



CARD OPERATING SYSTEMS FOR PUBLIC TRANSPORT

- **Reliable Performance** – Innovative development, integration and quality testing
- **Versatile** – Addresses multiple markets and applications
- **Scalable** – Seamless operation, concurrent applications

HID’s Soma Atlas® chip operating system platform is designed to address a diverse set of applications and solve multiple access control use cases, especially for transport operators. Innovative architecture allows users to combine secure access functionality across transportation, events and tourism venues. Additionally, e-purse and other applications can be integrated into the OS.

A modular offering for many applications:

SOMA Atlas® KIAT® is a specialized multi-application operating system developed by HID Global. Due to vast experience in smart card and application development like the MIT® operating system in Italy, KIAT is flexible and customizable to solve typical Smarty City user requirements.

A light version of the KIAT operating system is also available in our portfolio. **SOMA Atlas KIAT Light** is a shrunk version of the original OS ported on a smaller and thinner microprocessor tailored for middle range paper ticket use.

SOMA Atlas, combines the **multi-application capabilities** of KIAT with the advantages of the **international**

Calypso Prime Rev 3 (3.1, 3.2) standard for ticketing and is the ideal choice for transportation and secure multi-application smart cards.

The **Calypso Light Application (CLAP)** helps public transport operators trying to reduce their costs. Our solution offers the same security of a full Calypso product, but at a very competitive price. The CLAP solution in form of a paper ticket is designed to replace traditional memory-only offerings adding advanced security features. HID Global has been awarded for developing the first certified CLAP implementation worldwide.

The **Cipurse** operating system is developed for automatic fare collection using advanced smart card payment security measures. To address the needs of local and regional transit authorities, Cipurse is based on the security standard established by the Open Standard for Public Transportation Alliance (OSPT).

All operating systems can be embedded in various, optionally customized and/or personalized, form factors like: Paper tickets, smart cards and key fobs.



KEY TECHNOLOGY HIGHLIGHTS

- ISO 7816-4 compliant data structure
- Active authentication / PIN
- Transaction Management (KIAT, Calypso and Cipurse)
- Secure messaging
- Secure proprietary e-purse
- Roll back functionality

TYPICAL APPLICATION AREAS

- Fast, small and secure multi-application operating systems for:
- Transportation
 - Loyalty
 - Access Control



SPECIFICATIONS

Operating System					
Platform	Soma™ Atlas™				Soma™ Helios™
Operating System	KIAT™	KIAT™ Lite	Calypso™	CLAP™	CIPURSE™
SECURE MICRO-CONTROLLER					
Security	SOLID FLASH™ with full E ² PROM functionality				
Memory	16-bit CPU with 6KB of RAM				
Non-Volatile Memory	Flexible secure NVM size to choose from	Flexible secure NVM size to choose from	Flexible secure NVM size to choose from	60 KB or 100 KB	240 KB
Symmetric cryptographic engine	DES, AES	DES	DES, AES	DES	DES, AES
Asymmetric cryptographic engine	RSA, ECC	N/A	RSA, ECC	N/A	RSA, ECC
Side channel attacks	Resistant				
Memory management & protection (MMU)	Yes				
Unique chip identification	Yes				
Environment sensors	Yes				
CHIP CERTIFICATION					
Common Criteria certification	EAL5+ high				
EMVCo	Yes		Yes	No	Yes
COMMUNICATION PROTOCOLS					
Contact	ISO 7816 up to 192 kbps (T=0, T=1)	N/A	ISO 7816 up to 192 kbps (T=0, T=1)	N/A	ISO 7816 up to 192 kbps (T=0, T=1)
Contactless	Contactless ISO 14443 type A & B up to 848 kbps; CEN/TS 16794 A&B				
NFC Forum Tag Type 4	Yes				
OPERATING SYSTEM FEATURES					
User Memory	5 KB, 20 KB, 64KB	20 KB	5 KB, 20 KB, 64KB	2 KB, 4 KB	64KB
Multi Application	Yes			No	Yes
CRYPTOGRAPHIC ALGORITHMS					
Cipher	DES (TDES, DESX) ECB-CBC		DES (TDES, DESX) ECB-CBC; AES	DES (TDES) ECB-CBC	AES
Signature	DES MAC8				AES MAC
MAC	ISO 9797, ISO 10118		Calypso™ MAC based on ISO 9797		ISO 9797
Checksum	CRC16/CRC32				
Random number	Secure Random				
DES Key sizes	up to 120-bit				N/A
AES Key sizes	128 bit			N/A	128 bit
DELIVERY FORMATS					
Modules	Contactless, Contact & Dual-Interface			Contactless	Contactless, Contact & Dual-Interface
Contactless prelaminate for cards	Polycarbonate, PVC & PET				
ISO Smart cards	White and pre-printed (PVC, PET, PC)				
Paper ticket	Yes		No	Yes	No
Other form factors	Yes e.g. Key fobs, wristbands				



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