



Scorpion 40
*Configuration settings for
Windows NT, Novell,
and UNIX operating systems*

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Introduction

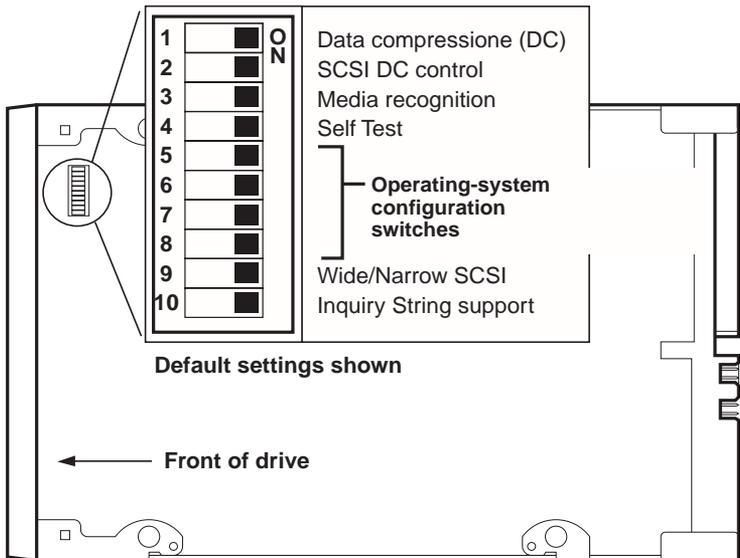
This booklet explains how to configure Scorpion 40 drives and various Windows NT, UNIX and Novell operating systems for optimum compatibility.

Operating-system configuration dip switches

The figure below shows the location of the operating-system configuration dip switches on the bottom of the internal Scorpion 40.

Note: If the drive is to be used with an operating system other than those described here, these switches should be left in their default positions.

Operating-system configuration dip switches on underside of the Scorpion 40



Configurations for Windows NT

If you use Windows NT 4.0 with the 4mmDAT.SYS driver from Microsoft, you *must* set Switch 10 (the Inquiry-String switch) to OFF. If you use Windows NT 4.0 with the STDAT4.SYS driver from Seagate, you can leave the Switch 10 in to ON (the default setting). In either case, switches 5 through 8, the UNIX configuration switches, should all be set to ON (the default settings).

Operating System / tape driver software	Switch 5	Switch 6	Switch 7	Switch 8	Switch 10
Windows NT 4.0 w/ native backup applet using STDAT4.SYS driver from Seagate	ON	ON	ON	ON	ON
Windows NT 4.0 w/ native backup applet using 4mmDAT.SYS driver from Microsoft	ON	ON	ON	ON	OFF

Configurations for the Novell environment

Novell 4.11

There are two possible ways to configure the Scorpion 40 to work with Novell 4.11, depending on which tape driver you use.

Configuration 1: If you are using the existing Novell TAPEDAI driver or a version of the NWTAPE driver created before 11/3/99, you must change the Operating-System Configuration Dip switches so that switches 5 and 8 are OFF, as shown in the table below. This is different from their default settings (all switches ON).

Operating System / tape driver software	Switch 5	Switch 6	Switch 7	Switch 8
Novell 4.11 w/ native backup applet using TAPEDAI driver or NWTAPE.CDM driver dated before 11/3/99	OFF	ON	ON	OFF

Configuration 2: If you use the *latest* Novell NWTAPE driver (available on the Novell web site), the Operating-System Configuration Dip switches should be left in their default positions (all switches ON). From the administrator workstation, place the new NWTAPE driver in the same directory as the TAPEDAI driver (usually the system directory). Edit any .ncf files, such as autoexec.ncf, which call the TAPEDAI driver and replace calls to TAPEDAI with NWTAPE. Do not delete the TAPEDAI driver, because it may come in handy in resolving future problems.

