



**Advanced Card Systems Ltd.**  
Identification and Payment Technologies



Identification & Payment Technologies

# 2024 - 2025



PRODUCT  
**CATALOGUE**



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AdvancedCardSystems

AdvancedCardSystems

Advanced Card Systems Ltd.

advancedcardsystems

# CORPORATE PROFILE

Advanced Card Systems Ltd. (ACS, wholly owned subsidiary of SEHK: 2086), 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. 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 for several years. 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.

## 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.

To strengthen its leading position as a provider of identification and payment technologies in the world.

## Mission



**Asia Pacific's No. 1 and  
Among The World's Top 3  
Suppliers of PC-Linked  
Smart Card Readers**



**20+**  
**International &  
Industry-Level Awards  
and Recognitions**



**200M+**  
**Global Users**



**50+**  
**Cities Benefitting from  
our Contactless Payment  
Technologies**



**100+**  
**High-Quality Products  
Developed**



**100+**  
**Countries Served**



**30K+**  
**Ticket Validators  
Deployed**



**More than  
50%**  
**Workforce Comprised of R & D**



# PRODUCTS



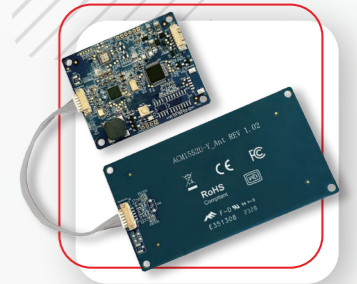
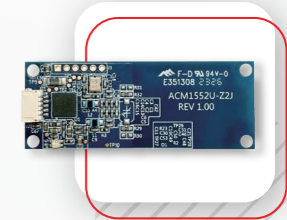
## Smart Cards & Smart Card Operating Systems

ACS provides a versatile range of smart cards and secure operating systems, designed for high-level encryption, authentication, and multi-application support. With industry-leading ACOS series cards and the CryptoMate EVO, ACS offers the best-in-class solutions for enterprises seeking secure, scalable, and customizable options for identity, payments, and beyond.



## Smart Card Reader Modules

ACS offers cutting-edge Contactless NFC Reader modules operating at 13.56MHz, compliant with ISO14443, ISO18092, and ISO15693 standards. These modules are the best options for the growing trend of automation, providing seamless integration into kiosks, ATMs, vending machines, and other smart systems, delivering fast, secure, and contactless interactions.



## Smart Card Readers

ACS offers a comprehensive range of smart card and NFC readers, designed for secure, high-speed transactions across various sectors such as e-government, e-banking, e-health, PKI solutions, and loyalty programs. Our readers are fully compliant with PC/SC and EMV standards, providing future-proof solutions that streamline operations and enhance user experiences in these critical industries.



## FIDO® Device

ACS introduces its latest line of FIDO®-certified devices, designed to provide secure, passwordless authentication for today's digital world. Our USB-based PocketKey and NFC-enabled PocketKey NFC Card offer a compact, durable, and easy-to-use solution for multi-factor authentication, ensuring a frictionless and secure user experience. Perfect for enterprises looking to enhance security with modern, user-friendly technology.



## Automatic Fare Collection (AFC) Terminals

ACS's advanced AFC terminals are designed to revolutionize transportation payment systems. Certified by major payment standards, our terminals guarantee secure, fast, and cashless transactions for buses, trains, ferries, and toll roads. These terminals are the perfect solution for transport operators looking to enhance efficiency, reduce errors, and elevate the commuter experience.





# SMART CARDS & SMART CARD OPERATING SYSTEMS

ACS develops and provides smart cards with a proprietary smart card operating system (ACOS). 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. ACOS cards meet the security requirements of these applications via multilevel secured access hierarchy.

One of these cards, the ACOS5-EVO, is the latest addition to the ACOS5 Series, that provides additional features such as support for ECC and RSA algorithms and extended APDU.



