



GOVERNMENT

PRODUCT PORTFOLIO

At Linxens, we provide highest security, integrity and trust for electronic Identity Documents (eID).

Modern RFID technology redefines traveling worldwide. While electronic passports have been introduced in numerous countries around the world, governments are now introducing further contactless identification documents based on RFID.

- dLOC™ SYSTEM
- DATAPAGE
- ePASSPORT INLAY
- eCOVER (ELECTRONIC COVER)
- SMART-LOOP PRELAM®
- DURASOFT®
- COIL ON MODULE
- SLIM LAM
- DUAL INTERFACE INLAYS
- GOVERNMENT VALUE ADDED SERVICES
- MODULE PACKAGING SERVICES

For further product details visit:

linxens.com/solutions/secure-id

dLOC™ SYSTEM

NEXT GENERATION DOCUMENT AUTHENTICATION

The dLoc™ document authentication solution allows private and government organizations to turn their offline documents into cloud based digital instances that can be easily connected to existing systems.

To achieve this, the dLoc™ solution uses a combination of components: The client customizable dLoc™ mobile app, a cloud based engine running alongside either a public or private blockchain, and the option to use Linxens' NFC dLoc™ seals which easily attach to existing documents.

dLoc™ can be easily integrated into any existing database and related documents, enhancing security and convenience for both the issuing organization, and their customers. The impact on well-rehearsed processes is negligible, allowing for seamless integration of dLoc™ into incumbent systems and existing databases.

The security of dLoc™ is its core functionality, and includes chip inventory management (digital track and trace system); digital signatures, user authentication and issuance control systems, all accessible via a secure "go anywhere" mobile application. Linxens provides full control of the issuance and verification systems and can detect any unauthorized attempt at alteration or forgery.

OVERVIEW

Operating Frequency	13.56 MHz
Benefits	Simplicity Flexibility Security Transparency
Features	Blockchain-based Cloud Storage Customized artwork and security elements Customized NFC mobile app Chip memory ranging from 1kb to 4kb
International Standards	ISO 14443-4 NFC Forum EAL 6
Example Application Areas	Birth Certificates Land Registration Education transcripts/diplomas Financial Transactions Medical Records

DataPage

WORLD'S THINNEST ELECTRONIC INLAY

The trend is clear. High-end travel documents are increasingly required to have a secure DataPage component. With rising expectations for security and durability, Linxens offers a DataPage Solution that meets the stringent requirements of security printers and governments around the world.

KEY FEATURES

- World's thinnest electronic DataPage inlay
- Highly flexible hinge material for easy passport production
- Encapsulated electronics with embedded chip module and wired antenna
- Smart AC (anti-crack) protection for high durability

OVERVIEW

Material	Polycarbonate (PC)
Options	Available with or without integrated hinge Available in laser and non-laser engravable PC
International Standards	ISO 18745 EAL 6

ePASSPORT INLAY

THE BEST CHOICE FOR SECURITY

Linxens contributes to the world of secure travel by offering a wide range of tailor-made ePassport inlay solutions to its customers. The inlays are made from laminated polycarbonate (PC) or polyester (PET) and can be incorporated into the datapage of a passport. In addition, Linxens offers an alternative solution to the e-passport cover with DURASOFT®. Both inlay solutions are based on the latest proven technology that offer:

- Enhanced document lifespan (10 years)
- CAP (Chip Activation Protection) to ensure no unauthorized data reading when passport is closed

Fast memory access and data protection take the security of Linxens ePassport inlays to a new level.

OVERVIEW

Operating Frequency	13.56 MHz
Operating Temperature	-25°C to +50°C
Integrated Circuit	ICAO compliant IC's and OS
Material	PC, PET-G, Durasoft®, Composite
International Standards	ISO 14443 ISO 15693, ISO 18000-6C EPC global
Application Area	eID Documents, ePassport
Features	Customized sheets formats Durability and Reliability Fulfills highest quality and security standards

eCOVER (ELECTRONIC COVER)

HIGHEST SECURITY FOR ELECTRONIC PASSPORT

Linxens provides high-security RFID eCovers of outstanding quality to customers worldwide which helps improve secure identification and increase the effectiveness of border control processes.

Linxens eCover products are typically manufactured applying a number of the company's proprietary and patent protected technologies consisting of a wire-embedded antenna on a carrier substrate connected to a chip module. The laminated inlay is then smoothly incorporated into the back cover of the passport.

One of the most globally recognized Linxens patents in this respect is DURASOFT®, a resilient material that enhances a document's reliability and durability significantly. Linxens's DURASOFT® has been the material of choice in the e-passport industry for more than a decade. It continues to successfully be used in numerous worldwide e-passport projects.

