (75 degrees C)	149 degrees F (65 degrees C)
GLUE Module	167 degrees F (75 degrees C)	149 degrees F (65 degrees C)



Fi



F

N rmine
th ation
o on the
b of the casting.

There must be suffient air flow through the drive so that the casting and module temperature limits defined above are not exceeded.

Module Temperature Measurement Notes
1. Center on the top surface of the module.
2. If copper tape is used to attach temperature sensors, it should be no larger than 6 mm square.

SPINDLE SYNCHRONISATION

Spindle Synchronisation Overview

There are four modes of spindle synchronisation. Spindle synchronisation function modes, which list the function mode versus -MASTER SYNC and -SLAVE SYNC. The following paragraphs give a short description of each of the four spindle synchronisation modes:

- The Slave drive (Slave Sync mode) receives the index from the Master drive on the -SLAVE SYNC line and synchronises its drive index (Slave index) to it.
- Should the drive be the Master drive, (Master sync mode) it outputs its drive index on the -MASTER SYNC and the -SLAVE SYNC lines. The Master drive is a normal running drive except that it outputs its drive index.
- In the Master Sync Control mode, a drive will synchronise its spindle to the signal it receives on the -SLAVE SYNC input. It outputs to -MASTER SYNC a pulse that has the same period as the drive INDEX generated from the disk.
- In the non-sync mode, the drive will receive the -SLAVE SYNC signal, but it is not used by the drive.

  Listed below is a table of the four different modes that the -MASTER SYNC and -SLAVE SYNC signals are used as. Reference the SCSI Specification for further information on the different synchronisation.

SPINDLE SYNCHRONIZATION CONTROL LINES

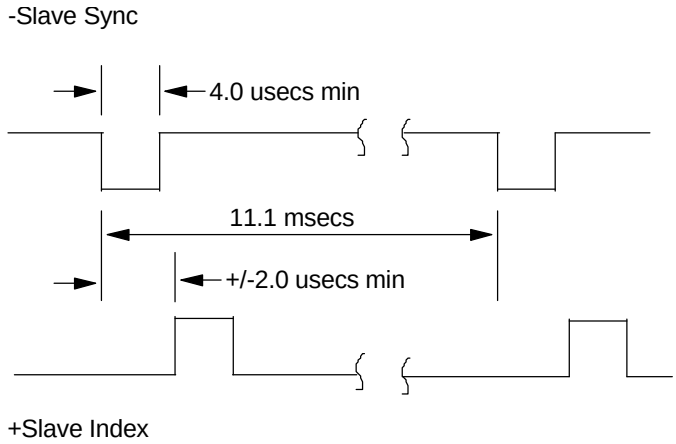
-MASTER SYNC	*- SLAVE SYNC*	*function mode*
released	receive	Slave Sync
drive	drive	Master Sync
drive	receive	Master Sync Control
released	receive	non sync

File Spindle Synchronization with Offset

The drive electronics receives the Master Index and creates the delayed Slave Index from the drive index. The delay is determined by using the Mode select command, Rigid Disk Drive Geometry Parameters. A rotational offset of 0/256 of a revolution up to 255/256 of a revolution (360 degrees) may be selected in increments of 1/256 of a revolution. Reference the SCSI Specification for further information on the rotational offset of synchronized spindles.

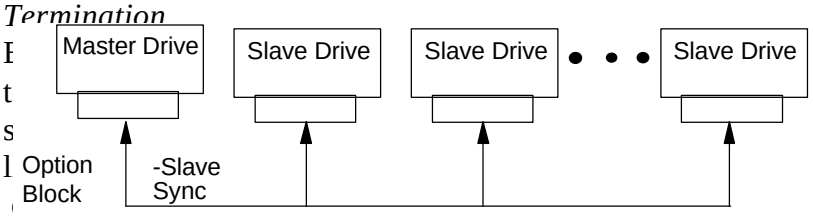
Synchronization Time

The SCSI MODE Select command is used to select the Spindle Sync mode. It could take up to 1.75 (1-25 secs nominally) seconds to synchronize the Slave drive to the Master drive. While the Slave drive is synchronizing, it will not be able to read and write data. Once synchronized, the drive will maintain +/- 20 usec synchronization tolerance.



ıal lines, -MASTER
ı the synchronized
ıization bus daisy

Termination



signals is internal
o the drives +5 volts
ʹNC or -SLAVE SYNC
Master drivers

Bus Characteristics

maximum Bus length = 6 meters
4 uS negative active pulse
0.8 volts = valid low input
2.0 volts = valid high input
0.4 volts = low input
64 mA = maximum output set by termination resistors

The driver used for these two signal lines are open collector buffers.

WARNING: This disk drive can be damaged by Electro-Static Discharge,

please follow recommended ESD procedures before unpacking or handling the drive. Ask your IBM marketing representative for details if you need assistance

.

PACKAGING: The drive must be protected against Electro-Static Discharge especially when being handled. The safest way to avoid damage is to put the drive in an anti static bag before ESD wrist straps etc are removed.

Drives should only be shipped in approved containers, severe damage can be caused to the drive if the packaging does not adequately protect against the shock levels induced when a box is dropped. Consult your IBM marketing representative if you do not have an approved shipping container.

AMP is a trademark of
AMP Incorporated.
Molex is a trade mark of
Molex Incorporated
DATA MATE is a trade mark of
AMP Incorporated.
Western Digital is a trade mark of
Western Digital Corporation.
NEXT is a trade mark of
NEXT Corporation.

IBM OEM Europe
PO Box 6
Langstone Road
Havant
Hampshire
PO9 ISA
United Kingdom
Telephone: (44) 705 486363

This data sheet is not a substitute for the full product specification, which should be used when detailed information is required.

Product Description data represents IBM's design objectives and is provided for comparative purposes; actual results may vary based on a variety of factors. This product data does not constitute a warrenty. Questions regarding IBM's warrenty terms or methodology used to derive this data should be referred to your IBM OEM representative. Data subject to change without notice.