

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



FIPS
201
government
standard

The LEGIC advant product line has been developed to ideally support the design and realisation of access control and other person related service applications. It provides a maximum of security, scalability and cost-effective investment protection.

Because of its advanced features and compliance with ISO 15693, ISO 14443 and the LEGIC RF standard, the LEGIC advant product line is especially suitable for smart card projects, such as 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



Additional target applications – single or multiapplications



time & attendance



biometrics



IT-access



identify



loyalty



collect data



parking



leisure



membership



all-in-one-card



stand-alone door locks

1 Efficient and convenient application and reader design – convenient integration and network connectivity

The LEGIC advant product line supports simple and fast application integration by using its application protocols and flexible programmable format generator. Upgrades from other ID technologies like barcode, magnetic stripe or 125 kHz are easily realised.

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

Application protocols:

- OMRON formats
- Wiegand formats
- BPA/L

Host interfaces:

- SPI
- RS232
- RS485

2 Your choice of industry standards and reading ranges

The LEGIC advant product line supports multiple industry standards giving you the choice between the following standards and respective reading ranges:

- ISO 15693

Read/write for vicinity standard applications with reading distance from proximity up to hands-free (70 cm*). Reads unique serial number of all ISO 15693 type transponders.

- ISO 14443 A

Read/write for proximity standard applications with reading distance of up to 10 cm. Reads unique serial number of all ISO 14443 A type transponders.

- LEGIC RF standard

Read/write of all LEGIC prime products as well as application standard formats on LEGIC smart from proximity up to hands-free distance of approximately 70 cm*.

* Max. reading range depends on requirements of national spectrum management authorities, antenna, reader application, transponder, requested information and surroundings.

Mixed standard operation

LEGIC advant modules can operate with mixed RF standards. Thus cards at ISO 15693, ISO 14443 and LEGIC RF standard can be handled simultaneously 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 high security – tailor-made for each application

LEGIC advant provides high 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.

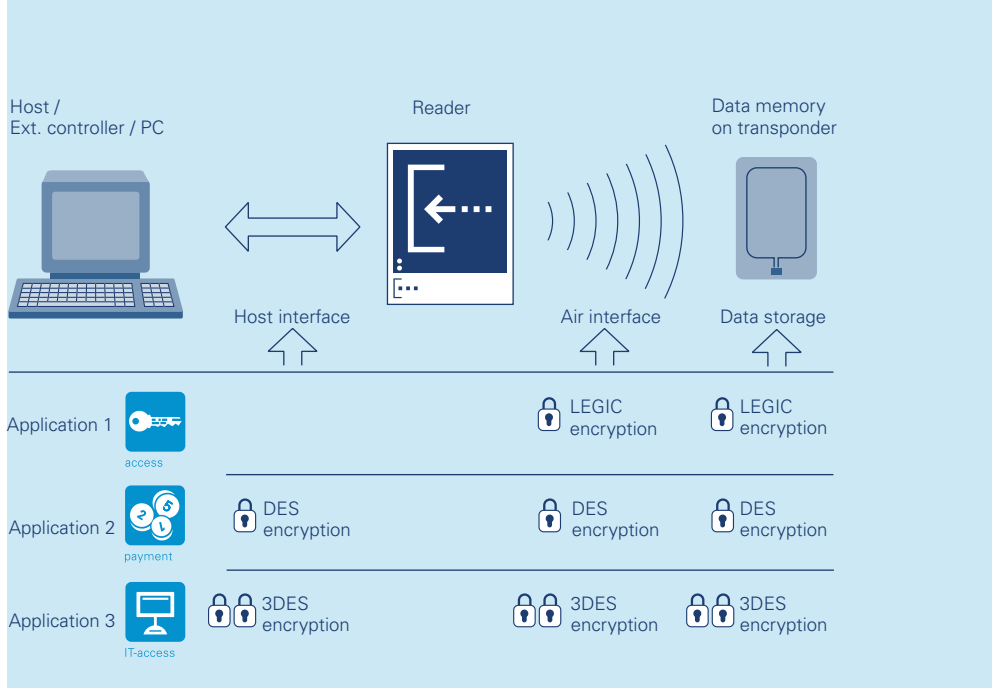
Security features include:

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

Configurable high-level encryption

Either LEGIC's encryption standard or advanced high security encryption, based on the open industry standard algorithms DES / 3DES, 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: three applications using different levels of encryption.



Benefits that matter

4 Master-Token based Security Control

Control

LEGIC's patented Master-Token System Control™ (MTSC) does not use easily compromised passwords. It provides total control of your security, your contactless smart card applications and thus your company. With over 50,000 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. Because of the mutual card/reader authentication and the unique genetic code the Master-Tokens and credentials cannot be copied.

