

worldpay
from FIS

EMV Terminal Parameter Guide

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V 5.0

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Revision History

Date	Version	Author	Updates
January, 2015	1.0	S. Cole	Initial creation
June, 2015	1.1	S. Cole	Updated brand documentation versions. Added Visa Common Debit TACs. Updated Visa TAC note.
August, 2015	2.0	S. Cole	Updated Amex TAC note. Added Card Brand Transaction Limits section.
January, 2016	3.0	S. Cole	Updated References, AID and TAC sections. Added INTERAC, JCB and UnionPay content.
May, 2016	3.1	S. Cole	Clarification in the References section and Discover AIDs
June, 2016	3.2	S. Cole	Added time-out recommendations, Discover Zip clarification, JCB and DNA application version number updates.
January, 2017	3.3	S. Cole	Added TAC references for contactless and updated Amex TACs.
February 2017	3.4	S. Cole	Added statement in first section regarding production and test values. Updated network
May, 2017	3.5	S. Cole	Corrected typo in Amex Decline TAC.

Information Classification

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May, 2017	3.6	S. Cole	Updated Amex TACs to remove different values for test.
May, 2017	3.7	S. Cole	Updated contactless TACs for UP and JCB. Updated brand references.
November, 2017	3.8	S. Cole	Updated transaction limits and application version number for Union Pay. Corrected typo in MC TAC setting, "Voice Auth NOT Supported," footnote provides value for supporting Voice Auth.
March, 2018	4.0	S. Cole	Updated brand references and MasterCard contactless TAC
September, 2018	4.1	S. Cole	Updated AMEX offline-only TACs. Updated brand references. Migrated to WP template.
January, 2019	4.2	S. Cole	Updated transaction limits table. Updated brand references.
July, 2019	4.3	S. Cole	Removed 'Worldpay' references. Added Discover footnote for Transaction Limits table.
March, 2020	4.4	S. Cole	Updated Visa TACs
May, 2020	4.5	S. Cole	Updated Visa and Amex CTLS CVM limits.
June, 2021	4.6	S. Cole	Removed Limits table.
December, 2022	5.0	E. Wenzel	Migrated to WP from FIS template. Added Updated Discover Version Numbers table.

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Brand References for EMV Terminal Implementations

The references listed below are the supported card brands' terminal implementation documentation. This list is not intended to be an exhaustive list of all brand documentation and may not reflect the latest versions. The values in this document are production values. Please refer to the appropriate brand testing documentation for test values that may be different. Additional references are in the documents themselves. Documentation should be obtained directly from the brands.

American Express

- American Express AEIPS Terminal Implementation Guide
- AEIPS Terminal Technical Manual (AEIPS)
- Expresspay Terminal Specification
- Expresspay Mobile Specification

Discover

- D-PAS Terminal Specification
- Discover® Contactless D-PAS: Terminal Application Specification
- Discover® Contact D-PAS: Acquirer Implementation Guide
- Discover® Contactless D-PAS: Acquirer Implementation Guide
- D-PAS U.S. Chip Terminal Guide
- Discover® Contact and Contactless D-PAS: Terminal Requirements for U.S. Debit Card, Technical Addendum
- Discover Contact D-PAS and D-PAS Connect: Acquirer Implementation Guide (Effective December 17, 2021 – Version 4.2)

INTERAC

- INTERAC IDP/POS Terminal Application Certification Guide for IS Implementation
- Interac Association IDP Terminal Specifications
- Interac IDP/POS Terminal Specification Bulletin for terminals deployed in the US

JCB

- Discover® and Pulse EMV: Terminal Guidelines for JCB Contact and Contactless Chip Cards Acceptance – Technical Addendum

Mastercard

- M/Chip Requirements for Contact and Contactless
- U.S. Market Terminal Requirements
- Mastercard Contactless Kernel Configuration
- Mastercard Contactless Reader Specification

UnionPay

- Terminal Implementation Guide for UnionPay IC Card Migration
- Discover® and Pulse EMV: Terminal Guidelines for UnionPay Contact and Contactless Chip Cards Acceptance – Technical Addendum

Visa

- Transaction Acceptance Device Guide (TADG)
- Terminal Acceptance Device Requirements
- Visa Smart Debit/Credit and Visa payWave U.S. Acquirer Implementation Guide (Appendix E pertains to the special logic to support the Visa U.S. Common Debit AID)

AIDs

A0000000031010	Visa Debit/Credit
A0000000032010	Visa Electron
A0000000033010	INTERLINK
A0000000980840	VISA US Debit (US Common Debit)
A0000000041010	Mastercard Debit/Credit
A0000000043060	Maestro
A0000000042203	U.S. Maestro (US Common Debit)
A0000001523010	Discover/Pulse/Diners (including contactless D-PAS)
A0000003241010	Discover Zip
A0000001524010	Discover/Pulse US Common Debit
A00000002501	American Express
A0000006200620	DNA Shared Debit AID
A00000002771010	INTERAC
A0000000651010	JCB
A000000333010101	UnionPay Debit
A000000333010102	UnionPay Credit
A000000333010103	UnionPay Quasi-Credit
A000000333010108	UnionPay US Common Debit