OVERVIEW

Operating Frequency	13.56 MHz
Operating Temperature	-25°C to +50°C
Material	Inlay Material: Durasoft® and Paper Cover Material: Textile and Paper
International Standards	ISO 14443 ICAO Compliant EAL 6
Application Area	Secure ePassport
Options	Customized sheet formats Initialization/Customized programming of data Flash loading Applet loading UID capturing and manifesting Foil embossing

SMART-LOOP PRELAM®

WIRE-EMBEDDED UHF ANTENNA MEETS INDUCTIVE COUPLING

Linxens's state-of-the-art Direct Connect PRELAM® broadens the technology portfolio available for UHF eID document production. Our new SMART-LOOP PRELAM®, based on patented wire-embedding and inductive coupling know-how, offers many benefits:

- Extended read range
- Very small and flexible antenna design
- Thinness of only 250µm
- Mechanical durability
- Long lifetime and high performance

The wire-embedded UHF PRELAM® uses inductive coupling technology. The lack of any intermetallic connection between chip and antenna makes it one of the most robust and reliable PRELAM cards available in the market today, and enables new solutions for eDrivers License and eResidence Permit cards.

OVERVIEW

Operating Frequency	860-960 MHz
Operating Temperature	-25°C to +50°C
Integrated Circuit	Impinj Monza 4D
Material	PC, PVC, PET-G, Composites
International Standards	ISO 18000-6C EPC Class 1 Gen 2
Application Area	eDrivers License, eResidence Permit, Border Crossing
Features	Wire-embedded Antenna Inductive Coupling

DURASOFT® HIGHLY DURABLE AND FLEXIBLE FOR ELECTRONIC PASSPORT

A DURASOFT® inlay is a unique synthetic inlay that has been developed specifically for the use in Electronic Passports (EP). The DURASOFT® inlay is a multilayered compound which contains an ISO-14443-compliant RFID-transponder (chip + antenna). The porous surface of the DURASOFT®-Inlay allows adhesives, coatings and laminating films to penetrate into its structure to form an extremely strong joint with the surrounding materials (passport-cover, passport-pages). The DURASOFT®-Inlay enables passport manufacturers to produce and process passport books by using conventional machines (e.g. Kugler, UNO).

DURASOFT®-Inlays are available in standard formats and are also available in a wide range of customized formats.

The DURASOFT®-Inlay comprises two pages; i.e., it is included in both the front cover page and the back cover page. The inlay has a reduced thickness at the hinge in order to guarantee that it can be folded easily and that it can be included in the sewing line.

OVERVIEW

Material	Inlay Material: DURASOFT® and Paper
Operating Frequency	13.56 MHz
Operating Temperature	-25°C to +50°C
International Standards	ISO 14443 ICAO Compliant EAL 6
Application Area	Secure ePassport
Options	Customized sheet formats Initialization / Customized programming of data Flash loading Applet Loading UID capturing and manifesting

Coil On Module

NEXT EVOLUTION OF DUAL-INTERFACE CARD PRODUCTION

Linxens Coil on Module (CoM) inlay uses an RFID link in place of the mechanical connection typically used between the card antenna and the module. Not only does this improve the robustness and long-term reliability of dual interface (DIF) ID documents, but it also simplifies the card design and manufacturing, making these processes more efficient and less complicated.

KEY FEATURES

- Flexibility to combine chips types and card antennas
- Single card antenna layout for different chip/module combinations
- Based flip chip technology
- Highest reliability levels thanks to integrated antenna and inductive coupling
- Laser and non-laser engravable designs available

OVERVIEW

Qualified chip types	SLE 77CLFX240AP(M) SLE 78CLFX400AP(M)
Material	Polycarbonate (PC)

SLIM LAM

VERSATILE AND RELIABLE THIN INLAY

Our SLIM LAM product family provides card manufacturers and security printers with a pioneering product range to meet tomorrow's requirements for versatile high-security contactless identity documents.

KEY FEATURES

Manufactured with patented wire-embedding technology on different substrates, SLIM LAM offers:

- Various form factors and sizes
- HF and UHF operating frequencies
- Optional SMART-AC, an Anti-Crack feature (AC) providing excellent protection against micro cracks

The outstanding product thinness enables easy integration of enhanced security features in ID cards or plastic data pages for e-passports, providing card manufacturers and security printers with enhanced flexibility and optimization of production processes.

OVERVIEW

Operating Frequency	13.56 MHz (HF) 860-960 MHz (UHF)
Operating Temperature	-25°C to +50°C
Integrated Circuit (IC)	ICs from leading suppliers
Material	PC PVC PET-G Teslin® Composite
International Standards	ISO 14443 ISO 15693 ISO 18000-6C
Application Area	eID Documents ePassport eDriver's License eResident Permit Border Crossing

DUAL INTERFACE INLAYS

HIGHEST DURABILITY AND LIFETIME

Our DUAL INTERFACE INLAYS provide card manufacturers with a durable and convenient solution for the manufacture of finished dual-interface cards.

