

# Q200 Series™ Intelligent Disk Drives

MAR 19 1986

## SCSI Command Set

Quantum's Q200 Series intelligent fixed disk drives are offered with a full implementation of the Small Computer Systems Interface (SCSI). SCSI commands and messages available for systems integrators using Quantum's Q200 Series disk drives are detailed below.

### General Description

In the SCSI environment, commands are given by an "initiator"; that is, a device (host or peripheral device) requiring an action. The initiator sets up active pointers for the operation requested, arbitrates for the SCSI bus, and selects the "target"; that is, the device which will satisfy the requested action. Once this process is complete, the target assumes control of the action.

The target obtains the command from the initiator, interprets the command, executes it, and ends the operation by sending a "Command Complete" message to the initiator.

In the case of a Q200 device identified as a target, the Q200, with its integrated controller, represents the target as well as the logical unit or attached peripheral.

### SCSI Commands Supported

Opcode (Hex)	Name	SCSI Type	Description
00	Test Unit Ready	O	Checks ready status of logical unit.
01	Rezero Unit	O	Requests target to set logical unit to a specific state (Q200 to track 0).
03	Request Sense	S	Requests target to transfer sense data to initiator.
04	Format Unit	S	Formats or reformats logical unit.
07	Reassign Blocks	O	Requests target to reassign defective logical blocks to Replacement Sector Map.
08	Read	S	Requests target to transfer data to initiator. A maximum of 256 logical blocks can be transferred with this command. Command provides 3 bytes for logical block address.

# Quantum

Opcode (Hex)	Name	SCSI Type	Description	Opcode (Hex)	Name	SCSI Type	Description
0A	Write	S	Requests target to write data transferred from initiator. A maximum of 256 logical blocks can be transferred with this command. Command provides 3 bytes for logical block address.	28	Read	O	Requests target to transfer data to the initiator. A maximum of 65K blocks can be transferred with this command. Command provides 4 bytes for logical block address.
0B	Seek	O	Requests logical unit to seek to specified 3-byte logical block address.	2A	Write	O	Requests target to write data transferred from the initiator. A maximum of 65K blocks can be transferred with this command. Command provides 4 bytes for logical block address.
12	Inquiry	E	Requests target to send parameter information regarding target and attached peripheral device(s) to initiator.				
15	Mode Select	O	Allows initiator to specify medium, logical unit, or peripheral parameters to target.	2B	Seek	O	Requests logical unit to seek to specified 4-byte logical block address.
16	Reserve	O	Allows initiator to reserve logical units for its use.	39	Compare	O	Allows comparison of data on a byte-by-byte basis from one logical unit to another or to the same logical unit.
17	Release	O	Allows initiator to release previously reserved logical units.	2F	Verify	O	Requests target to verify data written on the medium.
18	Copy	O	Allows copying of data from one logical unit to another or to the same logical unit.	37	Read Defect Data	O	Requests target to transfer medium defect data to initiator.
1A	Mode Sense	O	Allows target to report medium, logical unit, or peripheral parameters to the initiator.	3B	Write Buffer	O	Diagnostic function for testing data buffer memory and SCSI bus integrity.
1B	Start/Stop Unit	O	Requests target to enable or disable the logical unit for further operations. (Q200 features a jumper option for autostart.)	3C	Read Buffer	O	Diagnostic function for testing data buffer memory and SCSI bus integrity.
1C	Receive Diagnostic Results	O	Internal command requesting analysis data to be sent to initiator after completion of "Send Diagnostic" command.	<b>SCSI Commands Not Supported</b>			
1D	Send Diagnostic	O	Internal command requesting target to perform specified diagnostics on itself, or attached peripherals or on both.	2E	Write and Verify	O	Achieved using Write (2A) and Compare (39) commands.
25	Read Capacity	O	Allows initiator to request information on the capacity of a logical unit.	30	Search Data High	O	Searches one or more logical blocks for more-than-equal or equality to a data pattern.
				31	Search Data Equal	O	Searches one or more logical blocks for equality to a data pattern.

Opcode (Hex)	Name	SCSI Type	Description	Opcode (Hex)	Name	SCSI Type	Description
32	Search Data Low	O	Searches one or more logical blocks for less-than-equal or equality to a data pattern.	06	Abort	O	Out. Clears the present operation requested from the issuing initiator. Does not affect data and status from other initiators.
33	Set Limits	O	Defines boundary outside of which any subsequent linked commands may not operate.	07	Message Reject	O	In/Out. Indicates last message received was inappropriate or has not been implemented.
3A	Copy and Verify	O	Achieved using Copy (18) and Compare (39) commands.	08	No Operation	O	Out. Responds to target's request for a message when initiator has no other valid message to send.
				09	Message Parity Error	O	Out. Indicates to target that one or more bytes from the last message received contained a parity error.
				0A	Linked Command Complete	O	In. Indicates execution of a linked command has completed and status sent to initiator.
				0B	Linked Command Complete (with Flag)	O	In. Indicates execution of linked command (with flag bit set to one) has completed and status sent to initiator.
				0C	Bus Device Reset	O	Out. Directs target to clear all current commands on that device. Forces device to an initial state with no operations pending for any initiator.
				80-FF	Identify	O	In/Out. Establishes physical path connection between initiator and target for a particular logical unit.

### SCSI Messages Supported

These single-byte messages are further described by a direction; that is, In = Target to Initiator; Out = Initiator to Target.

Opcode (Hex)	Name	SCSI Type	Description
00	Command Complete	S	In. Indicates execution of a command (or series of linked commands) has completed and valid status has been sent to initiator.
02	Save Data Pointer	O	In. Directs initiator to save a copy of the present active data pointer for the currently attached logical unit.
03	Restore Pointers	O	In. Directs initiator to restore to the active state the most recently saved pointers (for the currently attached logical unit).
04	Disconnect	O	In. Notifies initiator that the target plans to disconnect from the present physical path but a later reconnect will be required to complete the current operation.
05	Initiator Detected Error	O	Out. Notifies target that an error (e.g., parity error) has occurred that does not preclude target from retrying operation.

### SCSI Messages Not Supported

01	Extended Message	O	In/Out. Indicates first byte of a multiple-byte message.
----	------------------	---	--

#### SCSI Type

S = Standard  
O = Optional  
E = Extended

Refer to SCSI specification (ANSI X3T9.2) for further information on SCSI commands.

Specifications subject to change without notice.

Q200 Series is a trademark of Quantum Corporation.  
Copyright 1985. Quantum Corporation.  
Printed in the U.S.A. 1/86 5M 002



Quantum Corporation 1804 McCarthy Boulevard, Milpitas, CA 95035 (408) 262-1100