

# advant

advanced contactless smart card system



power

## Fully scalable – fully flexible

### Key applications & standards



access



ticketing



payment



ISO



LEGIC RF  
standard



13.56  
MHz  
contactless  
technology



government  
standard



NFC

The LEGIC advant product line ideally supports the design and realisation of access control and other person related service applications. It provides an advanced security, scalability and cost-effective investment protection.

Because of its advanced features and compliance with global industry standards, such as ISO 15693, ISO 14443 and LEGIC RF, the LEGIC advant product line is especially suitable for smart card projects, like single- and multifunctional company or leisure cards. Its target applications include ticketing, government ID, general access control and high security solutions for converged access (incl. IT access) and biometrics.

# Benefits that matter



## ✓ identify

### Additional target applications – single or multiapplications



time & attendance



biometrics



stand-alone door locks



IT access



identify



loyalty



collect data



parking



leisure



membership



all-in-one-card

### 1 Efficient application and reader design – high connectivity, low power

The LEGIC advant product line supports simple and fast application integration for battery powered and line powered standard readers.

Convenient hardware integration and network connectivity is supported through the included common host interface.

Upgrades from other ID technologies like barcode, magnetic stripe or 125 kHz are easily realised.

### 2 Your choice of industry standards

The LEGIC advant product line supports all major industry RF standards giving you choice and flexibility:

#### - ISO 14443 A + B

Read/write access on various LEGIC and third party card technologies from low-end memory up to high security microcontroller transponders, used for payment, IT access, Government ID or in NFC mobile phones.

#### - ISO 15693

Read/write for vicinity standard applications with reading distance from proximity up to hands-free.

#### - ISO 18092

Near Field Communication devices such as NFC mobile phones and NFC tag types are supported with read/write access.

#### - LEGIC RF standard

Read/write of all LEGIC prime transponder products ensure investment protection and easy migration.

#### - Felica / Inside

Read/write access on transponders using Sony Felica RF protocol is given for the open memory area. Reads card serial number of transponders based on Inside Contactless protocol, for example HID iClass.

### Mixed standard operation / Migration

LEGIC advant modules can operate with mixed RF standards. Thus cards can be handled in parallel by one reader. This allows to run systems using credentials of varying RF standards. It offers seamless merging and migration of the issued cards.

# Benefits that matter

## Secure access



## Secure e-payment



## Ticketing – contactless leisure fun



### 3 Advanced security – tailor-made for each application

LEGIC advant provides security covering the data and applications in your contactless system all the way from the host to the storage of data on the transponder. This provides the right degree of protection in an open standard world.

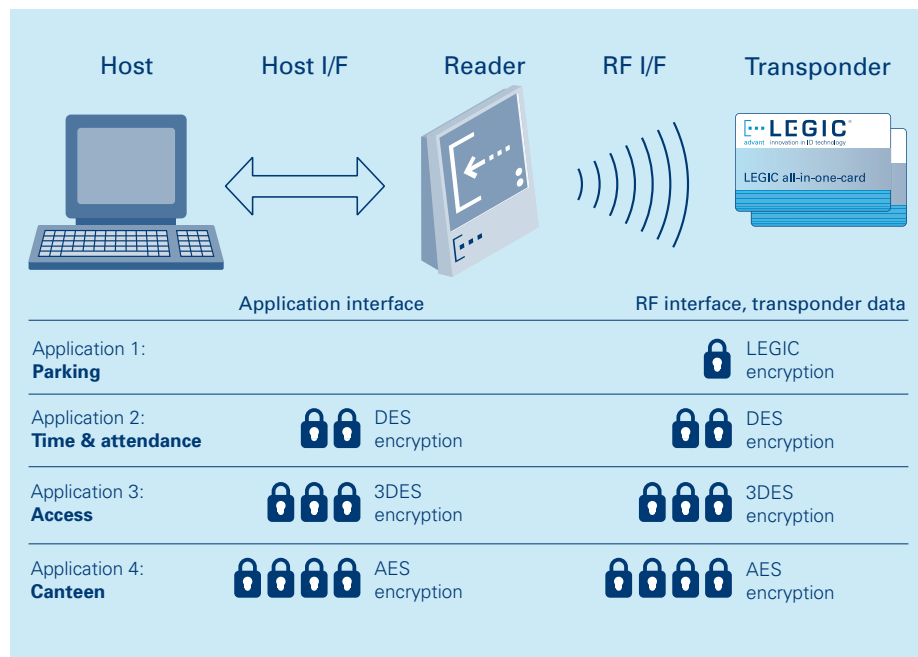
Security features include:

- **unique serial numbers for transponders and reader modules**
- **mutual authentication**
- **advanced cryptographic data transmission and storage along complete data path from host to transponder (end-to-end security)**
- **user-definable read and write access protection**
- **secure reading and writing of data**
- **secure transponder unique serial card number verification**

### Configurable encryption

Either LEGIC's encryption standard or stronger encryption, based on the open industry standard algorithms AES (128 or 256 Bit) / 3DES / DES, can be enabled for each application and data path, providing strong protection for data and applications. This makes the product suitable for use in IT access, high-value payment, biometrics or governmental solutions such as ID cards.

