

## BayLan RFID Mifare DESFire EV1 NXP Cards

**BCRMNW326-D 2K (2048 bytes)**  
**BCRMNW324-D 4K (4096 bytes)**  
**BCRMNW328-D 8K (8192 bytes)**



BayLan MIFARE DESFire EV1 (MF31CD(H) 21/41/81), a common criteria (EAL4+) certified product, is ideal for service providers wanting to use secure multi-application smart cards in Public Transport Schemes, Access Management or Closed-loop e-payment applications. It fully complies with the requirements for Fast and Highly Secure Data Transmission, Flexible Memory Organization and Interoperability with existing infrastructure.

MIFARE DESFire EV1 is based on open global standards for both air interface and cryptographic methods. It is compliant to all 4 levels of ISO/IEC 14443A and uses optional ISO/IEC 7816-4 commands.

Featuring an on-chip backup management system and the mutual three pass authentication, a MIFARE DESFire EV1 card can hold up to 28 different applications and 32 files per application. The size of each file is defined at the moment of its creation, making MIFARE DESFire EV1 a truly flexible and convenient product.

Additionally, an automatic anti-tear mechanism is available for all file types, which guarantees transaction oriented data integrity. With MIFARE DESFire EV1, data transfer rates up to 848kbit/s can be achieved, allowing fast data transmission.

The main characteristics of this device are denoted by its name "DESFire": DES indicates the high level of security using a 3DES or AES hardware cryptographic engine for enciphering transmission data and Fire indicates its outstanding position as a fast, innovative, reliable and secure IC in the contactless proximity transaction market. Hence, MIFARE DESFire EV1 brings many benefits to end users. Cardholders can experience convenient contactless ticketing while also having the possibility to use the same device for related applications such as payment at Vending Machines, Access Control or Event Ticketing. In other words, the MIFARE DESFire EV1 silicon solution offers enhanced consumer-friendly system design, in combination with security and reliability.

MIFARE DESFire EV1 delivers the perfect balance of speed, performance and cost efficiency. Its open concept allows future seamless integration of other ticketing media such as smart paper tickets, key fobs, and mobile ticketing based on Near Field Communication (NFC) technology. It is also fully compatible with the existing MIFARE reader hardware platform. MIFARE DESFire EV1 is your ticket to contactless systems worldwide.

Specifications are subject to change without prior notice with advancement in technology.

## FEATURES:

### Mifare RF Interface (ISO / IEC 14443 A)

- Contactless transmission of data and powered by the RF-field (No Battery needed)
- Operating Distance Upto 100mm (Depending on power provided by the PCD and Antenna Geometry)
- Operating Frequency 13.56MHz
- Fast Data Transfer 106 Kbit/s, 212 Kbit/s, 424 Kbit/s, 848 Kbit/s
- High Data Integrity 16/32 Bit CRC, Parity, bit coding, bit counting
- True Deterministic Anti-collision
- 7 byte unique identifier (cascade level 2 according to ISO / IEC 14443-3 and option for random ID)
- Uses ISO/IEC 14443-4 protocol
- Purse Functionality Value File
- Transaction Logging Capability Record File
- Secure Transport Transaction example 512 bytes read, 128 bytes write
- Related Transaction Time 89ms
- Transaction oriented automatic anti-tear mechanism
- Configurable ATS information for card personalization
- Optional high input capacitance (70pF) for small form factor design (MF31CDH 21/41/81)

### ISO / IEC 7816 Compatibility

- Supports ISO/IEC 7816-3 APDU message structure
- Supports ISO/IEC 7816-4 INS code 'A4' for SELECT FILE
- Supports ISO/IEC 7816-4 INS code 'B0' for READ BINARY
- Supports ISO/IEC 7816-4 INS code 'D6' for UPDATE BINARY
- Supports ISO/IEC 7816-4 INS code 'B2' for READ RECORDS
- Supports ISO/IEC 7816-4 INS code 'E2' for APPEND RECORD
- Supports ISO/IEC 7816-4 INS code '84' for GET CHALLENGE
- Supports ISO/IEC 7816-4 INS code '88' for INTERNAL AUTHENTICATE
- Supports ISO/IEC 7816-4 INS code '82' for EXTERNAL AUTHENTICATE

### Non-Volatile Memory

- 2KB or 4KB or 8KB NV-Memory
- Data Retention of 10 years
- Write Endurance typical 500,000 cycles

### NV-Memory Organization

- Flexible file system
- UP to 28 applications simultaneously on one PICC
- Up to 32 files in each application (Standard data file, Back-up data file, Value file, linear record file and cyclic record file)
- File size is determined during creation

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## Security

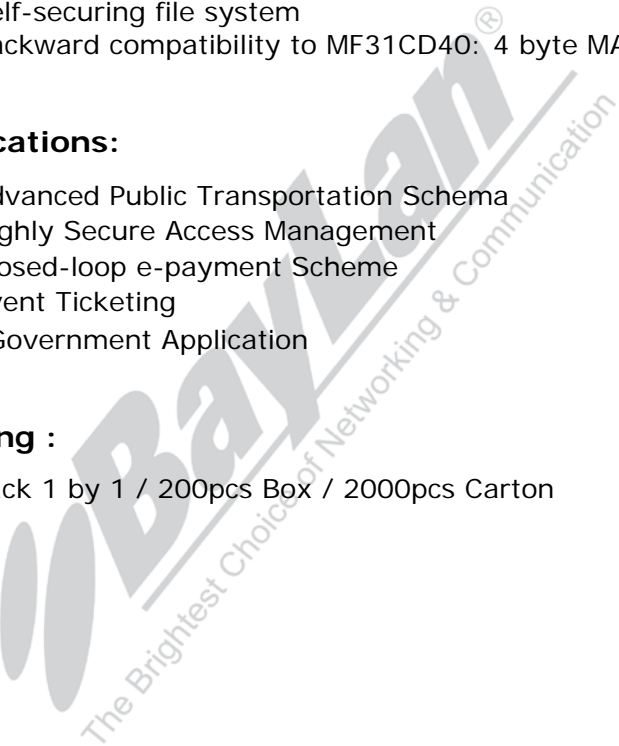
- Common Criteria Certification EAL4+ (Hardware and Software)
- Unique 7 bytes serial number for each device
- Optional "RANDOM" ID for enhance security and privacy
- Mutual three pass authentication
- Mutual authentication according to ISO/IEC 7816-4
- 1 card master key and up to 14 keys per application
- Hardware DES using 56/112/168 bit keys featuring key version, data authenticity by 8 byte CMAC
- Hardware AES using 128-bit keys featuring key version, data authenticity by 8 byte CMAC
- Data encryption on RF-channel
- Authentication on application level
- Hardware exception sensors
- Self-securing file system
- Backward compatibility to MF31CD40: 4 byte MAC, CRC 16

## Applications:

- Advanced Public Transportation Schema
- Highly Secure Access Management
- Closed-loop e-payment Scheme
- Event Ticketing
- eGovernment Application

## Packing :

- Pack 1 by 1 / 200pcs Box / 2000pcs Carton



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