

Card Technology

In modern security systems, badges are used as electronic keys for access control in buildings. These badges offer more security than traditional keys, are easier to handle and can be used for more applications than just access control, such as visual identification, cashless vending, access to lockers etc.

Combinations of different card technologies are possible, e.g. in one badge both Mifare and a contact chip can be combined, or Nedap handsfree (120 kHz) and Legic (13,56 MHz.) These badges are so called **combi badges**. Other combinations are also possible, according to customer needs.

- Unique combination of security and user friendliness
- True "Hands-free" access up to 150 cm*
- Multi-functional use
- Multiple printing options for visual identification
- Combi Cards
- Default high security 3-DES technology

Detection principle of access badges

The detection principle of access badges is based on Radio Frequency Identification Technology. This means that the detection antenna at the door transmits a radio frequency signal. As soon as the badge comes within range of this RF field, energy is received by the badge, which activates the chip in the badge. The information on the chip is then being processed and decoded. The decoded badge number is transmitted back to the reader, after the authorization is verified in the controller, the lock will be opened and the LED is switched to green.

Securely stored badge information

The Nedap badge information consists of a customer code and a 6-digit card number. This makes each badge unique. To increase the data security level the code is programmed into the R/O memory in a scrambled way. Only the controller with the identical customer code (programmed into the firmware) is capable of decoding the



Nedap card. The combination of customer code and badge number makes each Nedap badge not only unique but also enables every customer to define a free range of badge numbers, which can be very useful in multi-site environments.

NeXS handsfree 3DES

The NeXS (**Nedap enhanced Access**) badge is Nedap's response to the increased demand for affordable high-security access badges. This badge has 3DES technology which increases the security level. The NeXS badge can be used at various security levels: the customer can decide which level to use. The NeXS card is always equipped with 3DES authentication keys. This type of encryption is considered high secure.

3DES

The 3DES mutual authentication in the NeXS card operates on the challenge/response principle. This principle checks whether the card presented is real and whether the reader is authentic. When a card is held within the card reader's detection range, the reader sends a challenge code, consisting of a key and a random number, to the card. When the card receives this signal, it uses the card number and a built-in key to encrypt

the code and sends it back to the card reader. Since the card reader sends a different challenge to the card every time, the communication between card and card reader is never the same twice. If the card signal were to be recorded and replayed, the card reader would immediately detect an abnormality because the signal would not be unique. As an additional safety measure, Nedap applies key diversification, i.e. every card's DES keys are different. The NeXS 3DES principle is an extremely safe principle and makes the NeXS badge highly suitable for security applications like access control.

True hands free access control

Nedap provides the utmost combination of security and user friendliness. This is achieved by using a reliable badge that provides a high level of data encryption, without even having to remove it from your pocket or wallet. NeXS is the only badge that combines comfortable hands free access with high secure data encryption.

Combi Cards

13,56 MHz technology (Legic, Mifare) is very much suited for sending large amounts of data with high speed at short distances. 120 kHz (Nedap) is especially suited for smaller amounts of data at a low speed at larger distances. The NeXS cards are therefore very well suited for access control. Other

functions like vending, catering and advanced data handling require additional chip technology. To combine the best of both worlds; Nedap integrates these technologies in one card, so called **Combi cards**. These Combi cards are available with Mifare, DESFire and Legic technology.

Visual identification

Nedap cards enable you to add an extra security feature: visual identification.

Your access control cards can be printed in full color in combination with a photo and/or laser marking. Nedap offers several printing technologies (e.g. Offset) in different qualities, which gives the customer the opportunity to create a personal badge according to the companies corporate image.

Optional functionality

Nedap additionally supplies the NeXS and or Combi badges with magnetic stripe, a barcode or contact (smart) chip to add extra functionality. Nedap also supplies tear drops; Proximity key fobs with NeXS technology.



For more technical details; please refer to www.nedap-aeos.com *Technical support*

For order details; please refer to www.nedap-aeos.com *Consultant support*

** Reading distance depending on credential type and card reader type*

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