



Advanced Card Systems Ltd.
Card & Reader Technologies



A world leader in smart card & reader technologies.

CARD & READER
TECHNOLOGIES
2015
Product Catalogue



<http://www.facebook.com/AdvancedCardSystems>



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CORPORATE PROFILE

Advanced Card Systems Ltd. (ACS, wholly owned subsidiary of Advanced Card Systems Holdings Ltd., SEHK: 8210), founded in 1995, is Asia Pacific's top supplier and one of the world's top 3 suppliers of PC-linked smart card readers, as well as the winner of the Product Quality Leadership Award for Smart Card Readers from Frost & Sullivan. In 2010 and 2014, ACS was listed in Forbes Asia's "Best Under a Billion" list, an inter-industry list comprised of 200 top-performing publicly listed companies in Asia Pacific, with sales between US\$5 million and US\$1 billion. ACS develops a wide range of high quality smart card reading/writing devices, smart cards and related products and distributes them to over 100 countries worldwide.

A leader in the smart card industry, ACS has the technology, expertise and global resources to facilitate an easier adoption of smart card applications in different industries across the globe.



Mission

To strengthen its leading position as a provider of card and reader technology in the world.

Vision

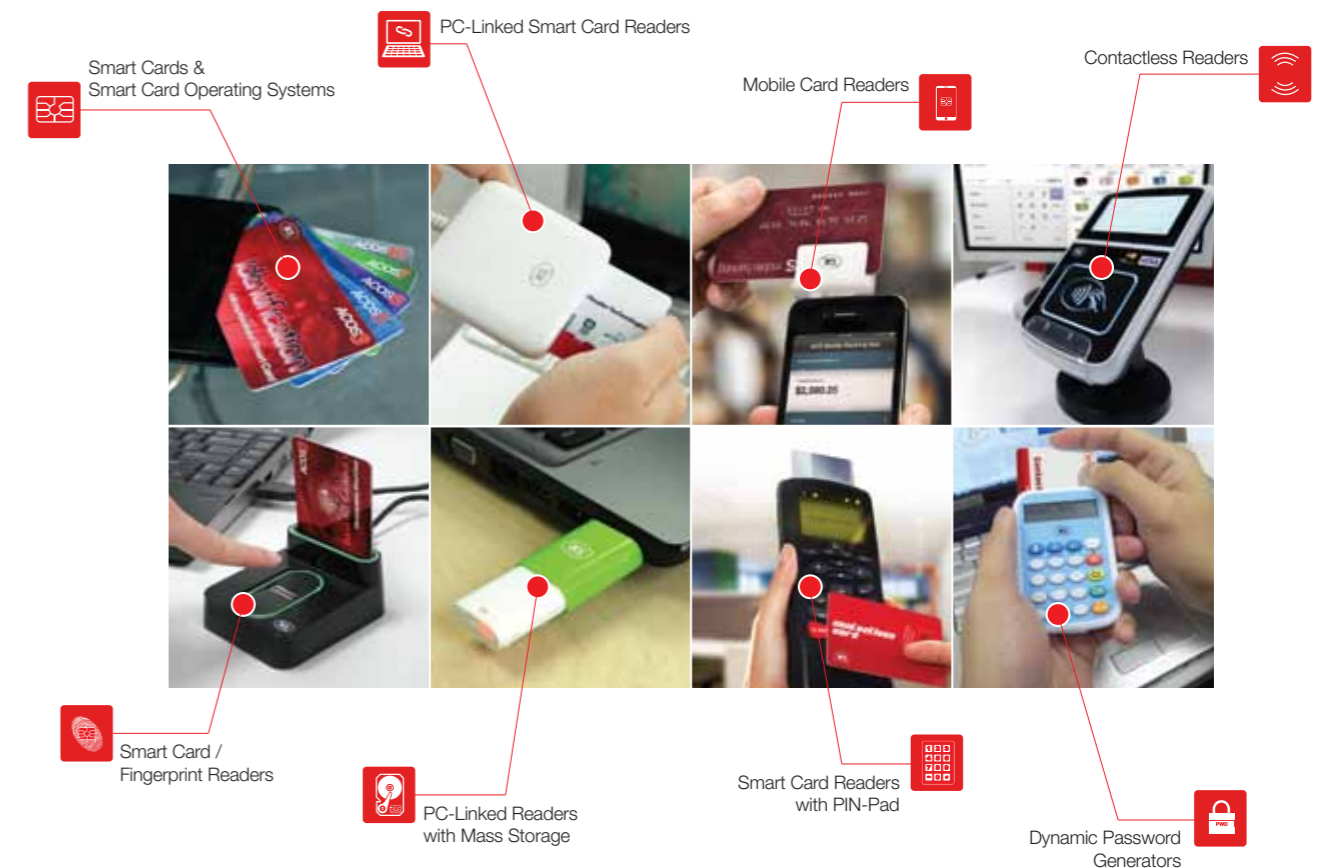
Combine scientific spirit and Confucius thoughts to build a sustainable electronic and IT business that is green in order to achieve the dual purposes of business growth and environmental protection.

