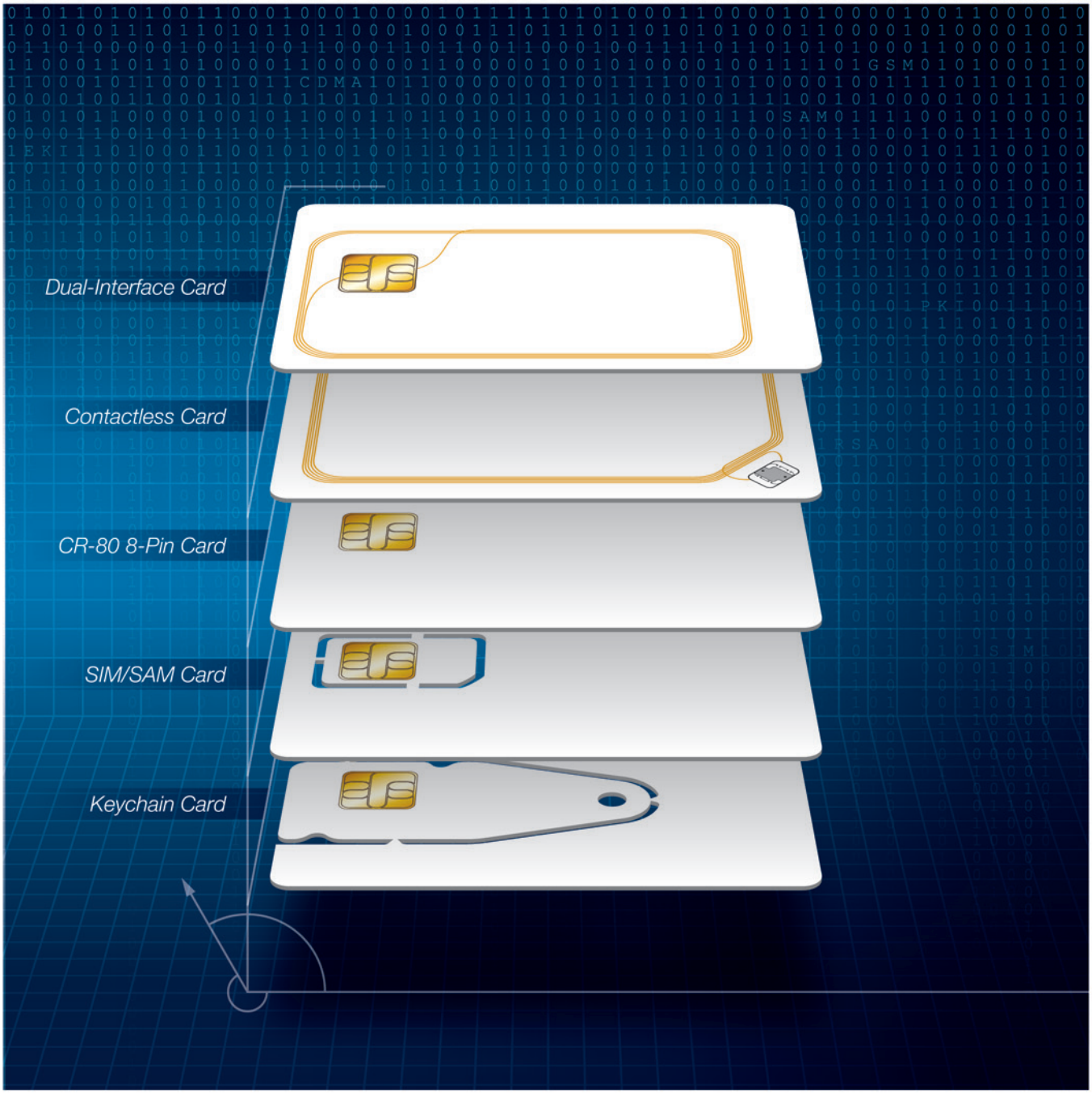
Smart Card

Product Selection Guide



CardLogix

Smart cards can improve any transaction involving data and value. When you design your smart card system, comprehensive planning means optimal results. This guide is meant for general reference only, and does not cover every possible design step and contingency.

