Frequently Asked Questions about LEGIC®

1. Who is LEGIC®?

LEGIC Identsystems Ltd, with headquarters in Switzerland, is a world leader in the design and manufacture of 13.56 MHz contactless smart card technology. The product portfolio includes highly integrated LEGIC RF Standard, ISO15693 and ISO14443 compliant read/write chip sets, security modules and transponder chips for integration into third party products.

LEGIC Identsystems currently works with over 200 external licence partners world-wide who offer compatible LEGIC based applications including access control, cashless payment, parking, e-ticketing etc. in both workplace and leisure applications.

2. Is the LEGIC® technology new in the market?

No. With more than 15 years experience in 13.56 MHz contactless smart card technology LEGIC has become a leading technology for providers of contactless readers and cards. **World-wide more than 200 licence partners** are offering currently applications and solutions based on the LEGIC technology.

Until today LEGIC has sold more than 70 million transponder chips and more than 1,000,000 reader components into over 50,000 installations world-wide.

3. What frequency does the LEGIC® technology use?

The LEGIC technology operates at **13.56 MHz**. This frequency is a world-wide standard for contactless smart card technology and offers benefits like e.g. tamper proof data transmission, faster card reading/writing, copy protection of card content compared to none secure 125 kHz frequency systems.

4. For which types of contactless smart card applications can I use LEGIC®?

LEGIC can be used for the following applications:

- Access control
- Biometrics
- Time and attendance
- Commercial door locks
- Cashless payment systems
- IT access terminals
- Safe locks
- Parking ticketing systems
- Public transport ticketing systems
- Loyalty and membership programs
- Office automation systems
- Handheld terminals / PDA's
- Leisure park systems
- Ski ticketing systems
- …and many more

5. What is the memory capacity of the LEGIC® transponders?

LEGIC Identsystems offers LEGIC transponder chips with either 1 kbits (128 Bytes), 2 kbits (256 Bytes), 4 kbits (512 Bytes), 8 kbits (1024 Bytes) or 16 kbits (2048 Bytes) of memory size. Due to the integrated **Plug & Play** applications handling any transponder can store **up to 127 different applications**.

Any such application can be freely configured in terms of its size (any size from 6 to 1024 bytes per application) and its security level (read only, read/write, read/write with conditions, etc..).

In comparison to fixed block allocation systems (e.g. iClass, Mifare, … LEGIC can offer up to 98% of its chip memory for application data (e.g biometric templates) without the waste of valuable memory. Due to the flexible application handling (like files on a floppy disk) any LEGIC application is stored and handled independently of each other.

LEGIC card (2K/8K/16Kbit)
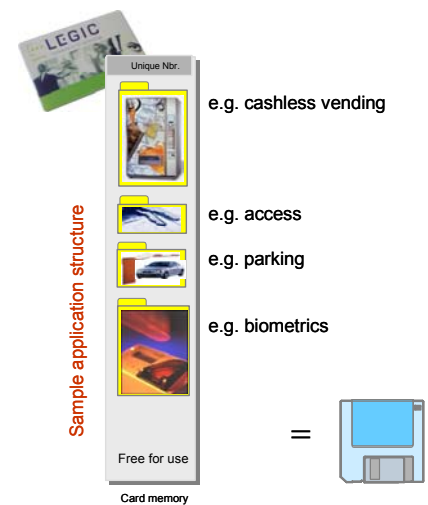
6. What is the typical read range of the LEGIC® technology?

The LEGIC technology is designed to provide a selection of read ranges depending on the application. The LEGIC product line offers **read/write ranges*** of approximately 4" (10 cm = **proximity**), 12" (30.4 cm = **semi hands-free**) and 27" (70 cm = **hands-free**). As with any contactless system, read range is a function of the size of the reader, the size/form factor of the transponder, and is dependent upon local installation conditions. Larger readers, when used with the standard transponder(card), will provide the longer read range.

e.g. access

e.g. turnstile

ISO card
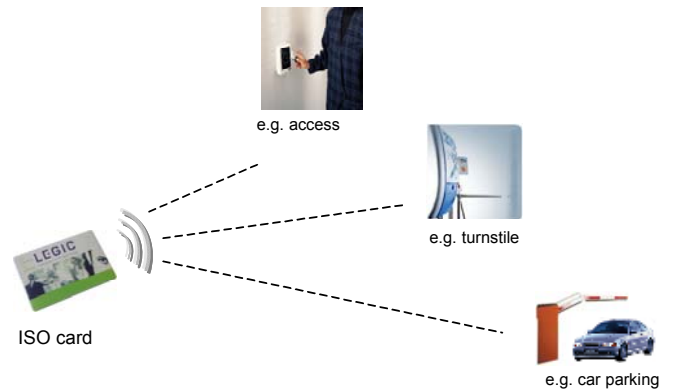
e.g. car parking

*Max. reading range depends also on requirements of national spectrum management authorities.

