
ATA5575 and ATA5577: Write and Programming Sequence Differences

ATAN0078**Foreword**

An optimized subset of the Atmel® ATA5577, the Atmel ATA5575 is designed for two general LF-RFID applications: the access control segment based on the widely used unique format as well as the animal ID segment according to ISO-11784 and ISO-11785. The modes supported here are FDX-B and FDX-A.

128 bits of memory and a small configuration register are sufficient for addressing these two segments. This allows the total memory size to be reduced from 363 to 136 bits. A further design optimization requires the memory organization to be changed as well.

This application note describes these differences and their effect on the programming sequences.

The read mode of the subset versions is identical to that of the Atmel ATA5577.

2. Configuration Register Structure

The second difference is that there are a number of configuration options available with the Atmel® ATA5575.

Table 2-1. Configuration Register Structure

Atmel ATA5575M1								Atmel ATA5575M2							
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
					1	1							0		
						ID Length 0 64 bit 1 128 bit									
						Fixed '11'									
Lock Bits 0 0 0 0 0 Memory reprogrammable, read dummy data 0 1 1 0 1 Memory locked, read user data - otherwise - unassigned								ID Length 0 64 bits (96 bits for FSK2 RF/50 coding ⁽²⁾) 1 128 bits ⁽¹⁾ Modulation 0 Differential bi-phase RF/32 ⁽¹⁾ 1 FSK2 RF/50 ⁽²⁾ Fixed '0'							
Note: Bits 6 and 7 must always be set to '1', otherwise, malfunction will occur								Lock-bits 0 0 0 0 1 Memory reprogrammable 0 1 1 0 1 Memory locked - otherwise - unassigned Bit 6 must always be at '0', otherwise a malfunction will appear Notes: 1. Setting for ISO 11785 FDX-B 2. Setting for ISO 11785 FDX-A							

The configuration word for the Atmel ATA5575 is only 8 bits wide, allowing it to address all the modes required. Compared to the Atmel ATA5577, where there were many combinations of configuration options, the Atmel ATA5575 only provides a few options. The payload of the command described in the next paragraph is only 8 bits for a given configuration setting.

3. Command Structure

The third difference is in how sending commands from the reader base station to the Atmel® ATA5575 is handled.

Table 3-1. Command Structure Atmel ATA5577

Command	Atmel ATA5577 (Password Commands not Listed)												
	Ref		OP										
Standard write	R**)	1p*)	L	1	Data	32	2	Addr	0				
Protected write	R**)	1p*)	1		Password	32	L	1	Data	32	2	Addr	0
AOR (wake-up command)	R**)	1p*)	1		Password	32							
Direct access (PWD = 1)	R**)	1p*)	1		Password	32	0	2	Addr	0			
Direct access (PWD = 0)	R**)	1p*)	0	2	Addr	0							
Page 0/1 regular read	R**)	1p*)											
Reset command	R**)	00											

*) p = page selector
**) R = Reference pulse if necessary

Table 3-2. Command Structure Atmel ATA5575

Command	Atmel ATA5575									
	OP									
Write byte	1	0	0	1	Data	8	4	Addr	0	
Direct access	1	0	0	4	Addr	0				
Read ID	1	0								
Read upper bytes	1	1								
Reset command	0	0								

Table 3-1 and Table 3-2 on page 4 show the differences and similarities between the devices. The standard write mode differs substantially because no page numbers are available. The data section has been reduced to 8 bits and the address expanded to 5 bits to address the larger number of blocks.

The separate page reads are replaced with a single “Read ID” command which accesses blocks set as “ID” in the configuration block. This may be less than the total number of blocks, in which case the “Rd Upper Bytes” can be used to access the remaining data. (IMPORTANT NOTE for Atmel® ATA5575M1: This can be used before the tag is locked to check the contents of the blocks. Until the tag is locked, only dummy data is modulated out on power-up.)

Direct access to a block is still possible. The changes are the size of the block address now being 5 bits and the RESPONSE from the tag now only being 8 bits instead of 32 bits, as it used to be with the Atmel ATA5577 device.

This command structure is also valid for programming the data blocks. Compared to the Atmel ATA5577, the programmer now has to execute four programming sequences to write 32 bits of data where the Atmel ATA5577 required only one. This increases the number of programming sequences, but because the two main target applications are mainly read-only applications, this increased effort only has to be done once during initial serialization of the tags.

4. Summary

Due to their varying memory structure, the differences are:

- No difference in standard reading after power-up
- The 8-bit data section payload of the commands during programming
- Instead of three address bits, the direct read mode requires five address bits

The principal concept of the programming sequence has been retained.

5. Further Documents

- Web:
 - Data sheets Atmel ATA5577C, Atmel ATA5575M1, Atmel ATA5575M2
- These can be requested by sending an e-mail to rfidsupport@atmel.com
 - ATAN0020-ATA5577-Versions-doc9266A-RFID-01-12.pdf
 - ATAN0021-ATA5575-Versions-doc9267A-RFID-01-12.pdf
 - Atmel ATA5577M3 data sheet

6. Revision History

Please note that the following page numbers referred to in this section refer to the specific revision mentioned, not to this document.

Revision No.	History
9318B-RFID-04/15	<ul style="list-style-type: none"> • Put document in the latest template
9251D-AUTO-02/14	<ul style="list-style-type: none"> • Type ATA6836 updated in ATA6836C • Type ATA6837 removed • Type ATA6838 updated in ATA6838C
9251C-AUTO-11/12	<ul style="list-style-type: none"> • Section “References” on page 1 updated • Section “Description” on page 1 updated • Figure 1-1 “Atmel ATA6836 Output Driver Open-load Detection Circuit” on page 2 updated



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