The First Four

1. Do you require a completely original design? Or is there an existing application that you can use? (For the latter, please visit CardLogix Smart Partners at http://www.cardlogix.com/smartpartners/)
2. Is there a clear business case? Does it include financial and consumer behavior factors?
3. Will the smart card handle data, value, or both? Adding a value function increases system design security and complexity.
4. What are the card's essential features? With multiple functionalities, prioritize, starting with the most important one and phase in additional features incrementally.

Basic Setup

1. Will the system be single-application or multi-application?
2. Are there industry standards (e.g. ISO, EAL, or ETTSI) to conform to for specific encryption or chip requirements?
3. What information do you want to store in the cards?
4. How much memory is required for the applications?
5. If the system is multi-application, how will you separate different types of data?
6. Will data be obtained from a database or loaded each time?
7. Will this data concurrently reside on a database?
8. How many smart cards will be needed?
9. Have card or infrastructure vendors been identified? What are their lead times?
10. What are the required readers, handsets, terminals, and software?
11. Is a Card Management System (CMS) necessary?
12. How many types of artwork will be included in the issuance?
13. Who will design the artwork?
14. What is needed on the card (e.g. signature panels, magnetic stripes, embossing, etc.)?

Value Applications

1. Is value in your cards reloadable or one-time use?
2. How will you distribute the cards?
3. How will cards be activated and loaded with value?
4. Will there be a refund policy?
5. What is the minimum and maximum value to store on each card?

Security

1. What are the security requirements?
2. Does all of the data need to be secure? Or only some?
3. Who will have access to this information?
4. Who will be allowed to change this information?
5. In what manner will you secure this data? (e.g. encryption, host passwords, card passwords, PINs, etc.)
6. Should keys/PINs be customer or system activated?
7. How will you identify the card issuance and versions?
8. Will the system utilize PKI and Digital Certificates? If so, how will they be managed?
9. What about security printing options? (e.g. guilloches, microprinting, holograms, hidden images, etc.)

Deployment Recommendations

1. Establish clear and achievable program objectives
2. Analyze the application and IT environment
3. Make sure the organization has a stake in the project's success and that management buys into the program
4. Set a budget
5. Name a project manager
6. Assemble a project team and create a team vision
7. Graphically create a dataflow diagram
8. Assess the card and reader options
9. Write a detailed specification for the cards and system
10. Set a realistic schedule with inchstones and milestones
11. Establish security parameters for people and the system
12. Build your on-card and host file structures
13. Phase in each system element and test as you deploy
14. Reassess your system for security leaks
15. Deploy the first phase of cards and test the system
16. Train the key employees responsible for each area
17. Set up a system user manual
18. Check the reporting structures
19. Create contingency plans, should problems arise
20. Deploy and announce your system
21. Advertise and market your system

CardLogix' Smart Toolz®, M.O.S.T. Toolz™, and Java-based open source software enable low-cost, high-performance system development for identity and stored value. Geode™, S@t Manager, and VirtuoSimo™ speed handset and operator solutions for mobile applications. For expert system integration, these tools, plus other hardware, mesh together for a best of breed smart card-based system.

Smart Toolz®

Smart Toolz is a comprehensive suite of software and hardware components that includes everything you need to develop contact and contactless memory smart card applications. The toolkit features the CardAppz® software, enabling marketing professionals to fully demonstrate a card's capabilities within a fully configurable card database and system. Also included is the Card Configuration Utility software, allowing designers to configure a card's parameters, load data to the card, and then communicate to the card through the supplied Winplex® middleware.

M.O.S.T. Toolz®

Designed specifically for multi-application and high security microprocessor-based smart card systems, the M.O.S.T. Toolz™ Microprocessor Card Development Kit features robust software and hardware components for rapid system development. M.O.S.T. Toolz gives you the power to deliver multiple applications and services on a single card, allowing for fast system design and easy updating without the need for card re-issuance.

Typical Card System

Card Configuration	
Card Configuration Utility™	Contactless and memory card tool
M.O.S.T. Toolz™	File creation utility software
APIs / Classes / Libraries	
Reelplex®	POS system for ticketing and stored value
Printplex®	API for card encoding and issuance
Trakplex®	API for gaming and hospitality
Winplex®	General purpose API
Application Development	
CardAppz®	Database demo software
Embedded Toolz™	Complete SDK for OEM designs

Embedded Toolz™

The Embedded Toolz™ SDK includes all the components, firmware, and software you need to prototype your product's smart cards and embedded readers. The kit comes complete with a full schematic, driver software, and source code to allow easy interfacing with your host processor and system hardware. The supplied reader chip is compatible with the widest range of smart cards and protocols available. When combined with Smart Toolz or M.O.S.T. Toolz, reading and configuring your cards is a snap.

