

	Mode	Mode	Mode
Check Power Mode	o	o	o
Disable Password	x	o	x
Execute Drive Diagnostic	o	o	o
Erase Prepare	x	o	x
Erase Unit	x	o	x
Format Track	x	o	o
Freeze Lock	x	o	o
Identify Drive	o	o	o
Idle	o	o	o
Idle Immediate	o	o	o
Initialize Drive Parameters	o	o	o
Read Buffer	o	o	o
Read DMA	x	o	o
Read Long	x	o	o
Read Multiple	x	o	o
Read Sector(s)	x	o	o
Read Verify Sector(s)	x	o	o
Recalibrate	o	o	o
Seek	o	o	o
Set Features	o	o	o
Set Multiple Mode	o	o	o
Set Password	x	o	x
Set Sleep Mode	o	o	o
Standby	o	o	o
Standby Immediate	o	o	o
Unlock	o	o	x
Write Buffer	o	o	o
Write DMA	x	o	o
Write Long	x	o	o
Write Multiple	x	o	o
Write Sector(s)	x	o	o
Write Verify	x	o	o

- o Drive executes command normally
- x Drive terminates command with error register of Aborted Command.

Drive Commands

- Disable Password (F6h)

The Disable Password command requests a transfer of a single sector of data from the host including information specified below. Then the drive checks the transferred password. If the User Password or Master Password match the drive disables the lock function. This command does not change the Master Password which may be re-activated later by setting User Password.

Password Information for Password disable command

Word	Description
00	Control word

	bit 0	: Identifier; 1-Master, 0-User
	bit 1-15	: Reserved
01-16	Password	(32 bytes)
17-255	Reserved	

The drive will compare the password sent from this host with that specified in the control word.

Identifier Zero indicates that the drive should check the supplied password against the user password stored internally. One indicates that the drive should check the given password against the master password stored internally.

- Erase Prepare (F3h)

The Erase Prepare Command must be issued immediately before the Erase Unit Command to enable drive erasing and unlocking. This command is to prevent accidental erasure of the drive.

This command does not request a data transfer.

- Erase Unit (F4h)

This command requests to transfer a single sector data from the host. If the password does not match then the drive rejects the command with an Aborted error.

Erase Unit information

Word	Description
00	Control word
	bit 0 : Identifier; 1-Master, 0-User
	bit 1-15 : Reserved
01-16	Password (32 bytes)
17-255	Reserved

Identifier Zero indicates that the drive should check the supplied password against the user password stored internally. One indicates that the drive should check the given password against the master password stored internally.

The Erase Unit command erases all user data. The erase prepare command should be completed immediately prior to the Erase Unit command. If the drive receives an Erase Unit command without a prior Erase Prepare command the drive aborts the erase unit command.

This command disables the drive lock function, however the master password is still stored internally within the drive and may be re-activated later when a new user password is set.

- Freeze Lock (F5h)

The Freeze Lock Command sets the drive to frozen mode. After this command is completed any other commands which update the drive lock function are rejected. Frozen mode is quit by Power off.

Commands Disabled by Freeze Lock:

- Set Password
- Unlock
- Disable Password
- Erase Unit

- Set Password (F1h)

This command requests a transfer of a single sector of data from the host including the identifier. The data transferred controls the function of this command.

Word	Description
00	Control word
	bit 0 : Identifier; 1-Master, 0-User
	bit 1-7 : Reserved
	bit 8 : Security level; 1 Maximum, 0 High
	bit 9-15 : Reserved
01-16	Password (32 bytes)
17-255	Reserved

Identifier	Zero indicates that drive regards Password as User Password. One indicates that drive regards Password as Master Password.
Security Level	Zero indicates High level, one indicates Maximum level. If the host sets High level and the password is forgotten, then the Master Password can be used to unlock the Drive. If the host sets Maximum level and the user password is forgotten, only an Erase Prepare/Erase Unit command can unlock the drive and all data will be lost.
Password	The text of the password - all 32 bytes are always significant.

The setting of the Identifier and Security level bits interact as follows.

Identifier=User / Security level = High

The password supplied with the command will be saved as the new user password. The lock function will be enabled from the next power on. The drive may then be unlocked by either the user password or the previously set master password.

Identifier=Master / Security level = High

This combination will set a master password but will NOT enable the lock function.

Identifier=User / Security level = Maximum

The password supplied with the command will be saved as the new user password. The lock function will be enabled from the next power on. The drive may then be unlocked by only the user password. The master password previously set is still stored in the drive but may NOT be used to unlock the drive.

Identifier=Master / Security level = Maximum

This combination will set a master password but will NOT enable the lock function.

- Unlock (F2h)

The Unlock command requests to transfer a single sector of data from the host including information specified in Figure 6-35 on page 6-41.

If the Identifier bit is set to master and the drive is in high security mode then the password supplied will be compared with the stored master password. If the drive is in maximum security mode then the unlock will be rejected.

If the Identifier bit is set to user then the drive compares the supplied password with the stored user password.

If the password compare fails then the drive returns an abort error to the host and decrements the unlock attempt counter. This counter is initially set to 5 and is decremented for each password mismatch, this includes password mismatches for all security commands. When this counter reaches zero then all password protected commands are rejected until a hard reset.

Identify Word 128

Identify word 128 is used to indicate security status.

Bit assignments

15-9	: Reserved	
8	: Security Level	1=Maximum, 0=High
7-4	: Reserved	
3	: Freeze	1=Frozen
2	: Lock	1=Locked
1	: Enable/Disable	1=Enabled
0	: Capability	1=Support