Example: four applications using different levels of encryption.



# Benefits that matter

## 4 Master-Token based Security

### Control

LEGIC's patented Master-Token System Control™ (MTSC) does not use easily compromised passwords. It provides comprehensive control of your security, your contactless smart card applications and thus your company. With over 60,000 installations worldwide already trusting LEGIC Master-Token based security control you will be in good company.

To create new credentials or authorise new readers within your security system the physical LEGIC Master-Token is needed. The security is provided through the genetic code which contains the authorisation to read or write card data. Master-Tokens transfer the genetic code to credentials during card initialisation and to readers during reader configuration. The mutual card / reader authentication and the unique genetic code allow a clear control over the credentials and system components.

## 5 Easy realised multiapplications

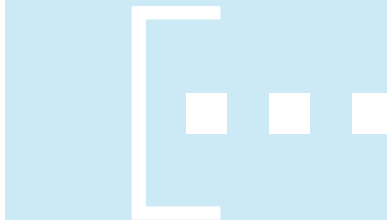
With LEGIC advant you can create multifunctional cards with up to 127 independent applications of various memory size on a single transponder.

Thanks to the variable memory allocation and the dynamic segment search functions, LEGIC allows easily realised multiapplication schemes with a high degree of flexibility. The dynamic multiapplication handling makes it simple to combine various applications of different type, memory size, supplier and ownership on a single

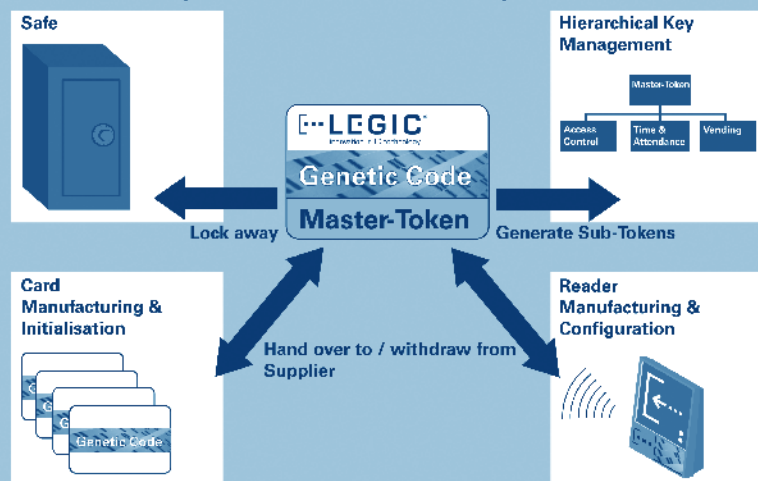


### Business example: staff badges

Leading multinational corporations use the proven multi-functionality of LEGIC all-in-one cards: access control, time & attendance, payment, parking and many more. LEGIC's powerful control system makes its management easy to handle. One card is able to carry exactly the functionalities its bearer needs and you always keep control.



### Master-Token System Control based Security Control



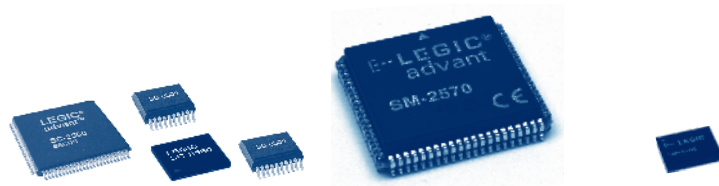
## 6 User-programmable universal reader module

The wide range of LEGIC advant quality products contains the integrated reader module SM-2570. Due to the integrated RF circuit a fast, easy and cost efficient reader design is possible. With its user programmable on-chip application processor and its versatile peripheral support the SM-2570 allows easy-to-realise and compact solutions without the need for external processor components.

# Unrivalled LEGIC advant<sup>®</sup> products

## Modular reader products

LEGIC advant's cost-effective modular range of reader chip sets (SC) and the reader module (SM) allows you to easily expand functionality.