The Embedded Toolz kit contains ten smart cards, a prototyping reader board with card sockets and USB input cable, plus a CD with sample code, schematics, manual, FAQ, and design tips.

Telecom Tools

CardLogix has you covered from SIM Toolkit configuration tools to complete Java SIM. Our goal is to make tools easy to use so your design is done right the first time and gets to market faster. We offer the best of breed tools for your development project. Some of them are even free, based on production commitments. Contact your CardLogix representative to get started today.

Middleware Support

- PCSC industry standard API
- All standardized PIV II Middleware meeting
- SP800-73-1 requirements
- ImageWare Systems Card Management Systems (CMS's)
- Intercede CMS
- MovieGold® API for Ticketing, Stored Value, and POS systems
- Printplex® API for Card Encoding and Issuance
- RSA PIV II Middleware and CMS
- SafeSign Middleware Cryptographic Service Provider (CSP)
- SafeSign Token Manager
- Worldwide Trust CMS's
- Winplex®, a general purpose API
- Trakplex® API for Gaming and Hospitality
- Charismathics CSP and PKI Middleware

Additional Card Options

- Lithographic card printing
- Guilloches and rosettes
- Microprinting
- Laser engraving
- Magnetic stripes (HiCo, LoCo, and colored)
- Card punching
- Optically Variable Devices (OVD's)
- Holograms and holomags
- Barcode printing
- Serialization and variable image printing
- Tamper-evident signature panels
- Ultraviolet inks
- Hidden images (Card Validator® graphics)
- Color shifting inks
- Colored interlayers

Additional Card Options (Continued)

- OV dots
- Speed bumps

Applet Support

- PIV II for Identity systems
- SafeSign SSO
- ICAO passport applets
- Match on-card biometric applets
- One-time password and digital signatures for GSM phones
- SMS applets
- Emergency medical record system applet
- Navy Cash applet

Fulfillment & Packaging Options

- Letter and Z-fold mailing insertions
- Card wallets
- Tyvek card sleeves
- Card wallet books
- CD Connect cards
- Retail card hangers and blister packaging
- Customized shrink-wrap bundles
- Cards with peel-off coupons
- Tamper-evident packaging

Encoding Options

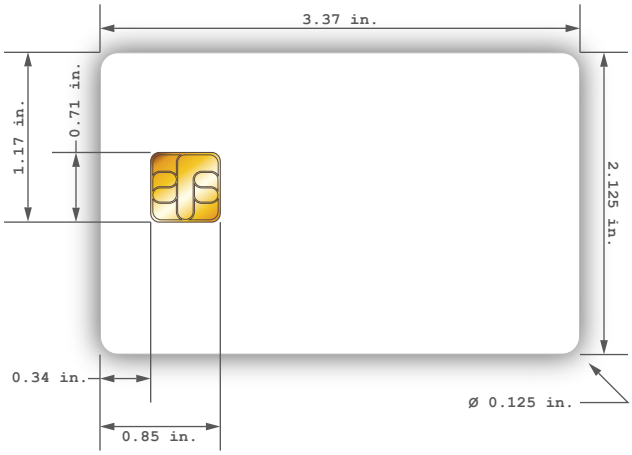
CardLogix can program your card orders, including magnetic stripe encoding and software loading. Fulfillment services are available for all orders (e.g. affixing cards to special carriers, such as promotional collateral). You can also order cards serialized and inserted into envelopes that can be stamped and mailed. Card lots can also be individually sleeved or shrink-wrapped for non-secure delivery.

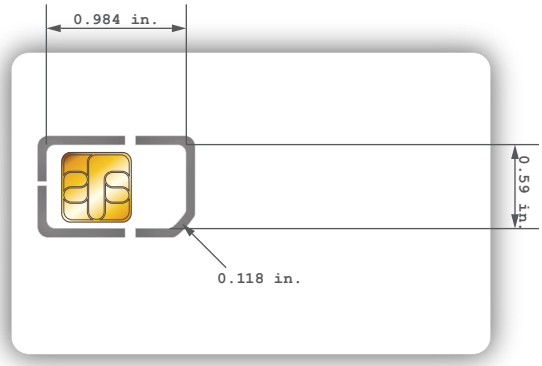
Our Magnetic Stripe Cards can be encoded to the industry specifications set by leading manufacturers of automated banking equipment for tracks 1, 2, and 3.

