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DVD-ROM Drive SCSI Command Set

Pioneer DVD-ROM drives complies with the SFF-8090 and SFF-8020 specifications. Please refer to the *SFF-8090* specifications for details of the DVD-ROM command set and to the *SFF-8020* specifications for the CD-ROM command set.[1]

When the Pioneer DVD-ROM drives were developed, the SFF-8090 specifications were not yet finalized. It was decided to make the drive operable by both DVD-ROM and CD-ROM command sets. The drive is operable in *Mix* (SFF-8090 and SFF-8020) mode or *DVD only* (SFF-8090) mode.

Operation under Windows 95 is possible when the drive is in mix mode. When operating under OS systems supporting SFF-8090, the drive should be in DVD mode. Place the function switch bit 8 to ON to set the drive to Mix mode, and to OFF for DVD only mode.

The following pages have tables outlining the command sets for each mode, the mode page code list and the Pioneer CD-ROM SCSI-2 command set.

Some items to be aware of:

- The commands _READ DISC INFORMATION and _READ TRACK INFORMATION are for CD writer only.

- _READ HEADER - when used for DVD medium, drive returns mode1 (the drive recognizes DVD as CD-ROM mode1).

- _READ SUB-CHANNEL - there is no sub code for DVD. The drive returns data track.

- READ TOC - when used for DVD medium, the drive returns 1 data track; DVD is considered as a disc with one data track.

- SEEK(10) - the drive returns 1X only; DVD has only 1x speed.

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[1]; Specification SFF-8090 is available from `ftp://fission.dt.wdc.com/pub/standards/SFF/spec/8090r096.pdf`; specification SFF-8020 is available from `ftp://fission.dt.wdc.com/pub/standards/SFF/spec/8020_26p.pdf`. Use Adobe Acrobat Reader to view these documents. Download Adobe Acrobat Reader from `http://www.adobe.com`.

Table 1 - Command List - SFF-8020/SFF-8090 Mix Mode

Command Name	Code	Applied Mode1		DVD Error	Remark
		ATAPI	SCSI		
AUDIO SCAN	BAh	--	--	05-20-00	
INQUIRY	12h	◆	◆	--	
MODE SELECT(10)	55h	◆	◆	--	
MODE SENSE(10)	5Ah	◆	◆	--	
PAUSE/RESUME	4Bh	◆	◆	ok/ng	resume : 05-2C-00
PLAY AUDIO(10)	45h	◆	◆	05-64-00	
PLAY AUDIO MSF	47h	◆	◆	05-64-00	
PLAY AUDIO TRACK/INDEX	48h	◆	◆	05-64-00	
PLAY TRACK RELATIVE(10)	49h	◆	◆	05-64-00	
PREVENT/ALLOW MEDIUM REMOVAL	1Eh	◆	◆	--	
READ(10)	28h	◆	◆	--	
READ(12)	A8h	◆	◆	--	
READ CD	BEh	◆	◆	05-64-00	
READ CD-DA	D8h	--	◆	05-64-00	vendor unique
READ CD MSF	B9h	◆	◆	05-64-00	
READ CD-DA MSF	D9h	--	◆	05-64-00	vendor unique
READ CD-XA	DBh	--	◆	05-64-00	venor unique
READ CD-ROM CAPACITY	25h	◆	◆	--	
READ HEADER	44h	◆	◆	--	mode1
READ SUB-CHANNEL	42h	◆	◆	--	data track
READ TOC	43h	◆	◆	--	1 data track
RELEASE	17h	--	◆	--	
REQUEST SENSE	03h	◆	◆	--	
RESERVE	16h	--	◆	--	
REZERO UNIT	01h	◆	◆	--	
SEEK(10)	2Bh	◆	◆	--	
SET CD-ROM SPEED	BBh	◆	◆	--	1x only
START/STOP UNIT	1Bh	◆	◆	--	
STOP PLAY/SCAN	4Eh	◆	◆	--	
TEST UNIT READY	00h	◆	◆	--	
FLUSH CACHE[*]	35h	◆	◆	--	
GET EVENT STATUS NOTIFICATION[*]	4Ah	◆	◆	--	
READ DISC INFORMATION	51h	--	--	05-20-00	
READ DVD STRUCTURE[*]	ADh	◆	◆	--	If CD, error : 05-30-02
READ FORMATED CAPACITIES[*]	23h	◆	◆	--	
READ TRACK INFORMATION	52h	--	--	05-20-00	
REPORT KEY[*]	A4h	◆	◆	--	if CD, error : 05-30-02
SEND KEY[*]	A3h	◆	◆	--	if CD, error : 05-30-02
SET READ AHEAD[*]	A7h	◆	◆	--	if CD, error : 05-30-02
READ CDP	E4h	◆	◆	--	venor unique
READ DRIVE STATUS	E0h	◆	◆	--	venor unique
WRITE CDP	E3h	◆	◆	--	venor unique