5 Easy realised multiapplications

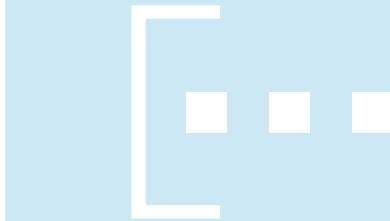
With LEGIC advant you can create multifunctional cards with up to 127 independent applications of various memory size on a single transponder.

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.



6 User-programmable universal reader module

Among the wide range of LEGIC advant quality products the integrated reader module SM-2570 is universally applicable. 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[®] 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-2140/C	SC-2240/C	SC-2560/C	SM-2570/C
Range*	up to 10 cm	up to 15 cm	up to 25 cm	up to 25 cm
RF interface	LEGIC RF standard ISO 14443 A	LEGIC RF standard ISO 15693**	LEGIC RF standard ISO 15693** ISO 14443 A	LEGIC RF standard ISO 15693** ISO 14443 A
Host interfaces and protocols	SPI RS232 Wiegand OMRON (Clock & Data) FIPS 201 / PACS V2.2***	SPI RS232 Wiegand OMRON (Clock & Data)	SPI RS232 RS485 Wiegand OMRON (Clock & Data) BPA/L FIPS 201 / PACS V2.2***	SPI RS232 RS485 Wiegand OMRON (Clock & Data) BPA/L FIPS 201 / PACS V2.2***
Encryption	LEGIC encryption standard, DES, 3DES	LEGIC encryption standard, DES, 3DES	LEGIC encryption standard, DES, 3DES	LEGIC encryption standard, DES, 3DES
Power-saving RF wake-up function	Yes	Yes	Yes	Yes
Integrated clock with alarms	Yes	Yes	Yes	Yes
Initialisation function	-	-	Yes	Yes
Software download	-	-	Yes	Yes
Integrated RF circuit	-	-	-	Yes
Interface for keyboard, displays, ect.	-	-	-	Yes
User-programmable controller	-	-	-	Yes
Compatible transponders****	ATC...-MP... MIM256, MIM1024	ATC...-MV... MIM256, MIM1024	ATC...-MP, ATC...-MV MIM256, MIM1024	ATC...-MP, ATC...-MV MIM256, MIM1024
High-Level command library for Cash/Value handling, e.g. electronic purse	Yes, with SC-2140C	Yes, with SC-2240C	Yes, with SC-2560C	Yes, with SM-2570C
LEGIC card-in-card support for smart card μC / NFC phones	Yes	-	Yes	Yes
14443 A transparent mode	Yes	-	Yes	Yes

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

** Reads additionally unique identification number (UID/CSN) of transponders based on Inside Contactless technology, e.g. HID iClass.

*** Meets US government standards FIPS 201 / PACS V2.2. Transition State Specification.

**** Supports MIM22 transponder.

Unrivalled LEGIC advant[®] products

Choice of crypto transponder chips

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



	ATC512-MP	ATC2048-MP	ATC4096-MP	ATC128-MV	ATC256-MV	ATC1024-MV
Memory size	512 Byte	2048 Byte	4096 Byte	128 Byte	256 Byte	1024 Byte
ISO standard	ISO 14443 A	ISO 14443 A	ISO 14443 A	ISO 15693	ISO 15693	ISO 15693
Range	up to 10 cm	up to 10 cm	up to 10 cm	70 cm	70 cm	70 cm
Cryptographic authentication	64 Bit	64 Bit	64 Bit	96 Bit	96 Bit	64 Bit
Max. of applications	34	123	127	8	16	59
Memory segmentation	dynamic	dynamic	dynamic	dynamic	dynamic	dynamic
Application segment size	variable	variable	variable	variable	variable	variable

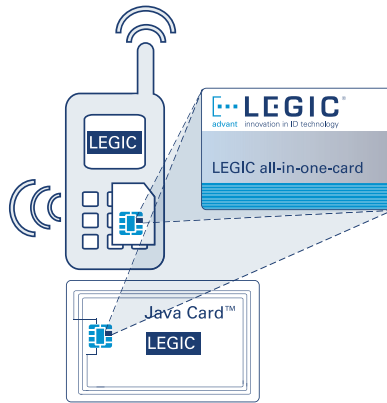
Max. reading range depends on used RF standard, the requirements of national spectrum management authorities, reader application, antenna, transponder and surroundings. Memory size indications are nominal values. The effective max. number of applications is depending on the memory requirements of applied applications.

In addition to LEGIC RF standard transponder family MIM256, MIM1024.