## SMART CARD Robust ACOS Architecture

## CRYPTOGRAPHIC USB TOKEN Portable PKI Tokens



### Form Factor

Card - Contact Only	•	•		•
Card - Contactless Only	•	•		•
Card - Combi (Contact and Contactless)	•	•		•
Token - Contact Card and USB Full Speed			•	

### Communication Speed

Contact Interface	up to 223.2 kbps	up to 446.4 kbps	up to 446.4 kbps	up to 625 kbps
Contactless Interface	up to 848 kbps	up to 424 kbps		up to 848 kbps

### Memory (EEPROM Size)

Contact Interface	32 KB/ 72 KB/ 256 KB	192 KB	192 KB	95 KB
Contactless Interface	8 KB	192 KB		95 KB
Combi Interface	8 KB	192 KB		95 KB

### Protocol

Contact Interface	T = 0	•	•	•	• (Default)
	T = 1		• (Default)	• (Default)	•
Contactless Interface	T = CL	•	•		•

### Certifications / Compliance

Contact Interface	ISO 7816 - 1/2/3	•	•	•	•
	ISO 7816 - 4		•	•	•
	ISO 7816 - 8/9		•	•	
Contactless Interface	ISO 14443 - 1/2/3/4	•	•		•
	ISO 14443 Type A	•	•		• (Default)
	ISO 14443 Type B				•
Common Criteria EAL5+	Chip Level (Combi/Contactless)		Chip Level	Chip Level	Chip Level
Global Platform 2.2.1					•
Java Card Classic 3.0.4					•
FIPS 140-2 (US)			FIPS Compliant	FIPS Compliant	

### File Systems

Transparent/Binary File	•	•	•	
Linear Fixed Record	•	•	•	
Linear Variable Record		•	•	
Cyclic File		•	•	

### Cryptographic Capabilities

3DES	56/112 bits	56/112/168 bits	56/112/168 bits	56/112/168 bits
AES		128/192/256 bits	128/192/256 bits	128/192/256 bits
RSA		Up to 4096 bits	Up to 4096 bits	Up to 2048 bits
ECC		Up to 521 bits	Up to 521 bits	Up to 384 bits
HASH		SHA1, SHA224, SHA256, SHA384, SHA512	SHA1, SHA224, SHA256, SHA384, SHA512	SHA1, SHA224, SHA256, SHA384, SHA512
CMAC		•	•	
SCP02				•
Mutual Authentication	•	•	•	•
Secure Messaging	•	•	•	•
Random Number Generator	•	•	•	•

### EEPROM Endurance

100,000 Read/Write Cycles	Contact			
500,000 Read/Write Cycles	Combi/Contactless	•	•	•

### Data Retention

10 Years	•	•	•	•
30 Years		•	•	•

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# SMART CARD READERS - CONTACT

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



## Physical Characteristics

Dimensions (mm)	55,0 x 65,0 x 9,0	58,5 x 67,6 x 62,5	48,9 x 17,7 x 8,0 (A1) 44,7 x 17,7 x 8,0 (A5)	49,5 x 17,7 x 8,0 (A6) 45,9 x 17,7 x 8,0 (A7)	58,0 x 20,0 x 13,9	94,0 X 60,0 X 12,0	96,0 X 60,0 X 13,0
Weight (g)	40,0	65,0	6,8 (A1) / 5,3 (A5)	8,1 (A6) / 6,2 (A7)	12,0 (N1) / 10,0 (NF)	30,8	98,0

## Host Interface

USB (Full Speed)							
Bluetooth® Standard						BT 4.0 BLE	

## 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	600	600	600	600	600	250
Card Form	Full-Sized	Full-Sized	SIM-Sized	SIM-Sized	Full-Sized	Full-Sized	Full-Sized

## Built-In Peripherals

LED				1	1	3	
LCD	2	2	1				
Keypad							20-Key
Buzzer						•	•
Button				•			

## Certifications/Compliance

PC/SC, CCID, WHQL	•	•	•	•	•	•	•
EMV Level 1 (Contact)	•	•	•	•	•	•	•
J-LIS (Japan)	•	•	•	•	•	•	•
CE, FCC, UKCA	•	•	•	•	•	•	•
VCCI (Japan)	•	•	•	•	•	•	•
KC (Korea)	•	•	•	•	•	•	•
RoHS, REACH	•	•	•	•	•	•	•
Bluetooth						•	•
MIC (Japan)						•	•
MTBF (hours)	500,000	500,000	500,000	500,000	500,000	400,000	60,000