PRODUCTS

ACS develops and provides smart card operating systems (COS) and readers to facilitate the implementation of smart card-based systems for various applications and industries. ACS products are compliant with major industrial standards, ensuring safe and compatible operations. Products are divided into eight product families: Smart Cards & Smart Card Operating Systems, PC-Linked Smart Card Readers, Contactless Readers, Mobile Card Readers, Smart Card/Fingerprint Readers, Smart Card Readers with PIN-Pad, PC-Linked Readers with Mass Storage, and Dynamic Password Generators. ACS also offers customization for some of these products, to meet specific needs of customers.

Apart from developing hardware, ACS applies its smart card technology and expertise to develop an end-to-end and scalable automatic fare collection (AFC) solution for micro payment operations, including bus, rail, ferry, road toll, parking, fast food, convenience stores, and vending systems.

For more information on any of our products or our complete AFC system, please email info@acs.com.hk.



SMART CARDS & SMART CARD OPERATING SYSTEMS



Global smart card shipments are expected to reach about **8.8 billion** units by 2015.



ACS develops and provides smart cards with its smart card operating system (ACOS) as intellectual property. Often noted for their 'secure and elegant' architecture, ACOS cards uncover the powerful potential of smart cards, enabling a single card to support multiple applications, from physical/network access control to payment applications. The security level requirement of these applications is, in turn, met by ACOS cards via multilevel secured access hierarchy.

One of these cards, the ACOS5 Cryptographic Smart Card, is especially designed for RSA public-key cryptographic operations that are essential in smart card PKI, digital signature, etc.



	ACOS3	ACOS3X	ACOS3 Combi / Contactless	ACOS6	ACOS6-SAM	ACOS7 Combi / Contactless	ACOS10	ACOS10 Combi / Contactless	ACOS5-64	ACOS5T-C CryptoMate64	ACOS5T2-B CryptoMate Nano	ACOSJ
Form Factor												
Card - Contact Only	•	•		•	•							
Card - Contactless Only			•			•		•				•
Card - Contact and Contactless			•			•		•				•
Token - Contact Card and USB Full Speed										•	•	
Communication Speed												
Contact interface 9.6 - 223.2 kbps	•	•	•	•	•	•	•	•	•	•	•	•
Contactless interface 106 - 848 kbps			•			•		•			•	•
Memory												
EEPROM Size	32KB/72KB	256KB	8KB	64KB	32KB	8KB	32KB	8KB	64KB	64KB	64KB	40KB
Protocol												
Contact interface T = 0	•	•	•	•	•	•	•	•	•	•	•	•
Contact interface T = 1												•
Contactless interface T = CL			•			•		•				•
Certifications / Compliance												
Contact Interface ISO 7816 - 1/2/3	•	•	•	•	•	•	•	•	•	•	•	•
Contact Interface ISO 7816 - 4				•	•	•	•	•	•	•	•	•
Contact Interface ISO 7816 - 8/9									•	•	•	•
Contactless Interface ISO 14443 - 1/2/3/4			•			•		•				•
Contactless Interface ISO 14443 Type A												•
Contactless Interface ISO 14443 Type B												•
Common Criteria EAL5+			Chip Level			Chip Level		Chip Level	Chip Level	Chip Level	Chip Level	Chip Level
Global Platform 2.2.1												•
Java Card Classic 3.0.4												•
PBOC 2.0 e-Deposit/e-Purse (China)							•	•				•
PBOC 3.0 Credit/Debit (China)												•
PBOC 3.0 qPBOC (China)												•
Ministry of Construction (China)						•						
NSH-1 (Brazil)										•		
FIPS140-2 (US)											•	
File Systems												
Transparent/Binary File	•	•	•	•	•	•	•	•	•	•	•	•
Linear Fixed Record	•	•	•	•	•	•	•	•	•	•	•	•
Linear Variable Record				•	•	•	•	•	•	•	•	•
Cyclic File				•	•	•	•	•	•	•	•	•
Cryptographic Capabilities												
DES/3DES	•	•	•	•	•	•	•	•	•	•	•	•
3K3DES					•				•	•	•	•
AES					128 bits				Up to 256 bits	Up to 256 bits	Up to 256 bits	Up to 256 bits
RSA									Up to 4096 bits	Up to 4096 bits	Up to 4096 bits	Up to 4096 bits
ECC												Up to 384 bits
SHA-1									•	•	•	•
SHA-2									Up to 256 bits	Up to 256 bits	Up to 256 bits	Up to 512 bits
SCP02												•
Mutual Authentication	•	•	•	•	•	•	•	•	•	•	•	•
Secure Messaging	•	•	•	•	•	•	•	•	•	•	•	•
Random Number Generator (FIPS 140-2)	•	•	•	•	•	•	•	•	•	•	•	•
EEPROM Endurance												
100,000 Read/Write Cycles	•	•		•	•		•					•
500,000 Read/Write Cycles			•			•		•		•	•	•
Data Retention												
10 Years	•	•	•	•	•	•	•	•	•	•	•	•
30 years									•	•	•	•