Operating System / tape driver software	Switch 5	Switch 6	Switch 7	Switch 8
Novell 4.11 w/ native backup applet using NWTAPE driver dated after 11/3/99	ON	ON	ON	ON

Novell 5.x

There are two possible ways to configure the Scorpion 40 to work with Novell 5.x, depending on which tape driver you use.

Configuration 1: If you are still using the original Novell NWTAPE driver or any version created before 11/3/99, you must change the Operating-System Configuration Dip switches so that switches 5 and 8 are OFF, as shown in the table on the front of this sheet. This is different from their default settings (all switches ON).

Operating System / tape driver software	Switch 5	Switch 6	Switch 7	Switch 8
Novell 5.x w/ native backup applet using NWTAPE.CDM driver dated before 11/3/99	OFF	ON	ON	OFF

Configuration 2: If you use the *latest* Novell NWTAPE driver (available on the Novell web site), the Operating-System Configuration Dip switches can be left in their default positions (all switches ON). Before installing the new NWTAPE driver, first rename the old NWTAPE driver (usually found in the system directory). Then copy the new version of NWTAPE into the same directory. Do not delete the old driver, because it might come in handy in resolving future problems.

Operating System / tape driver software	Switch 5	Switch 6	Switch 7	Switch 8
Novell 5.x w/ native backup applet using NWTAPE.CDM driver dated after 11/3/99	ON	ON	ON	ON

Configurations for the DEC UNIX environment

Dip switch settings

Before using the Scorpion 40 in a DEC UNIX environment, set the operating-system dip switches as shown below:

Operating System / tape driver software	Switch 5	Switch 6	Switch 7	Switch 8
DEC UNIX	OFF	ON	ON	ON

Digital UNIX Version 4.0 and later

With Version 4.0 of their UNIX operating system, DEC introduced a new method of configuring the CAM SCSI driver. Modify the file `/etc/ddr.dbase` as follows:

1. Look through the file and locate the database entry for the DEC TLZ07 DAT drive
2. Copy this entry and paste it later in the file, taking care to maintain the file syntax.
3. Modify this new entry as shown below.

```
SCSIDEVICE
#
Type = tape
Name = "SEAGATE" "DAT"
#
PARAMETERS:
    TypeSubClass           = rdat
    TagQueueDepth          = 0
    MaxTransferSize        = 0x0fffffff # (16MB - 1)
    ReadyTimeSeconds       = 60          # seconds
```

```
DENSITY:
#
DensityNumber = 0,3,4,5,6,7
DensityCode = default
CompressionCode = 0x0
Buffered = 0x1
```

```
DENSITY:
#
DensityNumber = 1,2
DensityCode = default
CompressionCode = 0x1
Buffered = 0x1
```

4. Save the database file.
5. Run the following command: **ddr_config -c**. This takes the default input file, ddr.dbase, and builds a new device database. The new device database is effective immediately, and there is no need to rebuild the kernel.

Digital UNIX Versions earlier than 4.0.

Configure the system by modifying the file **cam_data.c**. This is located in either `/usr/sys/data` or `/sys/data`, depending on the system configuration. The `cam_data.c` file should be modified as shown below:

1. Look through the file to locate the database entry for the "TLZ07 - RDAT" drive.
2. Make a copy of this entry and paste it later in the file, taking care to maintain the syntax of the C source.
3. Modify the new entry as shown below.

```
/* Seagate DAT Drive Returning "SEAGATE DAT" Inquiry */
{"SEAGATE DAT", 14, DEV_TLZ07,
 ALL_DTYPE_SEQUENTIAL << DTYPE_SHFT) | SZ_RDAT_CLASS,
 struct pt_info *)ccmn_null_sizes, SZ_NO_BLK, (DEC_MAX_REC - 1),
 &tlz07_dens, NO_MODE_TAB, SZ_NO_FLAGS,
 NO_OPT_CMDS, SZ_READY_DEF, SZ_NO_QUEUE,
 DD_REQSNS_VAL | DD_INQ_VAL, 36, 64
},
```