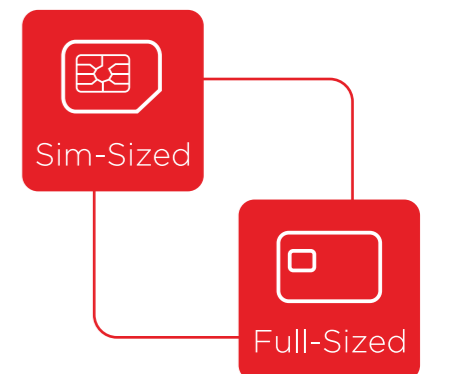
## Supported OS Platforms

Windows	•	•	•	•	•	•	•
macOS	•	•	•	•	•	•	•
Linux	•	•	•	•	•	•	•
Android	•	•	•	•	•	•	•
iOS/ iPadOS (iOS16 or above)	•	•	•	•	•	•	•

## Upgradeability

Firmware Upgradeable	•	•	•	•	•	•	•
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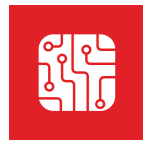


# SMART CARD READERS - CONTACTLESS

ACS offers contactless smart card readers/writers to address the growing 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, ISO18092, ISO15693, MiFare®, FeliCa and NFC, to facilitate their use in a wide range of applications. Additionally, ACS provides dual interface readers that allow for the integration of both contact and contactless technologies into a single device and card, consolidating traditionally separate applications.



Physical Characteristics	ACR1552U-M1 / ACR1552U-MF	WalletMate	ACR1555U-A1	ACR1581U-C1 / ACR1581U-CF	ACR1552U-A2	ACR1251T	ACR1222L
Dimensions (mm)	98,0 x 65,0 x 12,8	98,0 x 65,0 x 12,8	93,0 x 58,0 x 6,0	120,5 x 72,0 x 20,4	85,0 x 60,0 x 9,0	75,0 x 30,0 x 12,7	158,0 x 95,0 x 95,0 (w/ Base Stand) 415,0 (w/ Base Stand)
Weight (g)	89,0	81,0	31,0	143,0	67,0	15,8	415,0 (w/ Base Stand)
Processor	32 bit	32 bit	32 bit	32 bit	32 bit	8 bit	8 bit
Power	•	•	•	•	•	•	•
USB Powered	•	•	•	•	•	•	•
Battery Powered			1 x Rechargeable Li-Ion Battery (charging through USB)				
Host Interface							
USB (Full Speed)	ACR1552U-M1 USB Type-A ACR1552U-MF USB Type-C	WalletMate USB Type-A	ACR1555U-A1 USB Type-C to Type-A BT 5,2 BLE (2 Mbps)	ACR1581U-C1 USB Type-A ACR1581U-CF USB Type-C	ACR1552U-A2 USB Type-A	ACR1251T USB Type-A	ACR1222L USB Type-A
Bluetooth® Standard							
Contactless Smart Card Interface							
ISO 14443 Type A and B	•	•	•	•	•	•	•
ISO/IEC 18092 (NFC)	•	•	•	•	•	•	•
ISO 15693	•	•	•	•	•	•	•
MIFARE®	•	•	•	•	•	•	•
FeliCa	•	•	•	•	•	•	•
Smart Card Read/Write Speed (kbps)	106, 212, 424, 848	106, 212, 424	106, 212, 424, 848	106, 212, 424, 848	106, 212, 424, 848	106, 212, 424	106, 212, 424
Reading Distance (mm) (depends on tag type)	70	50	50	70	70	30	50
Extended APDU Support	•	•	•	•	•	•	•
Reader/Writer Mode	•	•	•	•	•	•	•
NFC Card Emulation Mode	•	•	•	•	•	•	•
NFC Keyboard Emulation Mode	•	•	•	•	•	•	•
Upgradeability							
USB Firmware Upgrade	•	•	•	•	•	•	•
Built-In Peripherals							
LCD Resolution							
LED	1 bi-colour	1 bi-colour	1 bi-colour + 2	2	1 RGB colour	1 bi-colour	•
Buzzer	•	•	•	•	•	•	4
SAM Slot	1	•	1	1	•	•	3
Certifications/Compliance							
PC/SC, CCID, WHQL	•	•	•	•	•	•	•
Apple VAS, Google Smart Tap	•	•	•	•	•	•	•
CE, FCC, UKCA	•	•	•	•	•	•	•
J-LIS (Japan)	•	•	•	•	•	•	•
VCCI, MIC (Japan)	•	•	•	•	•	•	•
TELEC (Japan)	•	•	•	•	•	•	•
RoHS, REACH	•	•	•	•	•	•	•
Bluetooth							•
IP Rating					IP67		
Supported OS Platforms							
Windows	•	•	•	•	•	•	•
macOS	•	•	•	•	•	•	•
Linux	•	•	•	•	•	•	•
Android	•	•	•	•	•	•	•
iOS/iPadOS (iOS16 or above)	•	•	•	•	•	•	•



