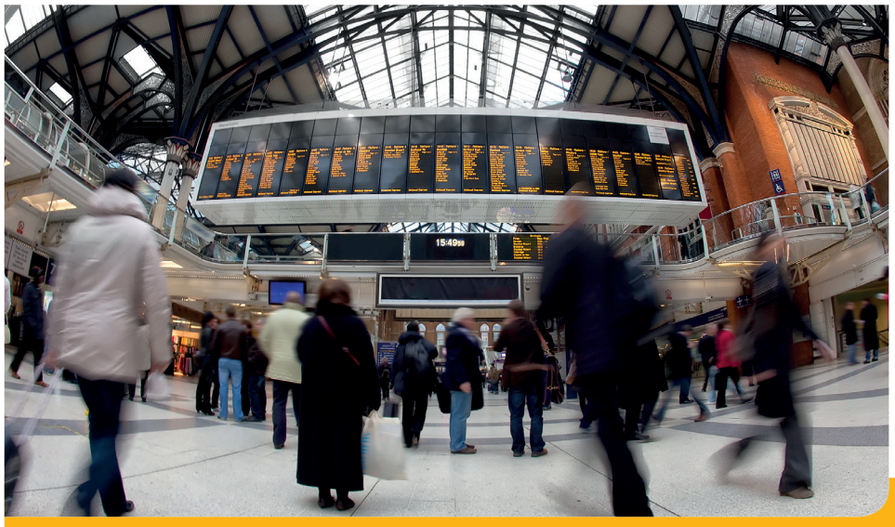

NXP
MIFARE Plus® SE

Seamless AES security upgrade for MIFARE Classic® installations

Bring benchmark security to mainstream contactless smartcard applications with minimum effort, using this seamless upgrade for existing MIFARE Classic infrastructure and services.

KEY FEATURES

- Entry-level version of proven MIFARE Plus family
- 1 kB EEPROM
- Simple fixed memory structure compatible with MIFARE Classic
- Full support for MIFARE Classic value-block operations
- AES for authenticity and integrity
- NXP originality check
- Freely configurable access conditions
- Supports ISO/IEC 14443-3A UIDs (4-byte NUID, 7-byte UID)
- Optional support of random IDs
- Multi-sector authentication, multi-block read and write
- Anti-tearing mechanism for writing AES keys
- Keys can be stored as MIFARE Crypto1 keys (2 x 48 bits per sector) and AES keys (2 x 128 bits per sector)
- Virtual card concept
- Communications speed up to 848 kbit/s
- Number of single write operations: 200,000 typical

KEY BENEFITS

- Minimum effort: compatibility with MIFARE Classic generations in SL1
- Added security: issue AES-ready cards in existing MIFARE Classic installations
- Sound investment: cost-effective preparation for AES secure credentials

APPLICATIONS

- Access management
- Public transport
- School and campus cards
- Employee cards
- Electronic toll collection
- Car parking

MIFARE Plus SE is the entry-level version of NXP's proven and reliable MIFARE Plus product family. Designed for full functional compatibility with MIFARE Classic 1K, MIFARE Plus SE provides complete support for the MIFARE Classic value blocks.

MIFARE Plus is the only mainstream smartcard product family compatible with MIFARE Classic 1K and MIFARE Classic 4K that offers pre-issuance of cards prior to making security upgrades in the infrastructure. After a security upgrade to Security Level 3, MIFARE Plus uses Advanced Encryption Standard (AES) for authentication, data integrity, and encryption.

MIFARE Plus SE is the choice for end customers who want to switch to higher security while preparing for the future by introducing cards, ready for AES security, into the existing system environment.

MIFARE Plus SE cards are easy to distribute into running MIFARE Classic systems, since MIFARE Plus SE uses the same linear memory structure as MIFARE Classic, and because MIFARE Plus SE supports all MIFARE Classic value-block operations in the Security Levels SL1 and SL3. MIFARE Plus SE stores its 128-bit AES keys on top of the data blocks. The optional AES authentication in SL1 enables efficient detection of cards not belonging to the system.

Feature comparison: MIFARE Plus S and MIFARE Plus SE

Feature	MIFARE Plus S	MIFARE Plus SE
Available memory size (kB)	2, 4	1
Input capacitance (pF)	17	17
Security levels	SL0, SL1, SL3	SL0, SL1, SL3
Maximum transfer data buffer size in ISO/IEC 14443-4 (B)	64	64
ID	7 B UID or 4 B ONUID	7 B UID or 4 B ONUID
Clone protection in SL1 (with optional AES authentication)	Yes	Yes
Encryption in SL1	Crypto1 with optional AES authentication	Crypto1 with optional AES authentication
Value block operations	No	Yes
Common Criteria certifications (HW & SW)	EAL 4+	Based on EAL4+ certified platform
AES key personalization	SL0, SL3	SL0, SL3
Virtual Card architecture for privacy protection	Yes	Yes
Proximity check against relay attacks (with L3 command)	Yes	Yes
Delivery formats	Wafer (120 µm), MOA4, MOA8	Wafer (120 µm), MOA4, MOA8

Ordering information

Type number	Description	Package	12NC
MF1SEP1001DUD/03	MIFARE Plus SE, 1 kB, 7 B UID	FFC bump (120 µm, 8"), UV tape	9353 061 61005
MF1SEP1001DA4/03	MIFARE Plus SE, 1 kB, 7 B UID	MOA4	9353 061 62118
MF1SEP1001DA8/03	MIFARE Plus SE, 1 kB, 7 B UID	MOA8	9353 061 63118
MF1SEP1031DUD/03	MIFARE Plus SE, 1 kB, 4 B ONUID	FFC bump (120 µm, 8"), UV tape	9353 061 71005
MF1SEP1031DA4/03	MIFARE Plus SE, 1 kB, 4 B ONUID	MOA4	9353 061 72118
MF1SEP1031DA8/03	MIFARE Plus SE, 1 kB, 4 B ONUID	MOA8	9353 061 73118

www.MIFARE.net

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