4. Rebuild the kernel using the *doconfig* script. Then reboot the system.

Configurations for the Sun UNIX environment

Dip switch settings

Before using the Scorpion 40 in a Sun UNIX environment, set the operating-system dip switches as shown below:

Operating System / tape driver software	Switch 5	Switch 6	Switch 7	Switch 8
Sun UNIX	ON	OFF	ON	ON

Sun OS 4.1.x

To configure SunOS 4.1.x to use the Scorpion 40, you must modify the **stdef.h** and **st_conf.c** files (in the directory `/usr/sys/scsi/targets`), then rebuild the kernel, as described below:

1. Modify the **stdef.h** file by adding a define statement for the Seagate drive like the one shown below:

```
#define ST_TYPE_SEAGATE_DAT <value>
```

This statement should be added after the last `ST_TYPE_` define statement in the file. `<value>` should be the next unused hexadecimal value. This value will depend on the release and number of devices supported by the system. For example, if the last value for an existing device is `0x2d`, then use a value of `0x2e`.

2. Modify the **st_conf.c** file by adding the following lines at the end of the device definition list:

```
/*Seagate DAT drive support */
{
  "SEAGATE DAT", 7, "SEAGATE", ST_TYPE_SEAGATE_DAT, 10240,
  (ST_VARIABLE | ST_BSF | ST_BSR | ST_LONG_ERASE | ST_KNOWS_EOD),
  5000, 5000,
  {0x0, 0x8c, 0x8c, 0x8c},
  {0, 0, 0, 0}
}
```

3. Use the `config` command to rebuild the kernel and include the new device definition. Refer to the `config` man page for details.

Solaris 2.x

1. To configure Solaris 2.x for compatibility with the Scorpion 40, add the following lines to the file **st.conf** in the directory */kernel/drv*.

```
tape-config-list=  
    "SEAGATE DAT      06240-XXX", "Seagate DAT  
Drive", "SEAGATE_DAT";  
SEAGATE_DAT = 1,0x34,0,0xd639,4,0x00,0x8C,0x8C,0x8C,3;
```

Note: The inquiry string above contains four spaces between the word DAT and the value 06240.

2. After modifying the file **st.conf**, you must reconfigure the kernel by booting the system using the *boot -r* command

Configurations for the SGI environment

Dip switch settings

Before using the Scorpion 40 in a SGI UNIX environment, make sure the dip switches are all set to ON, as shown in the table below:

Operating System / tape driver software	Switch 5	Switch 6	Switch 7	Switch 8
SGI UNIX	ON	ON	ON	ON

Note: The main difference between tape drive support in Irix 5.x and 6.x is the introduction for Data Compression switching via software in Irix version 6.2. When running Irix 5.x, the drive will always operate in the compression setting determined by switch 6 on the bottom of the drive (off=compression enabled (default), on=compression disabled).

Irix V5.x

To configure Irix 5.x to use the Scorpion 40, you must modify the file `/var/sysgen/master.d/scsi` as described below:

1. Edit the file `/var/sysgen/master.d/scsi` and add the following entry:

```
{DATTAPE,TPDAT,7,12,"SEAGATE", "DAT    06240" /*DAT*/ ,0,0,{0,0,0,0},
MTCAN_BSF|MTCAN_BSR|MTCAN_APPEND|MTCAN_SETMK|MTCAN_PART|MTCAN_PREV|
MTCAN_SYNC|MTCAN_SPEOD|MTCAN_CHKRDY|MTCAN_VAR|MTCAN_SETSZ|
MTCAN_SILI|MTCAN_SEEK|MTCAN_CHTYPEANY,
/* minimum delay on i/o is 12 minutes, to allow the Drives
* full error recovery sequence to be performed. */
40, 12*60, 12*60, 12*60, 512, 512*512 },
```

Note: The string above contains four spaces between the word `DAT` and the value `06240`.

2. Rebuild the kernel using the `autoconfig` command (see the `autoconfig` man page for details). After the kernel is rebuilt you will need to reboot the system again to bring the changes into effect.