	SC-2560/C	SM-2570/C	SM-4200
RF interface	LEGIC RF standard ISO 15693* ISO 14443 A	LEGIC RF standard ISO 15693* ISO 14443 A	LEGIC RF standard ISO 15693* ISO 14443 A+B ISO 18092 / NFC** Sony Felica ***
Host interfaces and protocols	SPI RS232 (logic levels) RS485 Wiegand OMRON (Clock & Data) BPA/L	SPI RS232 (logic levels) RS485 Wiegand OMRON (Clock & Data) BPA/L	SPI RS232 (logic levels)
Encryption, incl. key diversification	AES 128/256 bit, 3DES, DES, LEGIC encryption	AES 128/256 bit, 3DES, DES, LEGIC encryption	AES 128/256 bit, 3DES, DES, LEGIC encryption
Energy saving with card based wake-up / stop mode	Yes typ. 55 µA / 5 µA	Yes typ. 60 µA / 8 µA	Yes typ. 20 µA / 5 µA
Software download	Yes	Yes	Yes
Initialisation function	Yes	Yes	–
Integrated RF circuit	–	Yes	–
User-programmable controller	–	Yes	–
High-level command library for cash / value handling, e.g. electronic purse	Yes, with SC-2560C	Yes, with SM-2570C	–
Compatible transponders	LEGIC advant ATC LEGIC card-in-card-solution AFS LEGIC prime MIM	LEGIC advant ATC LEGIC card-in-card-solution AFS LEGIC prime MIM	LEGIC advant ATC LEGIC card-in-card-solution AFS LEGIC prime MIM
LEGIC card-in-card support for smart card µC / NFC phones	Yes	Yes	Yes
Third party transponder read / write access	Yes	Yes	Yes

\* Reads additionally Unique Identification Number (UID / CSN) of transponders based on Inside Contactless technology, e.g. HID iClass.

\*\* ISO 18092 passive mode, initiator, selected tag types

\*\*\* Sony Felica encryption not supported

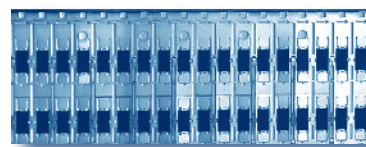
# Unrivalled LEGIC advant<sup>®</sup> products

## Choice of crypto transponder chips

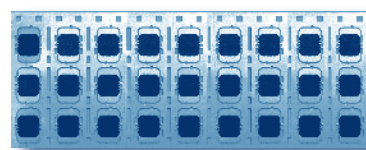
The LEGIC advant product line offers you the choice between the ISO standard crypto transponder types:



Wafer delivery form



MCC2 module delivery form



MOA4 module delivery form

	ATC128-MV	ATC256-MV	ATC1024-MV	ATC2048-MP	ATC4096-MP
Memory size*	128 byte	256 byte	1024 byte	2048 byte	4096 byte
ISO standard	ISO 15693			ISO 14443 A	
Data rate (max)	26.5 kbit/s			106 kbit/s	848 kbit/s
Range **	up to 70 cm			up to 10 cm	
Data transfer & storage encryption	3DES, DES, LEGIC encryption				AES, 3DES, DES, LEGIC encryption
Cryptographic authentication	96 bit	96 bit	64 bit	64 bit	112 bit
Max. number of applications	8	16	59	123	127
Memory segmentation	dynamic				
Application segment size	variable				
Hardware certification	-				CC EAL4+

\* Memory size indications are nominal values. The effective max. number of applications is depending on the memory requirements of applied applications.

\*\* Max. reading range depends on used RF standard, the requirements of national spectrum management authorities, reader application, antenna, transponder and surroundings.

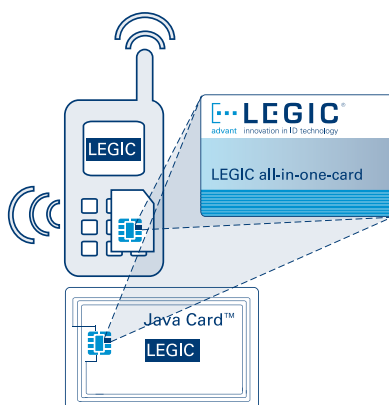
Additionally available transponders:

- LEGIC prime: MIM256, MIM1024
- LEGIC advant: card-in-card solutions for third party smart cards (see pages 7 and 8)