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[*] ■ Added DVD-ROM only command.

Table 2 - Command List - SFF-8090 Only Mode

Command Name	Code	Applied Mode1		DVD Error	Remark
		ATAPI	SCSI		
AUDIO SCAN	BAh	--	--	05-20-00	
INQUIRY	12h	◆	◆	--	
MODE SELECT(10)	55h	◆	◆	--	
MODE SENSE(10)	5Ah	◆	◆	--	
PAUSE/RESUME	4Bh	◆	◆	05-30-02	
PLAY AUDIO(10)	45h	◆	◆	05-30-02	
PLAY AUDIO MSF	47h	◆	◆	05-30-02	
PLAY AUDIO TRACK/INDEX	48h	◆	◆	05-30-02	
PLAY TRACK RELATIVE(10)	49h	◆	◆	05-30-02	
PREVENT/ALLOW MEDIUM REMOVAL	1Eh	◆	◆	--	
READ(10)	28h	--	--	05-20-00	
READ(12)	A8h	◆	◆	--	
READ CD	BEh	◆	◆	05-30-02	
READ CD MSF	B9h	◆	◆	05-30-02	
READ CD-ROM CAPACITY	25h	◆	◆	--	
READ HEADER	44h	◆	◆	05-30-02	
READ SUB-CHANNEL	42h	◆	◆	05-30-02	
READ TOC	43h	◆	◆	05-30-02	
RELEASE	17h	--	◆	--	
REQUEST SENSE	03h	◆	◆	--	
RESERVE	16h	--	◆	--	
REZERO UNIT	01h	◆	◆	--	
SEEK(10)	2Bh	◆	◆	--	
SET CD-ROM SPEED	BBh	◆	◆	--	1x only
START/STOP UNIT	1Bh	◆	◆	--	
STOP PLAY/SCAN	4Eh	◆	◆	--	
TEST UNIT READY	00h	◆	◆	--	
FLUSH CACHE[*]	35h	◆	◆	--	
GET EVENT STATUS NOTIFICATION[*]	4Ah	◆	◆	--	
READ DISC INFORMATION	51h	--	--	05-20-00	
READ DVD STRUCTURE[*]	ADh	◆	◆	--	If CD, error : 05-30-02
READ FORMATED CAPACITIES[*]	23h	◆	◆	--	
READ TRACK INFORMATION	52h	--	--	05-20-00	
REPORT KEY[*]	A4h	◆	◆	--	if CD, error : 05-30-02
SEND KEY[*]	A3h	◆	◆	--	if CD, error : 05-30-02
SET READ AHEAD[*]	A7h	◆	◆	--	if CD, error : 05-30-02
READ CDP	E4h	◆	◆	--	venor unique
READ DRIVE STATUS	E0h	◆	◆	--	venor unique
WRITE CDP	E3h	◆	◆	--	venor unique

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[*] ■ Added DVD-ROM only command.

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Table 3 - Mode Page Code List

Page Code	Description	SFF-8020/SFF-8090 Mix	SFF-8090 only
00h	Only Block Descriptor	◆	◆
01h	Read Error Recover page	◆	◆
0Dh	CD-ROM Parameters page	◆	--
0Eh	CD-ROM Audio Control page	◆	◆
18h	Feature Set Support & Version page	◆	◆
1Ah	Power Condition page	◆	◆
1Ch	Fault/Failure Reporting page	--	--
1Dh	C/DVD Timeout & Protect page	◆	◆
2Ah	CD-ROM Capabilities & Mechanical Status page	◆	◆
31h	Drive Speed page (vendor unique)	◆	◆
3Fh	Return All Pages (MODE SENSE command only)	◆	◆