Note: Irix 5.3 and later will detect the changes made and automatically rebuild the kernel the next time the system boots.

Irix V6.x through V6.5

To configure Irix 6.x-6.5 to use a Scorpion 40, you must modify the files **/var/sysgen/master.d/scsi** and **/dev/MAKEDEV.d/TPS_base**, as described below. After modifying these files you must rebuild the kernel.

1. Edit the file **/var/sysgen/master.d/scsi** and add one of the following entries, depending on your version of IRIX:

For IRIX V6.x through V6.4:

```
{ DATTAPE, TPDAT, 7, 12, "SEAGATE", "DAT    06240"/*DAT*/, 0, 0,
{0},
/* This drive uses mode select page 0xf for compression control;
* most of the other drives supporting compression use page 0x10
*/
MTCAN_BSF|MTCAN_BSR|MTCAN_APPEND|MTCAN_SETMK|MTCAN_PART|MTCAN_PREV|
MTCAN_SYNC|MTCAN_SPEOD|MTCAN_CHKRDY|MTCAN_VAR|MTCAN_SETSZ|
MTCAN_SILI|MTCAN_SEEK|MTCAN_CHTYPEANY|MTCAN_COMPRESS,
/* minimum delay on i/o is 12 minutes, to allow the Drives
* full error recovery sequence to be performed. */
40, 12*60, 12*60, 12*60, 512, 512*512, 0, (u_char *)0 },
```

For IRIX V6.5:

```
{ DATTAPE, TPDAT, 7, 12, "SEAGATE", "DAT    06240"/*DAT*/, 0, 0,
{0},
/* This drive uses mode select page 0xf for compression control;
* most of the other drives supporting compression use page 0x10
*/
MTCAN_BSF|MTCAN_BSR|MTCAN_APPEND|MTCAN_SETMK|MTCAN_PART|MTCAN_PREV|
MTCAN_SYNC|MTCAN_SPEOD|MTCAN_CHKRDY|MTCAN_VAR|MTCAN_SETSZ|
MTCAN_SILI|MTCAN_SEEK|MTCAN_CHTYPEANY|MTCAN_COMPRESS,
/* minimum delay on i/o is 12 minutes, to allow the Drives
* full error recovery sequence to be performed. */
40, 12*60, 12*60, 12*60, 3*3600, 512, 512*512,
```

```
tpsc_default_dens_count, tpsc_default_hwg_dens_names,
tpsc_default_alias_dens_names,
{0},0,0,0,
0, (u_char *)0 },
```

2. Edit the file **/dev/MAKEDEV.d/TPS_base** and make the following modification (this modification is not required on systems running IRIX 6.4 or 6.5).

Locate the area of code which deals with DAT drives. This starts with:

```
*Drive?type:*DAT*
```

Then insert the following text before or after the similar entries for other supported devices:

```
*Device:*DAT*06240*) # DAT drive with compression
    mdev=`expr $mdev + 8`;
    mknod ${prf}$lc c ${C_TPS} $mdev;
;;
```

3. Restart the system. Irix 6.x will detect the changes made and automatically rebuild the kernel on startup.

Alternatively, you could manually rebuild the kernel using the `autoconfig` command (see the `autoconfig` man page for details), then reboot the system again to bring the changes into effect.

Troubleshooting installations on the SGI platform

Checking the drive's inquiry string

It may be useful to confirm the drive's inquiry string. This is done using the `mt` command. The following command line will retrieve the Inquiry string and other status data from a drive on SCSI bus 1, ID 4.

```
mt -f /dev/rmt/tps1d4 status
```

System Interchange Problems

If the following error appears when trying to restore a `cpio` archive from another system, it is likely that a mistake was made in the installation sequence in section 7.1 above:

```
Byte swapped Data - re-try with correct device
```

If this error is encountered, make sure that the correct modifications were made to the file `/var/sysgen/master.d/scsi`.