7. What are LEGIC® Master-Tokens and the MTSC (Master-Token System Control)?

The LEGIC contactless smart card platform is based on a unique security concept whereby important security rules and authorisation rights are stored in physical Master-Tokens. Any manufacturer, project operator or larger end-user can acquire and manage his own set of Master-Tokens (*left*) in order to gain full control over the application data stored on a card (*right*).

Application Level

Control Level

Company X

e.g. Sites   US   GB

e.g. Projects   P1   P2

Unique Nbr.

e.g. ePurse by Company X

GB
P2

e.g. Access by Company Y

Access
London
B1
Client
735

Card memory
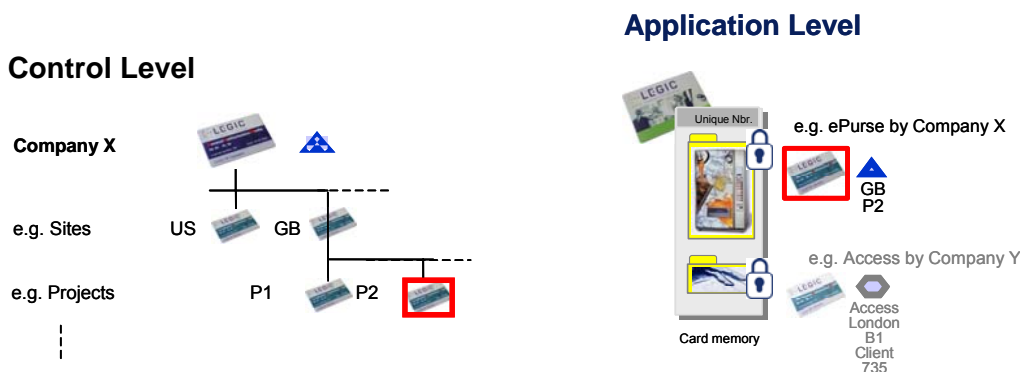
Example: Individual Master -Token structure

Master-Tokens are used for:
- Secure card issuing process
- Control of projects, departments, installation sites, etc.
- Handling of application security

**8. Must I completely change over to LEGIC®, or can I use a mix of technologies in my facilities (i.e. PROX, MAG stripe, etc.)?**

Various card suppliers offer **multi-technology transponders** that allow you to use a mix of technologies in your facilities. For example, if you are using a MAG stripe currently, you may consider either adding a LEGIC Tag to your existing MAG stripe card or purchasing LEGIC cards with a MAG stripe. In either case, you will experience the convenience of using a single transponder on more than one type of reader.

Currently the LEGIC partner network offers a vast number of transponders with different form factors:

- Cards
- Paper tickets
- Keyfobs
- Keys
- Key clips
- Watches
- Stickers
- Wristbands
- Coins
- Golf Tag
- CD's
- …and many more
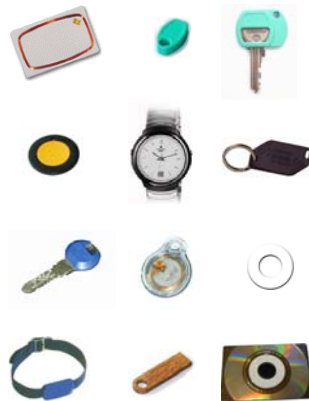
Multi-Technology card

You will be able to add MAG stripes, barcodes, contact smart chip modules, and other technologies, dependent upon the form factor of the transponder and the combination of technologies required.

Note: Since the LEGIC stickers are very thin (0.5 mm thickness only) your card still can be swiped at your standard MAG stripe or WIEGAND reader. Regardless the form factor of a LEGIC transponder they are compatible and can therefore be mixed in your installations.

9. Where can I buy LEGIC® based products from?

LEGIC products are currently available and shipped from **over 200 co-operation (licensee) partners worldwide**. For more details on these partners visit www.legic.com.