# SMART CARD READER MODULES

ACS develops smart card reader solutions in embeddable form. These smart card & contactless reader modules are designed to be integrated into embedded systems, which include smart card readers, ATM machines, kiosks, and gaming machines. Support various contactless protocols, such as ISO18092 and ISO15693. SAM slots add layers of security to the modules. This product line offers both contact and contactless reader module options to help it add value to a wide range of applications.



## Physical Characteristics

Dimensions (mm)	55,0 x 45,0 x 6,5 (Main Board) 91,0 x 49,5 x 5,0 (Antenna Board)	52,0 x 20,0 x 5,7	57,0 x 20,0 x 5,7	106,6 x 67,0 x 16,0	70,0 x 82,0 x 10,0
Weight (g)	27,7	3,4	3,9	20,8	32,0

## Host Interface

USB (Full Speed)	•	•	•	ACM1281U-C7	•
Serial (RS-232)				ACM1281S-C7	
Connector Type	5 pin, 1,25mm pitch, Molex PicoBlade series compatible	5pin, 1mm pitch, JST SH series compatible	5pin, 1mm pitch, JST SH series compatible	2,54mm Pitch (ACM1281U-C7) 2,54mm Pitch & 2,5mm Pitch (ACM1281S-C7)	1,25mm Pitch

## 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
Card Form					Full-Sized

## Contactless Smart Card Interface

ISO 14443 Type A and B	•	•	•	•	
ISO/IEC 18092 (NFC)	•	•	•	Tag Type 1/2/4	
ISO 15693	•	•	•		
MIFARE®	•	•	•		
FelCa	•	•	•		
Smart Card Read/Write Speed (kbps)	106, 212, 424, 848	106, 212, 424, 848	106, 212, 424, 848	106, 212, 424, 848	
Reading Distance (mm)	Up to 70	Up to 50	Up to 50	Up to 50	
Extended APDU Support	•	•	•	•	
NFC Reader/Writer Mode	•	•	•	•	
NFC Card Emulation Mode	•	•	•	•	
NFC Keyboard Emulation Mode	•	•	•	•	

## Upgradeability

Firmware Upgradable	•	•	•	•	
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## Built-In Peripherals

SAM Slot	Upon Request			1	
LED	1 bi-colour	1 bi-colour	1 bi-colour	2	2
Buzzer	•			•	

## Certifications/Compliance

PC/SC, CCID, WHQL	•	•	•	ACM1281U-C7	•
Apple VAS, Google Smart Tap					
CE, FCC	•	•	•	•	•
VCCI (Japan)	•	•	•		
MIC (Japan)	•	•	•		
RoHS, REACH	•	•	•	•	•

## Supported OS Platforms

Windows	•	•	•	•	•
macOS	•	•	•	ACM1281U-C7	•
Linux	•	•	•	•	•
Android	•	•	•	ACM1281U-C7	•
iOS/iPadOS (iOS16 or above)	•	•	•		•

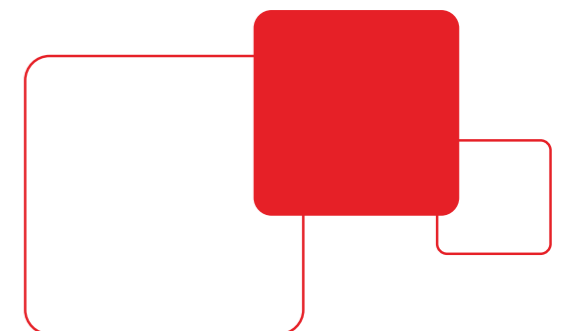
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## MULTIPLE OPTIONS FOR KIOSK INTEGRATION

Wide variety of contact card and NFC contactless modules to meet specific kiosk and automated system requirements.

## CUSTOMIZATION SERVICES

Our expert development team offers customization to tailor modules to your unique project needs.