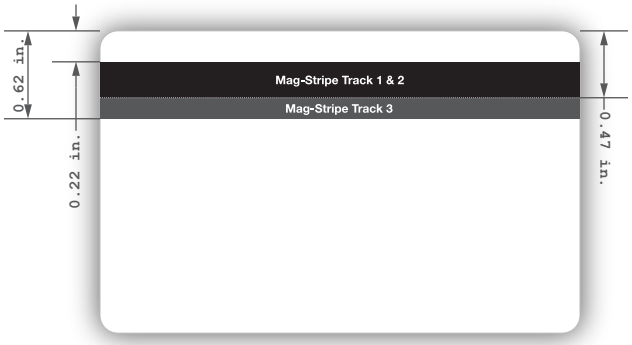
CardLogix can load Java applets and all standard types of data, such as identification records, health histories, etc. For security applications, CardLogix can also load the card with digital certificates, transport keys, and encrypted keys.

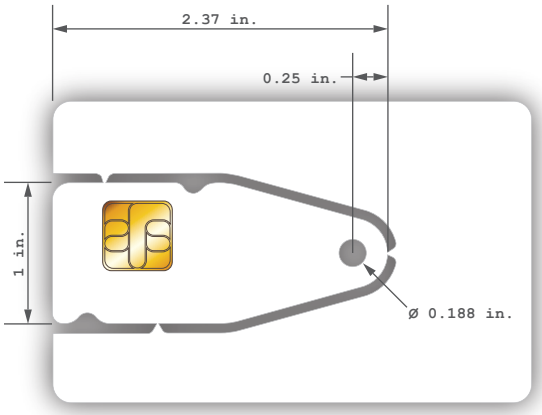
Smart Card Dimensions & Specifications

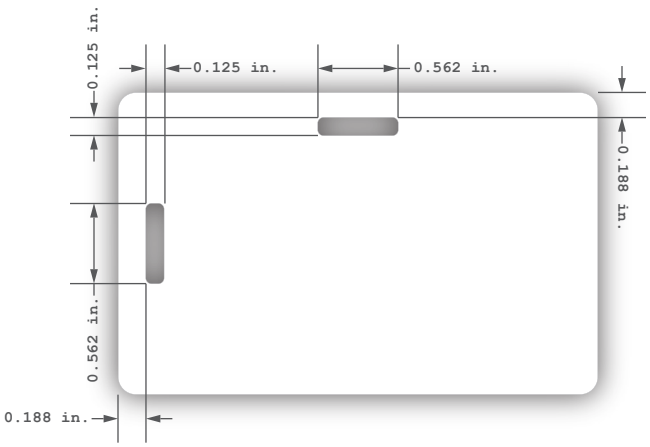
Note: Drawings are 2:3 scale.

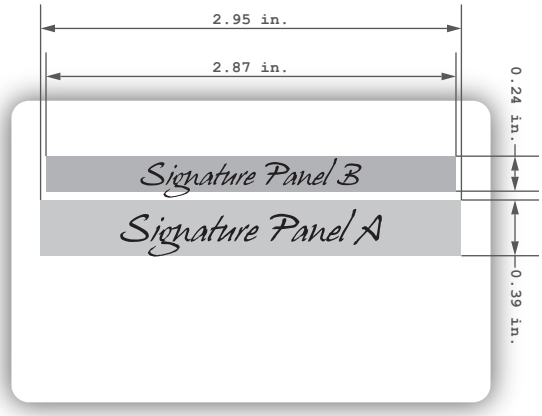












Additional smart card form factors include:

- USB jump drives
- E-passports
- SD cards
- miniSD cards
- Laundry tags

CardLogix offers cards in the following substrates:

- Commercial grade
- Biodegradable grade
- Precision identity grade
- Government certified grade
- Molded ABS (for SIM cards)