PC-LINKED SMART CARD READERS

ACS develops and provides high quality and reliable PC-linked smart card readers, which are based on various industry standards such as PC/SC (Personal Computer/Smart Card) and EMV (Europay, MasterCard and Visa). ACS PC-linked readers are ideal for providing individual authentication for security applications such as e-government services, e-commerce, banking services, healthcare management, digital signature, internet lottery and mobile telecommunication applications.



PC-linked readers are poised for greater popularity because these relatively low-cost readers enable simple operation, extensive range of compatibility and ease of implementation.



Physical Characteristics

Dimensions (mm)	72.2 x 69.0 x 14.5	58.0 x 20.0 x 13.7	71.5 x 80.0 x 80.0	67.6 x 23.0 x 8.0	125.0 x 101.5 x 25.5	449.7 x 138.5 x 40.3	72.2 x 69.0 x 14.5	49.5 x 21.5 x 9.0	103.5 x 85.0 x 59.9
Weight (g)	65.0	12.0	174.0	12.0	140.0	540.0	65.0	8.5	310.0

Host Interface

USB (Full Speed)	Type A	Type A	Type A	Type A	Type A	Type A	Type A	Type A	Type A
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Contact Smart Card Interface

ISO 7816 (Class A, B and C)	•	•	•	•	•	•	•	•	Class A only
MCU Cards, T=0 and T=1	•	•	•	•	•	•	•	•	•
Memory Cards	•	•	•	•	•	•	•	•	•
Smart Card Read/Write Speed (kbps)	344	344	344	344	344	344	600	600	344
Card Form	Full-Sized	Full-Sized	Full-Sized	SIM-Sized	Full-Sized	Full-Sized	Full-Sized	SIM-Sized, Micro SIM-Sized* (Optional)	Full-Sized
Card Slot	1	1	1	1	1	1	1	1	2

Built-In Peripherals

LED	1	1	2	1	1	1	1	1	3
Buzzer									•
SAM Slot	Optional								3
USB port						1			

Certifications/Compliance

PC/SC	•	•	•	•	•	•	•	•	•
CCID	•	•	•	•	•	•	•	•	•
WHQL	•	•	•	•	•	•	•	•	•
EMV Level 1 (Contact)	•	•	•	•	•	•	•	•	•
FIPS 201	•	•	•	•	•	•	•	•	•
LASCOM (Japan)	•	•	•	•	•	•	•	•	•
CE, FCC	•	•	•	•	•	•	•	•	•
VCCI	•	•	•	•	•	•	•	•	•
KC	•	•	•	•	•	•	•	•	•
RoHS 2	•	•	•	•	•	•	•	•	•
REACH	•	•	•	•	•	•	•	•	•
MTBF (hours)	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000

Supported OS Platforms

Windows	•	•	•	•	•	•	•	•	•
Mac OS X	•	•	•	•	•	•	•	•	•
Linux	•	•	•	•	•	•	•	•	•
Android	•	•	•	•	•	•	•	•	•

CONTACTLESS READERS



NFC payments would total to **22B USD** by 2016.