# AUTOMATIC FARE COLLECTION TERMINALS

ACS develops and provides multi-interface devices to offer the convenience of cashless payment in transportation, parking and retail establishments such as fast food chains and convenience stores. These terminals support ISO 14443 Type A & B, MIFARE®, FeliCa, any of 4 types of NFC (ISO18092), Mastercard® Contactless or Visa payWave® cards/ tags, and printed or mobile barcodes. Accepting a wide range of payment options, this product line enables you to speed up operations and defend transactions against evolving threats.

Physical Characteristics	
Dimensions (mm)	245.0 x 135.0 x 91.0 (Main Body) 245.0 x 135.0 x 159.0 (Main Body + Back mount)
Weight (kg)	1.01 (Main Body) 1.81 (Main Body + Back mount)
Mounting	Pole Dimension: 31mm, 32mm, 35mm (Both Vertical and Horizontal)
Processor	
Processor	Arm® Cortex®-A9 Quad-Core 1GHz Processor
Embedded Platform	Linux
Operation Modes	
Standalone	•
Power	
Supply Voltage	9-36 VDC Reversed voltage polarity protection: up to -24 VDC Over voltage protection: up to +60 VDC
Power Rating (Max.)	48 W
SuperCap UPS	5 seconds with full function after primary power source is lost
Contactless Smart Card Interface	
ISO 14443 Type A and B	•
ISO/IEC 18092 (NFC)	•
Mifare	•
FeliCa	•
Calypso	•
Smart Card Read/Write Speed (kbps)	106, 212, 424
Reading Distance (mm)	up to 50
NFC Reader/Writer Mode	•
Memory	
Flash	25 GB
RAM	1 GB
Tamper Protected RAM	32 KB
Micro SD Card Slot	Up to 128 GB
Upgradeability	
Firmware Upgradable	•
Built-In Peripherals	
SAM Slot	4 (Size: ID-000)
LCD Type	4.3" Color LCD
LCD Resolution	480 x 272
Touch Panel	Capacitive Type
Button	4 with blue back-lit
LED	6 (4pcs at the front and 2pcs at the back)
Built-in Speaker	•
Buzzer	•
Tamper Switch	•
Real Time Clock	•
USB Port	USB Host (Type A)
Serial Port	RS-232 x 1, RS-485 x 1
Wi-Fi	2.4GHz, IEEE 802.11 b/g/n
Network	4G/3G/GPRS
SIM Slot	1 (Size: ID-000)
Ethernet	10/100/1000 Mbps
Positioning System	GPS, Glonass, Beidou, Galileo AGPS Support
Bluetooth®	5.1 Dual Mode
Control Signals	2 x Input + 2 x Output
Ignition Sense	•
CAN Bus	•
1D/2D Barcode Scanner	•
Other Features	
Key Management Supported	Fixed Key, MK/SK, DUKPT
Certifications/Compliance	
PC/SC	•
EMV Level 1 (Contactless)	•
PCI	•
MasterCard® Contactless, Visa payWave®	•
CE, FCC	•
RoHS, REACH	•
Shock and Vibration	Military Standard MIL-STD-810
IP Rating	IP65
IK Rating	IK08

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**ACR350**



# FIDO® DEVICES

ACS's FIDO® certified devices are compliant with FIDO U2F and FIDO2 protocols, and aim to provide users with a speedy and safeguarded passwordless online login experience.



Physical Characteristics		ISO Card (Full Size)
Dimensions (mm)	29.0 x 14.5 x 10.5	ISO Card (Full Size)
Weight (g)	4.5	5.7
Cryptographic Specifications		
ECC p256	•	•
Resident Key Storage	200	200
Interface		
USB (Full Speed)	•	
ISO 14443 Type A		•
ISO 7816 1/2/3		•
Built-In Peripherals		
Button	1 with blue back-lit	
LED	1 (Blue)	
Certifications/Compliance		
FIDO U2F, FIDO2 L1	•	•
CE, FCC, UKCA	•	
RoHS, REACH	•	•
Common Criteria EAL6+		Chip Level
Other Features		
Key Management Supported	•	•
Enterprise Attestation	Upon Request	Upon Request
Supported OS Platforms		
Windows	•	•
macOS	•	•
Linux	•	•
Android	•	•
Browsers Support		
Chrome	•	•
Safari	•	•
Microsoft Edge	•	•
Firefox	•	•

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- Reliable**  
Robust casing design
- Strengthen Account Security**  
FIDO U2F, FIDO2, FIDO2 CTAP2 authenticators
- Enable Swift Online Login**  
Passwordless operations