Memory Smart Cards

CardLogix Part Number	User Memory	Issuer Memory	Type	Functionality / Applications	Security Features	Communication Protocols	Supported Readers*	Maximum Supply Current
CLXSA002KA2	2k bits	N/A	Memory	Small record storage, loyalty, conventions, digital receipts	Host-based only	I^2C	A, C, I, O	3 mA
CLXSA008KA7	8k bits	N/A	Memory	Small record storage, loyalty, conventions, digital receipts	Host-based only	I^2C	A, C, I, O	3 mA
CLXSA016KA8	16k bits	N/A	Memory	Data / record storage, health informatics, loyalty, conventions, digital receipts	Host-based only	I^2C	A, C, I, O	3 mA
CLXSA032KA9	32k bits	N/A	Memory	Data / record storage, health informatics, loyalty, conventions, digital receipts	Host-based only	I^2C	A, C, I, O	3 mA
CLXSA064KA3	64k bits	N/A	Memory	Data / record storage, health informatics, loyalty, conventions, digital receipts	Host-based only	I^2C	A, C, I, O	3 mA
CLXSA128KA4	128k bits	N/A	Memory	Data / record storage, health informatics, loyalty, conventions, digital receipts	Host-based only	I^2C	A, C, I, O	3 mA
CLXSA256KA5	256k bits	N/A	Memory	Data / record storage, health informatics, loyalty, conventions, digital receipts	Host-based only	I^2C	A, C, I, O	3 mA
CLXSA512KD5	512k bits	N/A	Memory	Data / record storage, health informatics, loyalty, conventions, digital receipts	Host-based only	I^2C	A, C, O	3 mA
CLXSA001MD1	1 Mbit	N/A	Memory	Data / record storage, health informatics, loyalty, conventions, digital receipts	Host-based only	I^2C	A, O	3 mA
CLXSA004MF1	4 Mbits	N/A	Memory	Data / record storage, health informatics, loyalty, conventions, digital receipts	Host-based only	SPI	Custom	3 mA
CLXSA001KK1	1k bits	644 bits	Smart Memory	Access control, stored value, data / record storage, health informatics, loyalty	Read / write password protection	7816 Synchronous	A, C, I, O	3 mA
CLXSA001KK2	1.5k bits	644 bits	Smart Memory	Access control, stored value, data / record storage, health informatics, loyalty	Read / write password protection	7816 Synchronous	A, C, I, O	3 mA
CLXSA002KK3	2k bits	644 bits	Smart Memory	Access control, stored value, data / record storage, health informatics, loyalty	Read / write password protection	7816 Synchronous	A, C, I, O	3 mA
CLXSB002KB5	2k bits	N/A	Smart Memory	Small record storage, loyalty, conventions, digital receipts	Security code, fuse lock, write protect	7816 Synchronous	A, C, I, O, S	5 mA
CLXSA001KL1	1k bits	2k bits	Smart Memory	Access control, stored value, data / record storage, health informatics, loyalty	Read / write password protection	I^2C & T=0	A, C, I, O, S	5 mA
CLXSA004KK4	4k bits	2k bits	Smart Memory	Access control, stored value, data / record storage, health informatics, loyalty	Read / write password protection	I^2C & T=0	A, C, I, O, S	5 mA
CLXSA008KK5	8k bits	2k bits	Smart Memory	Access control, stored value, data / record storage, health informatics, loyalty	Read / write password protection	I^2C & T=0	A, C, I, O, S	5 mA
CLXSA016KK6	16k bits	2k bits	Smart Memory	Access control, stored value, data / record storage, health informatics, loyalty	Read / write password protection	I^2C & T=0	A, C, I, O, S	5 mA