The size and shape of the antenna can be adapted to customized requirements as well as sheet formats and layouts for PRELAM® and PROCOIL.

Our production for DUAL INTERFACE INLAYS is compliant with MasterCard's Card Quality Management (CQM) requirements.

OVERVIEW

Operating Frequency	13.56 MHz
Operating Temperature	-25°C to +50°C
Material	PVC, PC, PET-G
International Standards	ISO 14443
Application Area	Government/eID ePayment Access
Benefits	Customized formats available Robust antenna-chip-module pads interconnection

GOVERNMENT VALUE ADDED SERVICES

FULL SUITE OF SERVICES FOR SECURE ID PORTFOLIO

Linxens's comprehensive portfolio of secure eID documents also offers a variety of Value Added Services. Linxens's partners benefit from receiving all products and services from one reliable component supplier offering customer satisfaction guaranteed one-stop shop. This single source method means a simplified supply chain for customers, with a proven level of quality throughout the manufacturing process.

Government products are offered with the following services:

- Wafer processing (Grinding, Dicing, Bumping)
- Chip packaging (SMOA4, SMOA5, SMOA6)
- Unique ID data capturing s
- Initialization and personalization of ROM and Flash based controller chips
- Chip & operating system bundle offering
- Optical personalization and numbering
- Gold foil embossing of eCovers
- Laser engraving
- Key Management
- Laser engraving

OVERVIEW

Operating Frequency	13.56 MHz
Operating Temperature	-25°C to +50°C
Product Families	SMART-ePP SMART-DC SMART-SL SMART-DI
Application Area	Electronic Identification Documents

MODULE PACKAGING SERVICES FOR PRE-LAMINATES WHITE CARDS AND eID PRODUCTS

Linens's in-house competence offers automated contactless module packaging of RFID memory and micro-controller ICs. Module packaging services for different SMOXX modules provide a cost effective alternative and enables seamless integration into existing PRELAM® product designs, semi-finished cards, and secure identification documents. These products are typically used in access control, payment, transport and government credential applications.

Linens packages wafers into SMOXX modules packed on lead frames and encapsulated with an epoxy mold compound. Linens offers four module packing formats that are industry standard compliant and fulfill the highest quality standards, demonstrating high robustness and a long lifespan.

The SMOXX solution offers mechanical flexibility proven in Card Quality Management (CQM), bending & stamping tests, and meets customer expectations by delivering fast transaction rates and anti-collision features.

OVERVIEW

Operating Frequency	13.56 MHz
Operating Temperature	-30°C to +125°C
Integrated Circuit (IC)	ICs from leading suppliers
Material	Lead Frame material: CuSn6 Encapsulation: Epoxy based filled mold compound
International Standards	JESD22-A103C JESD22-A110B JESD22-A104C
Application Area	Access Control Automad Fare Collection Government, eID Payment

LIXENS

FACTS AND FIGURES



GLOBAL LEADER
€ 535 million turnover



UNIVERSAL
80% people on Earth use our products



LARGE-SCALE PRODUCTION
8 production sites



PIONEER
4 research & development centers



MULTICULTURAL
3,000 employees in Brazil, China, France,
Germany, Japan, Korea, Singapore, Thailand, US



WORLDWIDE
200 clients all over the world

- Linxens has so far supplied more **than 80 billion connectors to the market** since the business was founded.
- Linxens produces **around 800 million RFID transponders per year**, the largest global production capacity in the RFID industry.

OUR STANDARDS AND CERTIFICATIONS

OPERATING AT THE HIGHEST LEVELS OF QUALITY
AND SECURITY STANDARDS

ISO standards

- ISO/TS 16949 v2009
- ISO TS
- ISO 9001
- ISO 14001
- ISO 18001

Other quality and security standards

- Common Criteria EAL 6 security Certification (BSI)
- NASPO Security Assurance Certification
- MasterCard CQM Certification
- SONY Green Partner Certificate
- Austrian Institute of Technology (AIT) qualification for PRELAM® and card inlay products

For further product details visit:

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OUR PASSION FOR INNOVATION

WE SEE INNOVATION AS THE KEY TO YOUR SUCCESS

With our client's current and future needs in mind, we **tailor our expertise** in a changing world.

More than 100 engineers and technicians specialized in R&D and process contribute on a daily basis to developing

- a series of advanced and distinctive technologies...
- for a broad diversity of customers...
- across multiple markets.



We provide both ready-made and customized offerings, suitable for a large number of applications



We present the most comprehensive technology portfolio and broadest product range with more than 1,000 patents and patent applications