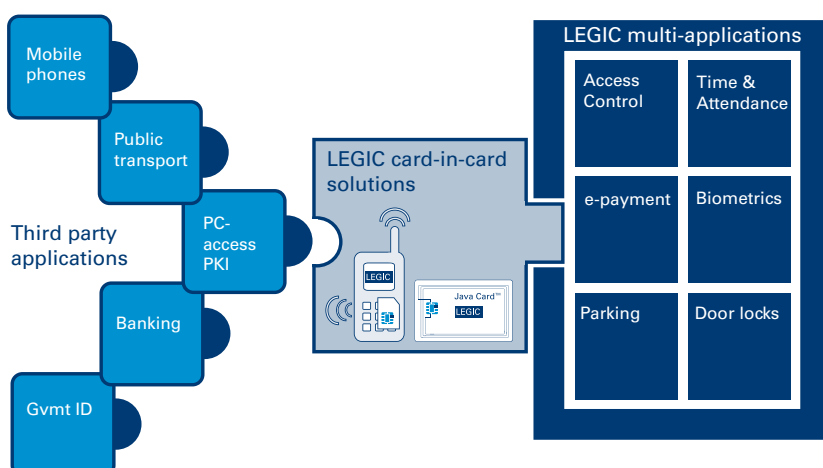
# Unrivalled LEGIC advant<sup>®</sup> products

## LEGIC card-in-card solutions for third party smart cards and NFC phones

LEGIC card-in-card solutions combine smart card microcontrollers with physical access and related multi-applications on one single smart card chip. The core element is the LEGIC all-in-one area which is a virtual multi-application transponder that behaves on the application level like all other LEGIC advant crypto transponders. The LEGIC all-in-one area runs on contactless smart card microcontrollers provided by third parties.



Smart card microcontrollers are commonly used for applications including logical access to PC and networks (PKI), mobile phones (SIM cards), banking and public transport. LEGIC card-in-card extends these with physical access and related multi-applications leading to extensive all-in-one multi-application credentials.



**LEGIC card-in-card solutions combine third party applications with LEGIC applications on the same smart card chip.**

### Examples:

- Open doors and log yourself on to PCs using dual interface smart cards
- Enter football stadiums using your NFC phone

## Benefits

### Endless possibilities:

Enjoy the vast possibilities of the LEGIC contactless application world with dual interface smart cards and NFC mobile phones.

### Easy integration:

Seamlessly use dual interface cards and NFC mobile phones the same way as crypto transponders.

### Investment security:

Makes your system future proof through support of open card architectures (including Java Card™ and use of certified hardware up to EAL5+).

### Access new markets:

Address emerging high volume markets both in the business and consumer areas through support of NFC enabled mobile phones.

### User comfort:

Use your personal NFC mobile phone as your single credential for all contactless applications.

### Cost benefits:

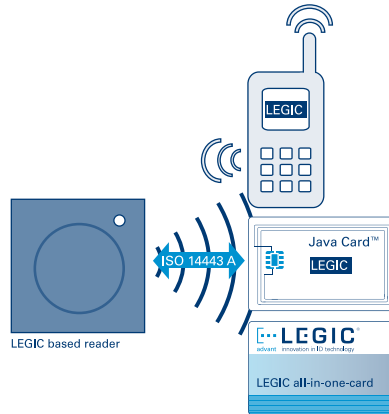
Save costs by using a single chip solution instead of two smart card chips used for hybrid cards; or just use your NFC mobile phone as your single credential.

# Unrivalled LEGIC advant<sup>®</sup> products

## Target markets for LEGIC card-in-card solutions

All solutions with a need to combine contactless or dual interface smart cards and NFC mobile phones with physical access and related multi-applications.

Security installations which require certified security, e.g. EAL5+.



Use the LEGIC all-in-one area on third party smart cards or NFC phones the same way as regular LEGIC all-in-one-cards.

## Typical third party applications used together with LEGIC card-in-card solutions include:

- Logical access to PCs and networks (PKI)
- Public transport schemes / tourist cards
- Event ticketing / membership pass
- Contactless payment and credit / debit cards
- Large-scale contactless ID projects
- NFC mobile phones



## Technical features of LEGIC all-in-one area

	AFS4096-JP
Memory size	4096 bytes
ISO standard	ISO14443 A
Supported smart card platforms	Various Java Card platforms
Data transfer encryption	AES 128/256 Bit, 3DES, DES, LEGIC encryption standard
Cryptographic authentication	112 bit
Max. number of applications	127
Memory segmentation	dynamic
Application segment size	variable
Certified hardware platforms	up to CC EAL5+



# Helpful tools to ease your work

## System configuration tools

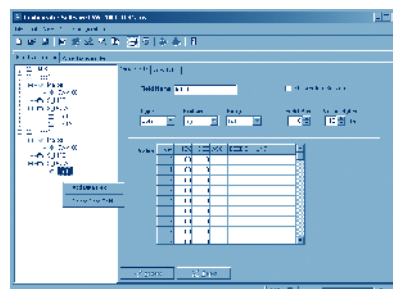
### Configurator-Software CSW-2000

The Configurator Software CSW-2000 is a helpful tool to configure and analyse single- and multi-applications on LEGIC credentials.