*Winplex supported reader brands: *A*CS, *C*ardcom, *I*D Tech, *O*mnikey, *S*CM

Contactless Smart Cards

CardLogix Part Number	User Memory	Manufacturer Description	Manufacturer Part Number*	Functionality / Applications	Security Features	Communication Protocols
CLXRN004KP3	500 bytes	Crypto RF	AT - AT88SC0404CRF	Building access, transportation, purse / wallet, and stored value	Anti-collision, authentication	ISO 14443 B
CLXRN008KP4	1k byte	Crypto RF	AT - AT88SC0808CRF	Building access, transportation, purse / wallet, and stored value	Anti-collision, authentication	ISO 14443 B
CLXRN016KP5	2k bytes	Crypto RF	AT - AT88SC1616CRF	Building access, transportation, purse / wallet, and stored value	Anti-collision, authentication	ISO 14443 B
CLXRN032KP6	4k bytes	Crypto RF	AT - AT88SC3216CRF	Building access, transportation, purse / wallet, and stored value	Anti-collision, authentication	ISO 14443 B
CLXRN064KP7	8k bytes	Crypto RF	AT - AT88SC6416CRF	Building access, transportation, purse / wallet, and stored value	Anti-collision, authentication	ISO 14443 B
CLXRN128KP8	16k bytes	Crypto RF	AT - AT88SC12816CRF	Building access, transportation, purse / wallet, and stored value	Anti-collision, authentication	ISO 14443 B
CLXRN512UN1	64 bytes	MIFARE Ultralight	NX - MF0 IC U1	Building access, transportation, purse / wallet, and stored value	Anti-collision	ISO 14443 A
CLXRN002KN2	320 bytes	MIFARE Mini	NX - MF1 IC S20	Building access, transportation, purse / wallet, and stored value	Anti-collision, RNG, and 2 keys	ISO 14443 A
CLXRN008KN3	1k bytes	MIFARE STD (Classic)	NX - MF1 IC S50	Building access, transportation, purse / wallet, and stored value	Anti-collision, RNG, and 2 keys	ISO 14443 A
CLXRN032KN4	4k bytes	MIFARE STD (Classic)	NX - MF1 IC S70	Building access, transportation, purse / wallet, and stored value	Anti-collision, RNG, and 2 keys	ISO 14443 A
CLXRN032KN5ED	4k bytes	MIFARE DESFire	NX - MF3 IC D40	Building access, transportation, purse / wallet, and stored value	Anti-collision, RNG, DES, and 14 keys	ISO 14443 A

*Manufacturers: *AT* = Atmel, *NX* = NXP

Credentsys® Dual-Interface Cards

CardLogix Part Number	User Memory	Operating System	Functionality / Applications	Supported Algorithms	Communication Protocols	Applets in ROM
CLXSU512KJ3/DIJ	72k bytes	Java Card Platform 2.2.1, Global Platform 2.1.1	National ID programs, healthcare, informatics, driver licenses, voter registration, enterprise IDs	AES-128, MD5, DES, TDEA, RSA-1024, RSA-2048, SHA-1, SHA-256	T=0, T=1, ISO 14443 B	PIV II, SafeSign