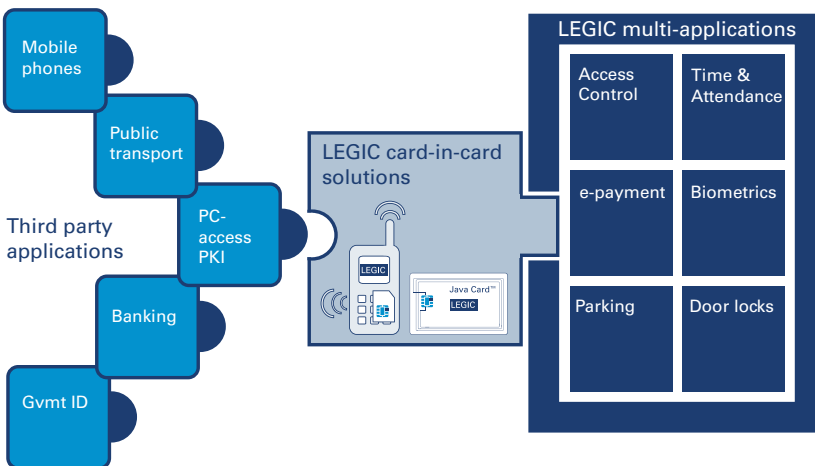
Unrivalled LEGIC advant[®] products

LEGIC card-in-card – Solutions for third party Smart Cards and NFC phones

LEGIC card-in-card solutions combine smart card micro-controllers 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 multi-application space that behaves on the application level like all other LEGIC advant crypto transponders. The LEGIC all-in-one area runs on contactless smart card micro-controllers provided by third parties.



Smart card micro-controllers 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 true 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™).

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.

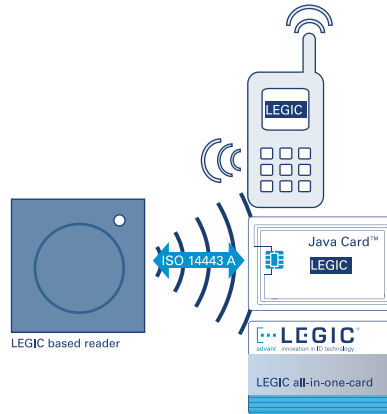
Unrivalled LEGIC advant[®] products

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.

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



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.



Technical features of LEGIC all-in-one area

	AFS4096-JP
Memory size	4096 bytes
ISO standard	ISO14443 A
Read/write range	<10 cm (depending on smart card platform)
Cryptographic authentication	64 Bit
Max. number of applications	127
Memory segmentation	dynamic
Application segment size	variable

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 configuration 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 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

Development Kit

The LEGIC advant Development Kit DK-2000 supports the easy development of readers and application software. It is particularly useful to evaluate the technology and the rapid development of prototypes. It comes with a development board including SC-2560 and SM-2570 samples, reference readers, antenna, set of transponders and a CD-ROM with the Development Kit Software and related documentation.





LEGIC advant – for single or multiapplications

Your benefits:

- Multi-standard compliant with ISO 15693, 14443 and LEGIC RF standard
- Choice of standards and reading ranges from proximity to hands-free
- Advanced high security for fraud protection
- Uncompromised control capabilities for cards, applications and installation
- Easy and cost-effective application and reader design
- Scalable functionality for your card
- Cost-efficiency through expandable functionality
- High investment protection
- Interoperability through high-level application standards
- Endless possibilities through use of open card platforms

Key features:

- Multi-industry standard compliant (13.56 MHz read/write)
- Simultaneous mixed RF-standard operation (ISO 15693, 14443, LEGIC RF)
- Advanced high security, DES / 3DES encryption
- Physical Master-Token System Control and Automatic Key Management
- Choice of state-of-the-art crypto transponders and solutions for smart cards and NFC phones
- Common application interface for transponders, smart cards and NFC phones
- Built-in RF circuit on reader module
- Versatile application protocols and peripherals interface
- User programmable intelligent controller on reader module
- Download function for extensions and upgrades
- Easy realised multiapplications
- Cost-effective modular system
- Meets US government standards FIPS 201
- Integrated RF wake-up function for battery operation



access



parking



payment



ticketing



leisure



membership



time & attendance



biometrics



IT-access



identify



loyalty



collect data



all-in-one-card



stand-alone door locks



NFC

Standards



ISO



LEGIC RF standard



contactless technology



government standard

advant

advanced contactless smart card system



advant innovation in ID technology

Switzerland – Headquarters

LEGIC® Identsystems Ltd
Binzackerstrasse 41
Post Box 1221
CH-8620 Wetzikon
Phone +41 44 933 64 64
Fax +41 44 933 64 65
info@legic.com

Asia

Phone +86 21 6288 4107
Fax +86 21 6288 4106
infoasia@legic.com

France

Phone +33 1 39 22 21 65
Fax +33 1 41 08 90 20
infofr@legic.com

Germany

Phone +49 2303 870 829
Fax +49 2303 870 879
infode@legic.com

Great Britain

Phone +44 1793 748 100
Fax +44 1793 748 057
infouk@legic.com

North America

Phone +1 630 717 5843
Fax +1 630 717 6527
infousa@legic.com

www.legic.com

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