Switching Hardware Compression

Irix 6.x provides support for software switching of hardware compression through the use of different device drivers. Drivers including a "c" in the device name should enable compression. You may be able to resolve problems with data compression by installing the latest Irix 6.x patch set.

Configurations for the HP-UX environment

Dip switch settings

Before using the Scorpion 40 in an HP UNIX environment, set the operating-system configuration dip switches as shown below:

Operating System / tape driver software	Switch 5	Switch 6	Switch 7	Switch 8
HP UNIX	ON	ON	OFF	ON

HP-UX Versions 10.2 and 11:

Follow the steps below to configure these HP-UX systems:

1. Log in as root.
2. Run the SAM utility.
3. Choose the Peripheral Devices option.
4. Choose Tape Drives.
5. From the Actions menu in the Tape Device Manager window, choose Add.
6. Within the Add a Tape Drive window, read the instructions, then click on OK.
7. SAM may detect that your HP-UX kernel lacks the drivers necessary to make use of your new tape drive. If so, within the "Device Driver Check" window, read the message and choose the appropriate action. If the chosen option is Build a new kernel and shut down the system immediately, SAM will create a new kernel, and automatically reboot the system. Once the system comes back up, the necessary drivers will be loaded, and the system will be able to use the tape drive.
8. If you had to shut down the system in order to physically connect the tape drive, re-enter SAM and repeat steps 3 through 6 above.
9. Choose the new tape drive.
10. From the *Actions* menu, choose *Create Device Files*.
11. Press OK and then exit from SAM.

Configurations for the IBM AIX environment

Dip switch settings

Before using the Scorpion 40 in an IBM AIX environment, set the operating-system configuration dip switches as shown below:

Operating System / tape driver software	Switch 5	Switch 6	Switch 7	Switch 8
IBM UNIX	ON	OFF	ON	OFF

AIX Version 3.2 and later

AIX Versions 3.2 and later can be configured to work with the Scorpion 40 by using the SMIT “Other SCSI Tape Drive” option.

Note: To use this procedure, you will need to know the SCSI ID being used by the tape drive.

To configure AIX using the SMIT utility, use the following procedure:

1. Enter SMIT at the Tape Drive menu by typing “smit tape”
2. Select “Add a tape drive”
3. Select the type of tape drive you will be adding. Use the “Other SCSI Tape Drive” option.
4. Select the parent SCSI Adapter from the available list
5. The Add a tape Drive entry fields now appear. Some of the standard options need to be changed to maximize drive performance and functionality:
 - Set the “Connection Address” with the tape drive’s Target and LUN (always use 0 for the LUN). In the list, the Target is the first number and the LUN is the second. For example, if the drive is ID 5, choose 5,0
 - Set the Fixed “Blocksize” to 1024
 - Set “Density 1” to 140

- Set the "Maximum delay for the Read/Write command" to 900
6. Press the RETURN key. The drive will be installed in the system database and the appropriate devices created
 7. Exit SMIT

Controlling data compression under AIX

After you run SMIT, device files will have been created for your new tape drive. Typical filenames are listed below:

```
/dev/rmt0      /dev/rmt0.1  /dev/rmt0.2  /dev/rmt0.3  
/dev/rmt0.4   /dev/rmt0.5  /dev/rmt0.6  /dev/rmt0.7
```

If you enter the configuration information specified in step 5 of the configuration process, devices rmt0, rmt0.1, rmt0.2 and rmt0.3 will cause the drive to write in compressed mode. Using devices rmt0.4, rmt0.5, rmt0.6 and rmt0.7 will cause the drive to write with compression disabled.

Configurations for Linux and SCO UNIX environments

The following table summarizes the settings for the operating-system configuration dip switches that should be used for [Linux and SCO UNIX](#) environments.

Operating System / tape driver software	Switch 5	Switch 6	Switch 7	Switch 8
Linux	ON	ON	ON	ON
SCO (ODT and Open Server) installation using MAKDEV utility	OFF	ON	ON	OFF
SCO UnixWare 7.x	ON	ON	ON	ON