ACS offers a series of contactless smart card readers/writers to address the growing popularity of and demand for contactless applications. Hinged upon the 13.56 MHz RFID technology, these readers are developed to support various contactless protocols such as ISO 14443 Type A and B, Mifare®, FeliCa and NFC, to facilitate their use in a wide range of applications.



	ACR122U	ACR122S	ACR122T	ACR1252U	ACR1222U-J4	ACR1281U-C1/ ACR1281S-C1	ACR122L/ ACR1222L	ACR1283L	ACR123U/ ACR123S
Physical Characteristics									
Dimensions (mm)	98.0 x 65.0 x 12.8	120.5 x 72.0 x 20.4	75.0 x 30.0 x 12.7	98.0 x 65.0 x 12.8	85.0 x 54.0 x 10.0	120.5 x 72.0 x 20.4	158.0 x 95.0 x 95.0 (w/ Base Stand)	158.0 x 95.0 x 95.0 (w/ Base Stand)	177.4 x 100.0 x 94.5 (w/ Base Stand)
Weight (g)	70.0	148.0	15.0	81.0	40.0	140.0 (ACR1281U-C1) 150.0 (ACR1281S-C1)	645.0 (ACR122L w/ Base Stand) 415.0 (ACR1222L w/ Base Stand)	420.0 (w/ Base stand)	506.0 (w/ Base Stand)
Processor									
Processor	8-Bit	8-Bit	8-Bit	32-Bit	8-Bit	8-Bit	8-Bit	32-Bit	32-Bit
Embedded Platform									FreeRTOS
Operation Modes									
PC-Linked	•	•	•	•		•	•	•	•
Standalone					•			•	
Power									
USB Powered	•	•	•	•		•		•	•
Battery Powered					1 x Rechargeable Li-ion Battery		ACR1222L		
External Power Adapter							ACR122L		
Host Interface									
USB (Full Speed)	Type A		Type A	Type A		Type A (ACR1281U-C1)	Type A (ACR1222L)	Type A	Type A (ACR123U)
Serial (RS232)		DB9				DB9 (ACR1281S-C1)	DB9 (ACR122L)		RJ45 (ACR123S)
Contactless Smart Card Interface									
ISO 14443 Type A and B	•	•	•	•		•	•	•	•
ISO/IEC 18092 (NFC)	•	•	•	•			•		
Mifare	•	•	•	•		•	•	•	•
FeliCa	•	•	•	•			•		
Smart Card Read/Write Speed (kbps)	106, 212, 424	106, 212, 424	106, 212, 424	106, 212, 424	212	106, 212, 424, 848	106, 212, 424	106, 212, 424, 848	106, 212, 424, 848
Reading Distance (mm)	50	50	30	50	10	50	50	50	50
FeliCa Mobile Devices					•				
Extended APDU Support					•	•			•
Secure Mifare Key Storage						•		•	
NFC Reader/Writer Mode	•	•	•	•					•
NFC Peer-to-Peer (P2P)					•				
NFC Card Emulation Mode					•				
Contact Smart Card Interface									
ISO 7816 (Class A, B and C)						•			
MCU Cards, T=0 and T=1						•			
Smart Card Read/Write Speed (kbps)						420			
Memory									
Third-party Application								400 KB	
Data Storage								512 KB	
Upgradeability									
USB Firmware Upgrade				•	•	•	ACR1222L	•	•
Built-In Peripherals									
LCD Resolution							128 x 32	128 x 32	128 x 64
Graphical LCD for Multiple Languages							16 alphanumeric characters x 2 lines	16 alphanumeric characters x 2 lines	16 alphanumeric characters x 8 lines
Keypad							12-Key		
LED	1 bi-colour	2	1 bi-colour	1 bi-colour	2	2	4	4	4
Buzzer	•	•		•	•	•	•	•	•
SAM Slot		1		1		1	3	4	3
Tamper Switch								•	•
Real Time Clock								•	•
Certifications/Compliance									
PC/SC	•		•	•		ACR1281U-C1	ACR1222L	•	
CCID	•		•	•		ACR1281U-C1	ACR1222L	•	
WHQL	•		•	•		ACR1281U-C1	ACR1222L	•	
EMV Level 1 and 2 (Contactless)									•
NFC Forum Certification Mark									
FIPS201	•								
Germany nPA						ACR1281U-C1 <i>Upon Request</i>			
LASCOM (Japan)									
CE, FCC	•	•	•	•	•	•	•	•	•
VCCI	•	•	•	•	•	•	•	•	•
MIC (Japan)	•	•	•	•	•	•	•	•	•
KC	•	•	•	•	•	•	ACR1222L	•	•
RoHS 2	•	•	•	•	•	•	•	•	•
Supported OS Platforms									
Windows	•	•	•	•		•	•	•	•
Mac OS X	•		•	•		ACR1281U-C1	ACR1222L	•	ACR123U
Linux	•	•	•	•		•	•	•	•
Android	•		•	•		ACR1281U-C1	ACR1222L	•	ACR123U

