MIFARE Classic 1K Access Bits Calculator

Byte Number	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Description	KEY A						Access Bits				KEY B (optional)					
							0x78	0x77	0x88	USER						

Access conditions for data block 0

Access bits				Access condition for				Application
	$C1_0$	$C2_0$	$C3_0$	read	write	increment	decrement, transfer, restore	
○	0	0	0	key A|B[1]	key A|B[1]	key A|B[1]	key A|B[1]	transport configuration
○	0	1	0	key A|B[1]	never	never	never	read/write block
◉	1	0	0	key A|B[1]	key B[1]	never	never	read/write block
○	1	1	0	key A|B[1]	key B[1]	key B[1]	key A|B1	value block
○	0	0	1	key A|B[1]	never	never	key A|B[1]	value block
○	0	1	1	key B[1]	key B[1]	never	never	read/write block
○	1	0	1	key B[1]	never	never	never	read/write block
○	1	1	1	never	never	never	never	read/write block

[1] if Key B may be read in the corresponding Sector Trailer it cannot serve for authentication (all grey marked lines in last table). As a consequences, if the reader authenticates any block of a sector which uses the grey marked access conditions and using key B, the card will refuse any subsequent memory access after authentication.

Access conditions for data block 1

Access bits				Access condition for				Application
	$C1_1$	$C2_1$	$C3_1$	read	write	increment	decrement, transfer, restore	
○	0	0	0	key A|B[1]	key A|B[1]	key A|B[1]	key A|B[1]	transport configuration
○	0	1	0	key A|B[1]	never	never	never	read/write block
◉	1	0	0	key A|B[1]	key B[1]	never	never	read/write block
○	1	1	0	key A|B[1]	key B[1]	key B[1]	key A|B1	value block
○	0	0	1	key A|B[1]	never	never	key A|B[1]	value block
○	0	1	1	key B[1]	key B[1]	never	never	read/write block
○	1	0	1	key B[1]	never	never	never	read/write block
○	1	1	1	never	never	never	never	read/write block

[1] if Key B may be read in the corresponding Sector Trailer it cannot serve for authentication (all grey marked lines in last table). As a consequences, if the reader authenticates any block of a sector which uses the grey marked access conditions and using key B, the card will refuse any subsequent memory access after authentication.

Access conditions for data block 2

Access bits				Access condition for				Application
	$C1_2$	$C2_2$	$C3_2$	read	write	increment	decrement, transfer, restore	
○	0	0	0	key A|B[1]	key A|B[1]	key A|B[1]	key A|B[1]	transport configuration
○	0	1	0	key A|B[1]	never	never	never	read/write block
◉	1	0	0	key A|B[1]	key B[1]	never	never	read/write block
○	1	1	0	key A|B[1]	key B[1]	key B[1]	key A|B1	value block
○	0	0	1	key A|B[1]	never	never	key A|B[1]	value block
○	0	1	1	key B[1]	key B[1]	never	never	read/write block
○	1	0	1	key B[1]	never	never	never	read/write block
○	1	1	1	never	never	never	never	read/write block

[1] if Key B may be read in the corresponding Sector Trailer it cannot serve for authentication (all grey marked lines in last table). As a consequences, if the reader authenticates any block of a sector which uses the grey marked access conditions and using key B, the card will refuse any subsequent memory access after authentication.

Access conditions for the sector trailer

Access bits				Access condition for						Remark
				KEYA		Access bits		KEYB		
	$C1_3$	$C2_3$	$C3_3$	read	write	read	write	read	write	
○	0	0	0	never	key A	key A	never	key A	key A	Key B may be read[1]

Access bits				Access condition for						Remark
				KEYA		Access bits		KEYB		
	$C1_3$	$C2_3$	$C3_3$	read	write	read	write	read	write	
○	0	1	0	never	never	key A	never	key A	never	Key B may be read[1]
○	1	0	0	never	key B	key A|B	never	never	key B	
○	1	1	0	never	never	key A|B	never	never	never	
○	0	0	1	never	key A	key A	key A	key A	key A	Key B may be read, transport configuration[1]
◉	0	1	1	never	key B	key A|B	key B	never	key B	
○	1	0	1	never	never	key A|B	key B	never	never	
○	1	1	1	never	never	key A|B	never	never	never	

[1] for this access condition key B is readable and may be used for data

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The information is taken from MF1S503x from NXP Semiconductors.