10. How does LEGIC differ from low frequency ?

LEGIC cards and readers offer several unique features that enhance traditional low frequency and low security 125 kHz RFID technology. These features include:

- **Cryptographic data exchange**
- Mutual authentication of card and reader
- **Secure reading and writing** of data (including card unique number)
- **Up to 127 applications** on a single card
- Powerful Master-Token System Control
- Plug & play multi-application
- Integrated access, biometric and cash **application standards**

11. What are the most compelling reasons to use LEGIC® in lieu of other smart card technologies?

Security	Higher data security
Handling	Easier and more secure application handling (plug & play)
Flexibility	Flexible data structure (up to 127 applications on one card)
Control	The LEGIC Master-Token key management puts end-users and suppliers in control of the security keys
Compatibility	Data standards for Access Control, Biometrics and Cash
Variety	Wide range of application and transponder suppliers and because of non-technical aspects such as:
Supplier Network	Approved and coordinated supplier network
Reliability	Proven track of success
Investment Security	Platform compatibility

12. Is LEGIC technology affordable?

Yes, the LEGIC product lines have been designed to be affordable. As you think of the number of applications that can be supported by a single transponder, affordability becomes value. LEGIC, as **a true multi-application technology** will provide the organization with a long-term solution and economic benefits.

13. What ISO standards does the LEGIC® technology comply with?

LEGIC contactless smart card readers are versatile, and can read transponders meeting several standards including:

LEGIC prime technology is compliant with:
- 13.56 MHz LEGIC RF Standard

LEGIC advant technology is compliant with:
- ISO15693 – read / write
- ISO14443 A – read / write
- 13.56 MHz LEGIC RF standard
  Reads unique ID number of all other ISO15693 / ISO14443 A compliant transponder chips.

14. How can I be assured that the cardholder's information can't be read by an unauthorized person who gets close to the card?

All **RF data transmission between the card and reader is encrypted** using a secure algorithm. By using high standard encryption techniques, LEGIC reduces the risk of compromised data or duplicated cards. Access to data stored on the cards is protected by different security layers, which can be further customized by the application provider or even the end-user. For even higher security, with LEGIC advant card data may also be protected with **DES or Triple DES encryption**. With any LEGIC reader, the transaction between the card and reader can not be sniffed.

15. I am currently using PROX, MIFARE or iCLASS cards, but like the flexibility of LEGIC® . How can I migrate to LEGIC® cards?

First of all, LEGIC advant readers can read the 32-bit unique serial number based on ISO14443 A (e.g. MIFARE) as well as the 64-bit card serial number based on ISO15693 (e.g. HID iClass). The serial number is the factory programmed permanent unique ID number of any card. Using this number allows in most cases an easy migration to LEGIC.

Additionally, various card manufacturer are providing cards with combined technologies – MIFARE, PROX,… and LEGIC in the same card.

Or you combine the technologies by affixing a LEGIC transponder sticker or label to your existing card. The card then functions with both technologies. This gives you the flexibility to fully operate both technologies in parallel.
Since these stickers come in very thin types (only 0.5 mm thick), you still can swipe the card at e.g. a MAG stripe or Wiegand reader.
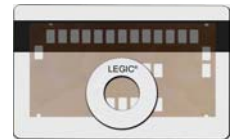
16. Can LEGIC® based readers provide a standard Wiegand output?

Yes. A LEGIC based reader can easily interface with most existing Wiegand protocol access control panels.

17. Is it possible to program an HID proximity format into LEGIC® transponders?

Yes. Wiegand data (standard HID proximity formats) can easily be stored in a LEGIC applications but with even higher data security than the standard HID format offers.

18. Is LEGIC® technology suitable for security installations such as Government ID or Military projects?

Yes, the LEGIC technology is specifically designed to meet the needs of high security access control and identity management. Due to its comprehensive security features LEGIC is today already widely used for Military, Government, Nuclear Power Stations, Airports, Sea Ports and other high security installations.

19. Who is writing applications that will be used with LEGIC® technology?

LEGIC is an open smart card platform where any supplier can write his own application. Any application provider can freely approach any of our cooperation partners or can contact LEGIC Identsystems Ltd directly.

20. How many applications can LEGIC® support?

LEGIC will support **up to 127 different application stored on a single card**. The effective number of individual applications you can support is based on the memory size required by each application and the transponder memory used.