MOBILE SMART CARD READERS

ACS offers a line of mobile card readers to work in conjunction with most tablets and smartphones in the market. Not only do these mobile card readers entail less installation costs, they also enable users to perform card transactions at any location, without being bogged down by PCs or other bulky equipment. With a mobile card reader, virtually anywhere is a point of sale.



Small and medium businesses are increasingly accepting payments through mobile card readers, and this number is set to rise considerably.



	ACR31-A1	ACR32-A1	ACR35-A1	ACR38U-ND	ACR39T-A3	ACR3901U-S1
Physical Characteristics						
Dimensions (mm)	39.7 x 46.0 x 18.0	60.0 x 45.0 x 16.0	60.0 x 42.0 x 13.0	58.0 x 20.0 x 13.7	49.5 x 21.5 x 9.0	94.0 x 60.0 x 12.0
Weight (g)	20.0	25.0	30.5	10.0	7.9	30.5
Power						
USB Powered						
Battery Powered	1 x Replaceable CR2016	1 x Rechargeable Li-ion Battery	1 x Rechargeable Li-ion Battery			1 x Rechargeable Li-ion Battery
Host Interface						
3.5 mm Audio Jack						
USB (Full Speed)		Type A		Micro-USB	Micro-USB	Type A
Bluetooth 4.0						
Magnetic Card Interface						
ISO 7810						
ISO 7811						
Hi-Coercivity Magnetic Card						
Lo-Coercivity Magnetic Card						
JIS1						
JIS2						
Contact Smart Card Interface						
ISO 7816 (Class A, B and C)						
MCU Cards, T=0 and T=1						
Memory Cards						
Smart Card Read/Write Speed (kbps)		600		344	600	600
Card Form		Full-Sized		Full-Sized	SIM-Sized, Micro SIM-Sized* (Optional)	Full-Sized
Contactless Smart Card Interface						
ISO 14443 Type A and B						
ISO/IEC 18092 (NFC)						
Mifare						
Felica						
Smart Card Read/Write Speed (kbps)			106, 212, 424			
Reading Distance (mm)			50			
Built-In Peripherals						
LED		1	1	1	1	3
Encryption Algorithm						
AES - 128						
Key Management						
DUKPT						
Certifications/Compliance						
PC/SC						
CCID						
WHQL						
EMV Level 1 (Contact)						
FIPS 201						
CE, FCC						
VCCI						
RoHS 2						
REACH						
Bluetooth Smart						
Supported OS Platforms						
Windows						
Mac OS X						
Linux						
Android						
iOS						

SMART CARD / FINGERPRINT READERS

The ACS line of smart card / fingerprint readers combines the smart card reader and fingerprint sensor technologies into one secure platform. By cooperating with leading biometric sensor and algorithm suppliers, ACS provides a high level of security and convenience for applications within the government, corporate, financial and healthcare sectors.



Biometric authentication is expected to secure ever-increasing mobile payment transactions.



Physical Characteristics		
Dimensions (mm)	121.5 x 53.9 x 28.4	85.1 x 70.1 x 35.5
Weight (g)	170.0	194.0
Host Interface		
USB (Full Speed)	Type A	Type A
Contact Smart Card Interface		
ISO 7816 (Class A, B and C)		•
MCU Cards, T=0 and T=1		•
Memory Cards		•
Smart Card Read/Write Speed (kbps)		250
Card Form		Full-Sized
Contactless Smart Card Interface		
ISO 14443 Type A and B		•
ISO/IEC 18092 (NFC)		•
Mifare		•
FeliCa		•
Smart Card Read/Write Speed (kbps)	106, 212, 424	
Reading Distance (mm)	30	
Fingerprint Scanner Interface		
Fingerprint Capture	Strip/Swipe	Strip/Swipe
Active Sensor Size (mm)	9.6 x 0.2	9.6 x 0.2
Image Resolution (dpi)	508	508
Template Extraction and Matching (via default UPEK algorithm)	Onboard	Onboard
Match Mode	1:1	1:1
3rd-Party Fingerprint Algorithm Support	•	•
Built-In Peripherals		
LED	1 bi-colour	2
SAM Slot	Upon Request	•
Certifications/Compliance		
PC/SC	•	•
CCID	•	•
WHQL	•	•
BioAPI 1.1	•	•
Windows Biometric Framework	•	•
CE, FCC	•	•
RoHS 2	•	•
Supported OS Platforms		
Windows	•	•
Linux	Upon Request	Upon Request