M.O.S.T.® (Microprocessor-Based) Cards

CardLogix Part Number	User Memory	Security Features	File Types Supported	Communication Protocols
CLXSU032KC5/T=0ED	4k bytes	SHA-1, DES, 3DES, AES-128	MF, DF, EF-Transparent, Linear, Cyclical, APP, CHV, Purse	T=0
CLXSU064KC5/T=0ED	8k bytes	SHA-1, DES, 3DES, AES-128	MF, DF, EF-Transparent, Linear, Cyclical, APP, CHV, Purse	T=0
CLXSU128KC5/T=0ED	16k bytes	SHA-1, DES, 3DES, AES-128	MF, DF, EF-Transparent, Linear, Cyclical, APP, CHV, Purse	T=0
CLXSU256KC5/T=0ED	32k bytes	SHA-1, DES, 3DES, AES-128	MF, DF, EF-Transparent, Linear, Cyclical, APP, CHV, Purse	T=0
CLXSU544KC5/T=0ED	68k bytes	SHA-1, DES, 3DES, AES-128	MF, DF, EF-Transparent, Extended, Linear, Cyclical, APP, CHV, Purse	T=0
CLXSU064KC6/CAED	8k bytes	SHA-1, DES, 3DES, AES-128	MF, DF, EF-Transparent, Linear, Cyclical, APP, CHV, Purse, GPF	14443 Contactless
CLXSU128KC6/CAED	16k bytes	SHA-1, DES, 3DES, AES-128	MF, DF, EF-Transparent, Linear, Cyclical, APP, CHV, Purse, GPF	14443 Contactless
CLXSU256KC6/CAED	32k bytes	SHA-1, DES, 3DES, AES-128	MF, DF, EF-Transparent, Linear, Cyclical, APP, CHV, Purse, GPF	14443 Contactless
CLXSU544KC6/CAED	68k bytes	SHA-1, DES, 3DES, AES-128	MF, DF, EF-Transparent, Extended, Linear, Cyclical, APP, CHV, Purse, GPF	14443 Contactless
CLXSU064KC7/AED	8k bytes	SHA-1, SHA-256, HMAC, DES, 3DES, AES-128, -192, -256	MF, DF, EF-Transparent, Linear, Cyclical, APP, CHV, Purse, GPF	T=0, T=1
CLXSU128KC7/AED	16k bytes	SHA-1, SHA-256, HMAC, DES, 3DES, AES-128, -192, -256	MF, DF, EF-Transparent, Linear, Cyclical, APP, CHV, Purse, GPF	T=0, T=1
CLXSU256KC7/AED	32k bytes	SHA-1, SHA-256, HMAC, DES, 3DES, AES-128, -192, -256	MF, DF, EF-Transparent, Linear, Cyclical, APP, CHV, Purse, GPF	T=0, T=1
CLXSU512KC7/AED	64k bytes	SHA-1, SHA-256, HMAC, DES, 3DES, AES-128, -192, -256	MF, DF, EF-Transparent, Extended, Linear, Cyclical, APP, CHV, Purse, GPF	T=0, T=1
CLXSU640KC7/AED	80k bytes	SHA-1, SHA-256, HMAC, DES, 3DES, AES-128, -192, -256	MF, DF, EF-Transparent, Extended, Linear, Cyclical, APP, CHV, Purse, GPF	T=0, T=1
CLXSU102MC7/AED	128k bytes	SHA-1, SHA-256, HMAC, DES, 3DES, AES-128, -192, -256	MF, DF, EF-Transparent, Extended, Linear, Cyclical, APP, CHV, Purse, GPF	T=0, T=1
CLXSU115MC7/AED	144k bytes	SHA-1, SHA-256, HMAC, DES, 3DES, AES-128, -192, -256	MF, DF, EF-Transparent, Extended, Linear, Cyclical, APP, CHV, Purse, GPF	T=0, T=1

SIM Cards (Java & Delos®)

CardLogix Part Number	User Memory	Type	SIM Application Toolkit (STK) Standard	R-UIM	PIM Phase 2	USIM	OTA	Browser Support
CLXSS512KH0/SJVO	64k bits	Java Card 2.21	GSM 11.11, GSM 11.14	No	No	No	Yes	N/A
CLXSS512KH0/SJV-W13O	64k bits	Java Card 2.21	GSM 11.11, GSM 11.14	No	No	No	Yes	WIP 1.3
CLXSS512KH0/SJV@2O	64k bits	Java Card 2.21	GSM 11.11, GSM 11.14	No	No	No	Yes	S@T 2
CLXSS001MH2/SJVU@2O	128k bits	Java Card 2.21	GSM 11.11, GSM 11.14	No	No	Yes	Yes	S@T 2
CLXSS001MH2/SJVUW13O	128k bits	Java Card 2.21	GSM 11.11, GSM 11.14	No	No	Yes	Yes	WIP 1.3
CLXSS256Kxx/SJVST14 *	32k bits	Java Card 2.21	GSM 11.11, GSM 11.14	No	No	No	No	N/A
CLXSS256KG1/DP2	32k bits	Delos Native	GSM 11.11	No	Yes	No	No	N/A
CLXSS256KF3/DST14O	32k bits	Delos Native	GSM 11.11, GSM 11.14	No	No	No	Yes	N/A
CLXSS256KF3/DST14OW12	32k bits	Delos Native	GSM 11.11, GSM 11.14	No	No	No	Yes	WIP 1.2
CLXSS256Kxx/DST14O@2*	32k bits	Delos Native	GSM 11.11, GSM 11.14	No	No	No	Yes	S@T 2

*256k bit and 512k bit Java-based SIMs are available with full browser support on a custom order basis.

Quality

CardLogix Corporation is absolutely committed to providing defect-free products and services to our customers, in partnership with equally committed integration partners and authorized resellers.

- California C Corporation
- CA Resale# SREAA 97-124323
- D&B# 867418899
- SIC Codes# 3577, 3089, 5162
- UNSPCSC Code# 32101617
- Harmonized Code# 8542.10.0000
- NAICS Codes# 334119, 326199, 334418, 334519, 42261, 51421
- CAGE Code# 1KV39
- Congressional District# 47

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