With the CSW-2000 segments can be defined and credentials can be initialised (e.g. as Master-Token or as user credential). The configuration required for a project can be easily administrated. The graphical user interface enables a quick analysis of credentials as well as the configurati-

on of LEGIC advant reader modules. The CSW-2000 can be operated together with the Configurator Hardware CHW-2000, the Development Kit DK-2000 or a LEGIC advant 2000 based reader from a LEGIC partner.

The configurator's definition files can be ex- or imported and provide a standardized interface to collaborate with any third party, e.g. other LEGIC application providers, integrators, etc.



### Configurator-Hardware CHW-2000

The LEGIC advant Configurator Hardware CHW-2000 is a universal desktop reader to initialise, write and read LEGIC credentials.

The robust desktop reader CHW-2000 is suitable especially to initialise and analyse LEGIC credentials. Its design is optimised to hold various credential shapes like cards, keys and fobs, wristbands and watches, as well as mobile phones.

The CHW-2000 can be operated with the LEGIC Configurator Software CSW-2000, the LEGIC Development Kit Software DKS-2000 or an alternative software available from a LEGIC partner. The integrated LEGIC advant reader module can be easily upgraded through the USB interface. Thus, new features are quickly available.



# Helpful tools to ease your work

## Evaluation and development tools

### Evaluation Kit EK-4000

The Evaluation Kit EK-4000 provides easy access to the LEGIC advant 4000 series. It supports you in rapid and cost efficient development of battery and line powered readers for 13.56 MHz contactless smart card applications using LEGIC advant 4000 reader components.



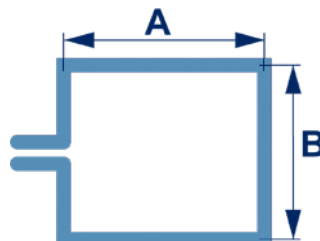
### Development Kit DK-2000

The LEGIC advant Development Kit DK-2000 supports the easy development of LEGIC advant 2000 based readers and application software and is particularly useful to evaluate the technology.



### Antenna Designer AD-0500

The Antenna Designer is a world-wide unique tool for designing and dimensioning 13.56 MHz antennas for readers. It shortens time-to-market and saves costs, making antenna design easy for experts and less experienced engineers. Different antenna shapes with variable size from 10 to 120 mm and with or without shielding can be layouted, calculated and matched.





checked

#### Your benefits:

- Unique system control over cards, applications and installations
- Credential of choice – seamless use of credentials of different standards, range, memory and technology
- Advanced ready-to-use security and data protection – tailor-made per application
- High interoperability – through high level application standards
- Wide choice of applications
- Easy and cost effective reader & application design and credential management
- Future proof, high investment protection – expandable and scalable functionality
- Low total cost of ownership – scalable use of your cards – easy multi-application

#### Key features:

- Simultaneous multi-RF standard operation (ISO15693, ISO14443A+B, LEGIC RF, Sony Felica)
- Advanced security, AES (128, 256) / 3DES / DES encryption standards
- Physical Master-Token System Control and Automatic Key Management
- Easy multi-application support – allows adding applications on cards in the field
- Wide choice of crypto transponders and solutions for microprocessor based third party smart cards and NFC phones (virtual transponder, card-in-card solutions)
- Common application interface for seamless use of transponders, smart cards and NFC phones
- Versatile application protocols and peripherals interface
- Secure software (LEGIC OS) download for extensions and upgrades of readers in the field
- Cost effective modular system
- Integrated card detection and wake-up for long battery life
- Compliant to multiple industry standards

#### LEGIC advant – for single or multiapplications



access



stand-alone door locks



payment



time & attendance



ticketing



parking



biometrics



IT access



collect data



identify



all-in-one-card



NFC



leisure



membership



loyalty

#### Standards



ISO



LEGIC RF standard



contactless technology



government standard



encryption standards

# advant

 **LEGIC**<sup>®</sup>  
advant innovation in ID technology

## advanced contactless smart card system

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