SMART CARD READERS with PIN-PAD

ACS develops and provides secure PIN-pad smart card readers, with each having a built-in keypad, an LCD and a host of other features. This type of reader is ideal for applications where a simple PC-linked smart card reader does not meet the user's security requirements, such as PIN entry and the confirmation of transaction details.



Pinpad readers present an advantage because they are among the devices that enable multi-layered security in applications.



Physical Characteristics

Dimensions (mm)	81.0 x 46.0 x 12.0	181.0 x 77.0 x 30.5	181.0 x 77.0 x 30.5	208.0 x 85.5 x 53.0
Weight (g)	65.0	235.0	235.0	555.0

Processor

Processor	8-Bit	32-Bit	32-Bit	A8
Embedded Platform		FreeRTOS	FreeRTOS	Linux

Operation Modes

PC-Linked	•	Via detachable USB cable	Via detachable USB cable	
Standalone		•	•	•

Power

USB Powered	•	PC-Linked Mode	PC-Linked Mode	
Battery Powered		1 x Rechargeable Li-ion Battery	1 x Rechargeable Li-ion Battery	1 x Rechargeable Li-ion Battery
External Power Adapter		Optional	Optional	•

Contact Smart Card Interface

ISO 7816 (Class A, B and C)	•	•	•	•
MCU Cards, T=0 and T=1	•	•	•	•
Memory Cards		•	•	•
Smart Card Read/Write Speed (kbps)	250	250	250	200
Card Form	Full-Sized	Full-Sized	Full-Sized	Full-Sized
Card Slot	1	2	2	1

Contactless Smart Card Interface

ISO 14443 Type A and B			•	•
Mifare			•	•
Felica			•	•
Smart Card Read/Write Speed (kbps)			106, 212, 424	106, 212, 424, 848
Reading Distance (mm)			30	30

Magnetic Stripe Card

ISO 7811				Tracks 1, 2, 3
Bi-directional				•

Memory

Third-party Application		512 KB	512 KB	380 MB
Data Storage		384 KB	384 KB	
RAM		20 KB	20 KB	512 MB

Upgradeability

On-Board Firmware Upgradeable		•	•	•
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Built-In Peripherals

LCD	96 x 16	128 x 64	128 x 64	240 x 320
Graphical LCD for Multiple Languages	16 alphanumeric characters x 2 lines	21 alphanumeric characters x 8 lines	21 alphanumeric characters x 8 lines	3.5" Color LCD
Keypad	14-Key	20-Key	20-Key	20-Key
LED		4	4	4
Buzzer		•	•	
Built-in Speaker				•
Tamper Switch		•	•	
Real Time Clock		•	•	•
SAM Slot		3	3	2
SIM Slot (GPRS)				1
USB Port				USB Protocol: Micro B
Serial Port				RS232 Protocol: Mini B
Wifi				•
WCDMA				•
Printer		Optional Detachable Thermal Printer (PTR89)	Optional Detachable Thermal Printer (PTR89)	Built-in Thermal Printer

Certifications/Compliance

PC/SC	•	PC-Linked Mode	PC-Linked Mode	
PC/SC 2.0 Part 10 - Secure PIN Entry	•	PC-Linked Mode	PC-Linked Mode	
CCID	•	PC-Linked Mode	PC-Linked Mode	
WHQL	•	PC-Linked Mode	PC-Linked Mode	
EMV Level 1 (contact)	•	•	•	
CE, FCC	•	•	•	•
RoHS 2	•	•	•	•

Supported OS Platforms

Windows	•	PC-Linked Mode	PC-Linked Mode	
Mac OS X	•	PC-Linked Mode	PC-Linked Mode	
Linux	•	PC-Linked Mode	PC-Linked Mode	
Android	•	PC-Linked Mode	PC-Linked Mode	

PC-LINKED READERS WITH MASS STORAGE

ACS has realized the importance of integrating flash memory into smart card readers, hence the development of PC-linked readers with mass storage. Designed for SIM-sized smart cards (Plug-in cards) access and data or application storage, it is ideal for GSM solutions such as GSM management software and VoIP applications, electronic payment systems, home banking, and transportation.