Table 4 - Command List - Pioneer CD-ROM SCSI-2

Command Name	Code	Applied Mode1				Sense Data
		1	2	3	4	Information Bytes
AUDIO SCAN (1)	BAh	--	--	◆	--	Logical Block Address
AUDIO SCAN (2)+	CDh	◆	◆	◆	--	Logical Block Address
CHANGE DEFINITION+	40h	1	--	--	--	
INQUIRY	12h	◆	◆	◆	◆	
MODE SELECT(6)+	15h	2	2	◆	◆	
MODE SELECT(10)	55h	2	2	◆	◆	
MODE SENSE(6)+	1Ah	2	2	◆	◆	
MODE SENSE(10)	5Ah	2	2	◆	◆	
PAUSE/RESUME	4Bh	◆	◆	◆	◆	Logical Block Address
PLAY AUDIO(10)	45h	◆	◆	◆	◆	Logical Block Address
PLAY AUDIO(12)+	A5h	◆	◆	◆	◆	Logical Block Address
PLAY AUDIO MSF	47h	◆	◆	◆	◆	Logical Block Address
PLAY AUDIO TRACK/INDEX	48h	◆	◆	◆	◆	Logical Block Address
PLAY TRACK RELATIVE(10)	49h	◆	◆	◆	◆	Logical Block Address
PLAY TRACK RELATIVE(12)	A9h	◆	◆	◆	◆	Logical Block Address
PREVENT/ALLOW MEDIUM REMOVAL	1Eh	◆	◆	◆	◆	
READ(6)	08h	◆	◆	◆	◆	Logical Block Address
READ(10)	28h	◆	◆	◆	◆	Logical Block Address
READ(12)	A8h	◆	◆	◆	◆	Logical Block Address
READ BUFFER+	3Ch	◆	◆	◆	◆	
READ CD	BEh	--	--	3	7	Logical Block Address
READ CD-DA	D8h	--	◆	3	◆	Logical Block Address
READ CD MSF	B9h	--	--	3	7	Logical Block Address
READ CD-DA MSF	D9h	--	◆	3	--	Logical Block Address
READ CD-XA	DBh	--	◆	◆	◆	Logical Block Address
READ ALL SUBCODE+	DFh	--	◆	◆	◆	Logical Block Address
READ CD-ROM CAPACITY	25h	◆	◆	◆	◆	Logical Block Address
READ HEADER	44h	◆	◆	◆	◆	Logical Block Address
READ SUB-CHANNEL	42h	◆	◆	◆	◆	
READ TOC	43h	4	◆	◆	◆	
RECEIVE DIAGNOSTIC RESULTS+	1Ch	◆	◆	◆	◆	
RELEASE	17h	◆	◆	5	5	
REQUEST SENSE	03h	◆	◆	◆	◆	

continued

+ ■ Unsupported CD-ROM command (DVD-ROM drives only).

Table 4 - Command List - Pioneer CD-ROM SCSI-2 *(continued)*

Command Name	Code	Applied Mode1				Sense Data
		1	2	3	4	Information Bytes
RESERVE	16h	◆	◆	5	5	
REZERO UNIT	01h	◆	◆	◆	◆	
SEEK (6) [+]	0Bh	◆	◆	◆	◆	Logical Block Address
SEEK (10)	2Bh	◆	◆	◆	◆	Logical Block Address
SEND DIAGNOSTIC	1Dh	◆	◆	◆	◆	
SET CD-ROM SPEED (1)	BBh	--	--	◆	◆	
SET CD-ROM SPEED (2) [+]	DAh	◆	◆	◆	◆	
START/STOP UNIT	1Bh	◆	◆	◆	◆	
STOP PLAY/SCAN	4Eh	--	--	◆	◆	
TEST UNIT READY	00h	◆	◆	◆	◆	
VERIFY (10) [+]	2Fh	◆	◆	--	--	Logical Block Address
VERIFY (12) [+]	AFh	◆	◆	--	--	Logical Block Address
WRITE BUFFER [+]	3Bh	◆	◆	5	5	
READ CDP	E4h	◆	◆	◆	◆	
READ DRIVE STATUS	E0h	◆	◆	◆	◆	
WRITE CDP	E3h	◆	◆	◆	◆	

[+] ■ Unsupported CD-ROM command (DVD-ROM drives only).