



Standard Command Table:

Command	Corresponding Address	Command Type	Response Mode	Command Name	Command Description
CMD0	[31:0] stuff bits	bc	No Response	GO_IDLE_STATE	Reset the Memory Card.
CMD1	Reserved				
CMD2	[31:0] stuff bits	bcr	R2	ALL_SEND_CID	Ask all cards to send the CID numbers in the CMD Line.
CMD3	[31:0] stuff bits	bcr	R6	SEND_RELATIVE - ADDR	Ask the card to pulish a new Relative Address (RCA).
CMD4	[31:16] DSR [15:0] stuff bits	bc	R1	SET_DSR	Program the DSR of all cards.
CMD5	Reserved				
CMD7	[31:16] RCA [15:0] stuff bits	ac	R1b (only from the selected card)	SELECT/DESELE CT_ CARD	Command toggles a card between the stand-by and transfer states or between the programming and disconnect states. In both cases, the card is selected by its own relative address and gets deselected by any other address; address 0 deselects all. In the case that the RCA equals 0, then the host may do one of the following: - Use other RCA number to perform card de-selection. - Re-send CMD3 to change its RCA number to other than 0 and then use CMD7 with RCA=0 for card deselection
CMD9	[31:16] RCA [15:0] stuff bits	ac	R2	SEND_CSD	The Addressed card sends its card-specific Data on the Command Line.



CMD10	[31:16] RCA [15:0] stuff bits	ac	R2	SEND_CID	The addressed card sends its card identification on the Command Line.
CMD11	Reserved				
CMD12	[31:0] stuff bits	ac	R1b	STOP_TRANSMISSION	Force the card to stop transmitting.
CMD13	[31:16] RCA [15:0] stuff bits	ac	R1	SEND_STATUS	The addressed card sends its status register.
CMD14	Reserved				
CMD15	[31:16] RCA [15:0] stuff bits	ac		GO_INACTIVE_STATE	Send an addressed card into the inactive state.

Command	Corresponding Address	Command Type	Response Mode	Command Name	Command Description
CMD16	[31:0] block length	ac	R1	SET_BLOCKLEN	Set the block length of the Block Command (Read/Write). If the block length is larger than 512 Bytes, the card sets the BLOCK_LEN_ERROR bit.
CMD17	[31:0] data address	adtc	R1	READ_SINGLE_BLOCK	Set to read the single BLOCK, the Command is set as SET_BLOCKLEN (Read).
CMD18	[31:0] data address	adtc	R1	READ_MULTIPLE_BLOCK	Read multiple Blocks and transfer the Block data from Card to Host until the CMD11 appears to stop transmitting data (Read).
CMD19 to CMD23	Reserved				

Table 1: Block-Oriented Read Commands (class 2)



Command	Corresponding Address	Command Type	Response Mode	Command Name	CommandDescription
CMD16	[31:0] data address	ac	R1	SET_BLOCK_LEN	Set the Block Length (Byte) for the Block Commands (Read, Write and Lock).The system sets the defaulted Data Block Length on the CSD Line if some Read/Write Blocks are only set on CSD Line to operate.
CMD24	[31:0] data address	adtc	R1	WRITE_BLOCK	Write the Block Length, the Command is set as SET_BLOCKLEN (Write).
CMD25	[31:0] data address	adtc	R1	WRITE_MULTIPLE_BLOCK	Continuously write blocks of data until a STOP_TRANSMISSION follows. (Write)
CMD26	Reserved for Manufacturer				
CMD27	[31:0] stuff bits		R1	PROGRAM_CSD	Program the programmable bits of the CSD.