PC-linked readers with mass storage extend capabilities of applications because of their flash drive feature. Partitioning options enhance security and flexibility in terms of software and application storage, and enable mobility.



Physical Characteristics

Dimensions (mm)	72.0 x 26.0 x 11.7	76.0 x 26.0 x 12.0
Weight (g)	15.0	20.0

Host Interface

USB (Full Speed)	Type A	Type A
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Contact Smart Card Interface

ISO 7816 (Class A, B and C)	•	•
MCU Cards, T=0 and T=1	•	•
Memory Cards	•	•
Smart Card Read/Write Speed (kbps)	344	344
Card Form	SIM-Sized	SIM-Sized

Mass Storage

Built-In Flash Memory (GB)		2
Expandable Memory	2GB Micro SD Card	
Partitionable Memory		•

Additional Features

Contactless Interface	Embedded Mifare 1K chip and antenna	Embedded Mifare 1K chip and antenna
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Certifications/Compliance

PC/SC	•	•
CCID	•	•
HID	Upon Request	Upon Request
WHQL	•	•
CE, FCC	•	•
VCCI	•	•
RoHS 2	•	•
MTBF (hours)	500,000	500,000

Supported OS Platforms

Windows	•	•
Mac OS X	•	•
Linux	•	•
Android	•	•

DYNAMIC PASSWORD GENERATORS

ACS develops and provides highly secure and reliable dynamic password generators that comply with industry standards such as EMV (Europay, MasterCard® and Visa) Level 1, MasterCard® CAP (Chip Authentication Program), MasterCard® PLA (Pin-less/Person-less Authentication) and VISA DPA (Dynamic Passcode Authentication). The device can be used in a variety of payment and banking applications, and its offline mode inhibits hackers from accessing information in the card. It is a portable device that needs no software installation, making it easily transportable for both home and office use.



Shipments of hardware-based secure password solutions will amount to around **1.8 billion** units by the end of 2016.



	APGB201	APGB202	APGB205
Physical Characteristics			
Dimensions (mm)	95.0 x 60.0 x 11.0	95.0 x 60.0 x 11.0	85.0 x 58.0 x 5.1
Weight (g)	49.0 (Device) 40.0 (USB Cable)	49.0	27.0
Operation Modes			
PC-Linked	Via detachable USB Cable		
Stand-Alone	•	•	•
Power			
USB Powered	PC-Linked Mode		
Battery Powered	2 x Replaceable CR2032	2 x Replaceable CR2032	2 x Replaceable CR2016
Host Interface			
USB (Full Speed)	Type A		
Contact Smart Card Interface			
ISO 7816	•	•	•
MCU Cards, T=0 and T=1	•	•	•
Card Form	Full-Sized	Full-Sized	Full-Sized
Smart Card Read/Write Speed (kbps)	250	250	250
Built-in Peripherals			
LCD Resolution	96 x 16	96 x 16	80 x 16
Graphical LCD for Multiple Languages	16 alphanumeric characters x 2 lines	16 alphanumeric characters x 2 lines	16 alphanumeric characters x 2 lines
Keypad	20-Key	20-Key	20-Key
Buzzer	•	•	•
Calculator and E-Purse Function	•	•	•
Certifications/Compliance			
PC/SC	PC-Linked Mode		
PC/SC 2.0 Part 10 - Secure Pin Entry	PC-Linked Mode		
CCID	PC-Linked Mode		
WHQL	PC-Linked Mode		
EMV Level 1 (Contact)	•	•	•
MasterCard® Chip Authentication Program (CAP)	•	•	•
MasterCard® PIN/Person-less Authentication (PLA)	•	•	•
VISA® Dynamic Passcode Authentication (DPA)	•	•	•
CE, FCC	•	•	•
RoHS 2	•	•	•
Supported OS Platforms			
Windows	PC-Linked Mode		
Mac OS X	PC-Linked Mode		
Linux	PC-Linked Mode		
Android	PC-Linked Mode		

Subject to change without prior notice