

# AT88RF020

## 13.56 MHz RFID READ/WRITE 2048-BIT EEPROM

### FEATURES

- ISO 14443-2B and ISO 14443-3B Compliant Operation
- Password Protected
- Data Locking
- One-way Transaction Counter
- Each Device Uniquely Serialized
- 106 Kbits/sec Data Rate
- On-chip tuning capacitor
- 100,000 Write Cycle and 10 Year Data Retention Reliability



The AT88RF020 is a 13.56 MHz Radio Frequency Identification (RFID) device that includes an on-chip EEPROM-based (non-volatile) memory. The wireless interface complies with "Type B" operation of specification ISO/IEC FDIS 14443-2:1999(E) and ISO/IEC FDIS 14443-3:2000(E), dated 5/2/00 and 7/13/00, respectively.

This device may be used in applications where one or more RFID devices will be simultaneously situated within an intelligent reader/writer RF field. Communication between the RF reader/writer and this device will take place through the use of the featured ISO14443-3 anti-collision command set.

The AT88RF020 contains 2048 bits of read/write, low-power EEPROM memory, organized as thirty-two 64-bit pages. Write operations are designed to finish in less than 2 ms. Atmel guarantees 100,000 write cycle reliability and 10-year data retention.



**Corporate Headquarters**

2325 Orchard Parkway  
San Jose, CA 95131  
TEL (408) 441-0311  
FAX (408) 487-2600

**Europe**

Atmel SarL  
Route des Arsenaux 41  
Casa Postale 80  
CH-1705 Fribourg  
Switzerland  
TEL (41) 26-426-5555  
FAX (41) 26-426-5500

**Asia**

Atmel Asia, Ltd  
Room 1219  
Chinachem Golden Plaza  
77 Mody Road Tsimshatsui  
East Kowloon  
Hong Kong  
TEL (852) 27219778  
FAX (852) 27221369

**Japan**

Atmel Japan KK  
Tonetsu Shinkawa Bldg. 9F  
1-24-8 Shinkawa  
Chuo-ku, Tokyo 104-0033  
Japan  
TEL (81) 3-3523-3551  
FAX (81) 3-3523-7581

**Atmel Operations**

Atmel Colorado Springs  
1150 E Cheyenne Mtn Blvd  
Colorado Springs, CO 80906  
TEL (719) 576-3300  
FAX (719) 540-1759

**Atmel Rousset**

Zone Industrielle  
13106 Rousset Cedex, France  
TEL (33) 4 42 53 60 00  
FAX (33) 4 42 53 60 01

**e-mail**

RFID@atmel.com

**Web Site**

<http://www.atmel.com>

**Bulletin Board Service**

1 (408) 436-4309



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This device has built-in security features that include a 64-bit password protect where read or write operations are only permitted after password confirmation, including data locking which prevents further writing of data to a page. Once the lock bit is set, it cannot be cleared. The AT88RF020 features a one-way transaction counter that allows tracking of individual device usage. The counter is factory set at zero and cannot be reset. Each device is uniquely serialized at the factory.

This device includes an on-chip internal tuning capacitor. The addition of an external coil antenna permits it to operate as a complete tag.

**MEMORY MAP**

The memory array within this device is organized in the following manner:

	BYTE 0	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
Page 0	[ Unique Tag ID ]					[ Lock Bits ]		
Page 1	[ Application Data ]					[ Reserved ]		
Page 2	[ Signature ]						[ Counter ]	
Page 3	[ Password ]							
Page 4	—	—	—	—	—	—	—	—
...								
...								
Page 31	—	—	—	—	—	—	—	—

**APPLICATIONS**

**Product Authentication:** Protecting brands against fraudulent knock-offs is a major concern of manufacturers of designer apparel and luxury products. RFID offers a cost effective method of identifying genuine articles, yet is prohibitively expensive to copy.

**Access Control:** RFID offers high security access control while minimizing the inconvenience to the authorized person. RFID facilitates compartmented access, assuring authorized persons have access to only the levels for which they are cleared.

**Transit Fare Collection:** With contactless operation and fast transaction time, RFID offers a cost effective way to collect and keep track of mass transit fare collection, allowing distance-based pricing.

Please email us at [RFID@atmel.com](mailto:RFID@atmel.com) for further information.