Table 2: Block-Oriented Write Commands (class 4)



Command	Corresponding Address	Command Type	Response Mode	Command Name	Command Description
CMD28	[31:0] data address	Ac	R1b	SET_WRITE_PROT	If the card has the write protection features, the Command sets the write protection bit of addressed group. The properties of write protection are coded in the card specific data.
CMD29	[31:0] data address	Ac	R1b	CLR_WRITE_PROT	If the card provides the write protection features, the Command clears the write protection bit of the addressed group.
CMD30	[31:0] write protect data address	adtc	R1	SEND_WRITE_PROT	If the card provides the write protection features, the command asks the card to send the status of the write protection bits.
CMD31	Reserved				

Table 3: Block Oriented Write Protection Commands (class 6)



Command	Corresponding Address	Command Type	Response Mode	Command Name	CommandDescription
CMD32	[31:0]DATA address	ac	R1	ERASE_WR_BLK - START	Set the address of the first write block to be erased.
CMD33	[31:0]DATA address	ac	R1	ERASE_WR_BLK - end	Set the address of the last write block of the continuous range to be erased.
CMD38	[31:0] stuff bits		R1B	ERASE	Erase all previously selected write blocks.
CMD39	Reserved				
CMD40	Reserved				Not valid in SD Memory Card- Reserved for Multimedia Card I/O mode.
CMD41	Reserved				

Table 4: Erase Commands (class 5)

Command	Corresponding Address	Command Type	Response Mode	Command Name	CommandDescription
CMD16	[31:0] block length	Ac	R1	SET_BLOCK_LEN	Indicate to the card that the next command is the specific command or the same to the standard command, and set the password length.
CMD42	[31:0] stuff bits	adtc	R1	LOCK_UNLOCK	Used to set/reset the password or lock/unlock the card. The size of the data block is set by the SET_BLOCK_LEN command (Write).
CMD43-49 CMD51	Reserved				

Table 5: Lock Card Commands (class 7)



Command	Corresponding Address	Command Type	Response Mode	Command Name	CommandDescription
CMD55	[31:16] RCA [15:0] stuff bits	Ac	R1	APP_CMD	Indicate to the card that the next command is an application specific command rather than a standard command.
CMD56	[31:1] stuff bits. [0]: RD/WR	adtc	R1	GEN_CMD	Used either to transfer a data block to the card or to get a data block from the card for general purpose/application specific commands.(Read or Write). The size of the data block shall be set by the SET_BLOCK_LEN command. (The specific command for the Read/Write command. The host sets RD/WR=1 for reading data from the card and sets to 0 for writing data to the card.)
CMD58-59	Reserved				
CMD60-63	Reserved for Manufacturer				

Table 6: Application-specific Commands (class 8)

CMD52CM D54	Reserved for I/O mode (refer to the "SDIO Card Specification").
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Table 7: I/O Mode Commands (class 9)



Application-specific Command Table:

Command	Corresponding Address	Command Type	Response Mode	Command Name	Command Description
ACMD6	[31:2] stuff bits [1:0]bus width	ac	R1	SET_BUS_WIDTH	Define the data bus width ("00"=1bit bus or "10"=4 bits bus) to be used for data transfer. The SET_BUS_WIDTH command is given in SCR register.
ACMD13	[31:0] stuff bits	Adtc	R1	SD_STATUS	Send the SD Card status. (Please refer to the Card Status Specifications for learning the details) (Write).
ACMD17	Reserved				
ACMD18					(Refer to the SD security applications.)
ACMD19.. ACMD21	Reserved				
ACMD22	[31:0] stuff bits	adtc	R1	SEND_NUM_WR_BLOCKS	Send the number of the write blocks, and respond with 32bit+CRC data block. If WRITE_BL_PARTIAL='0', the unit of ACMD22 is always 512 Bytes. (Write) If WRITE_BL_PARTIAL='1', the unit of ACMD22 is a block length.
ACMD23	[31:23] stuff bits [22:0]Number of blocks	ac	R1	SET_WR_BLK_ERASE_COUNT	Set the number of write blocks to be pre-erased before writing (to be used for faster Multiple Block WR command).
ACMD24	Reserved				
ACMD25					Reserved for SD security applications
ACMD26					Reserved for SD security applications
ACMD38					Reserved for SD security



					applications
ACMD39.. ACMD40					
ACMD41	[31:0]OCR without busy	bcr	R3	SD_SEND_OP_C OND	Ask the accessed card to send its operating condition register (OCR) content in the response on the CMD line.
ACMD42	[31:1] stuff bits [0]set_cd	ac	R1	SET_CLR_CARD _ DETECT	Connect [1]/Disconnect [0] the 50 KOhm pull-up resistor on CD/DAT3 (pin 1) of the card.
ACMD43 ACMD49	Reserved				Reserved for SD security applications
ACMD51	[31:0] stuff bits	adtc	R1	SEND_SCR	Send the SD Configuration Register (SCR).(Write)

Table 8: Application Specific Commands used/reserved by SD Memory Card



Switch Function Command Table:

Command	Corresponding Address	Command Type	Response Mode	Command Name	Command Description
CMD6	[31] Mod0:Check function 1:Switch function [30:24] Reserved (All '0') [23:20] Reserved for function group 6 (All '0' Or0xF) [19:16] Reserved for function group 5 (All '0'or 0xF) [15:12] Reserved for function group 4 (All '0' or0xF) [11:8] Reserved for function group 3 (All '0' or0xF) [7:4] function group 2 for command system [3:0] function group 1 for access mode	adtc	R1	SET_BUS_WI DTH	Confirm the mode (Write).
CMD34	Reserved for each command system set by switch function command (CMD6). Detailed definition is referred to each command system specification.				
CMD35					
CMD36					
CMD37					
CMD50					
CMD57					

Table 9: Switch Function Commands (class 10)



※ Note:

1: CMD'X' is denoted by the 6bits, and the binary value is transferred as the decimal value. For example, the CMD3 is 6₍₁₀₎, that is 000011₍₂₎; CMD42 is 101010₍₂₎.

2: ACMD belongs to the specific command. The following command does not belong to the specific command until the CMD55 appears. The ACMD'X' is the same as the other commands, whose values are transferred from the binary.

3: Ac denotes that only the host transfers the Command.

4: Bcr denotes that there is the Response.

5: Ac denotes the Command and Response are performed on the CMD line, but there is not action on the DAT line.

6: Adtc denotes there is command to be performed on the CMD line, and there is data to be transferred on the DAT line. (It is the important condition to judge the Data Packet on the DAT line.)

Register Response (Response Format)

R1 Response Mode (normal response command):

Response from the Host corresponds to the Command index one by one.

Bit position	47	46	[45:40]	[39:8]	[7:1]	0
Width (bits)	1	1	6	32	7	1
Value	0	0	COMMAND	X	CRC7	1
Description	start bit	Card	command index	Response status	Check	end bit

Table 10: Normal Response R1

R2 Response CID and CSD register (Specific):

Response from the Host accesses to the Card CID/CSD register mode.

Bit position	135	134	[133:128]	[127:1]	0
Width (bits)	1	1	6	32	1
Value	0	0	111111	X	1
Description	start bit	Card	fixed value	CID or CSD register Response Status	end bit

Table 11: CID/CSD Register Response R2



R3 Response OCR register (Specific):

Response from the Host accesses to the OCR register mode.

Bit position	47	46	[45:40]	[39:8]	[7:1]	0
Width (bits)	1	1	6	32	7	1
Value	0	0	111111	X	111111	1
Description	start bit	Card	fixed value	OCR status	fixed value	end bit

Table 12: OCR Register Response R3

R6 Response RCA register (Specific):

Response from the Host accesses to the RCA register mode (The command lines are corresponded.).

Bit position	47	46	[45:40]	[39:8]	[7:1]	0	
Width (bits)	1	1	6	16	16	7	1
Value	0	0	000011	X	X	111111	1
Description	start bit	Card	Fixed (CMD 3 response)	version	status	fixed value	end bit

Table 13: RCA Register Response R6

※ Note:

1: The R1 Normal Response is depended on the HOST, namely, this value 45:40 is interpreted as a binary code number.

2: The Start Bit of the specific Command Response is 11111.