Notes:

- There are no Visa payWave specific AIDs.
- All POS contact chip terminals that contain the Visa AID must also contain the Visa Electron AID.
- There are no Mastercard contactless specific AIDs.
- All American Express Expresspay-compliant applications will commence with the Application Identifier (AID) of 'A00000002501' but may contain longer AIDs.
- Discover Zip is contactless mag-stripe and as such has no application version number, Default DDOL, TDOL or TACs.

TACs

Visa/Interlink

Denial: 0010000000
Online: DC4004F800
Default: DC4000A800

- ONLINE-ONLY TERMINAL SUPPORTS TAC/IAC-ONLINE AND TAC/IAC-DEFAULT PROCESSING.

Visa US Common Debit

Denial: 0000000000
Online: FFFFFFFFFF
Default: FFFFFFFFFF

- ONLINE-ONLY TERMINAL SUPPORTS TAC/IAC-ONLINE AND TAC/IAC-DEFAULT PROCESSING.
- The Visa contactless payWave solution does not utilize Terminal Action Codes (TACs).

Mastercard

Attended POS or CAT offline/online capable, SDA/DDA/CDA, Offline and Online PIN, Voice Auth Not Supported:

Denial: 00 00 00 00 00
Online: FEa 50 BC F8 00
Default: FEa 50 BC A0b 00

- 'FC' should be used, if the terminal does not support the "SDA selected" setting
- '20' if voice authorization supported for Mastercard transactions in "Unable to go Online" mode
- If you have different terminal setups, the TACs may be different.
(See the **Mastercard M/Chip Requirements for Contact and Contactless guide**)
- For Contactless Refer to the Mastercard Contactless Kernel Configuration guide for TAC values.

Discover

Offline Data Authentication supported:

Denial: 0010000000
Online: FCE09CF800
Default: DC00002000

Offline Data Authentication not supported:

Denial: 0010000000
Online: 30E09CF800
Default: 1000002000

U.S. Debit and Prepaid (Offline Data Authentication supported):

Denial: 0010000000
Online: FCE09CF800
Default: DC00002000

U.S. Debit and Prepaid (Offline Data Authentication not supported):

Denial: 0010000000
Online: FFFFFFFF
Default: FFFFFFFF

- Contactless: There are no TACs for contactless transactions

Amex

Production*:

Offline Only:

Default: DC 50 FC 80 00
Online: 00 00 00 00 00
Denial: DC 50 FC 80 00

Online Capable:

Default: DC 50 FC 98 00
Online: DE 00 FC 98 00
Denial: 00 10 00 00 00

- Values do not apply to Ingenico Terminals Deployed using XP version 2.0.1a or Transit

- SIAC Default (Production and Test): FC 50 FC 20 00 (Only used when stand-in processing has been implemented)
- Contactless (Expresspay): Same as contact

DNA Shared Debit AID

Denial: 00 00 00 00 00
Online: FC 50 BC F8 00
Default: FC 50 AC A0 00

- No support for contactless at this time.

INTERAC (Online-only Terminals)

Denial: 0000580000
Online: 0000008000
Default: 0000008000

- Interac requires all transactions to go online to the issuer.
- If a POS terminal is unable to successfully go online, it may optionally skip TAC/IAC Default processing. If a terminal does skip TAC/IAC Default processing, it shall request an AAC with the second GENERATE AC command.
- No support for contactless in the US at this time.

JCB

Denial: 0010000000
Online: FC60ACF800
Default: FC6024A800

- Contactless values are the same as contact.

UnionPay

Denial: 0010000000
Online: D84004F800
Default: D84000A800

- Contactless values are the same as contact.

CAP Keys

Test keys and production keys can be obtained from your implementation consultant.

Floor Limit and Random Selection Recommendations

Worldpay recommends that merchants certify their terminal implementations for a non \$0 offline floor limit, but set the floor limit to \$0 in production. This way, the merchant will be certified for a non \$0 floor limit should they choose to move to that in the future.

Recommended Production Offline Floor Limit: \$0

Recommended Thresholds for Random Selection: N/A if Floor Limit set to \$0

Default DDOL

Must contain the Unpredictable Number generated by the terminal (Tag 9F37, 4 bytes binary)

Default TDOL

None of the global brands have defined value for the default TDOL. In addition, Worldpay has not defined a default TDOL value. This value can set by the terminal vendor.

Terminal Types

This information is excerpted from the *EMV Integrated Circuit Card Specifications for Payment Systems, Book 4, Cardholder, Attendant, and Acquirer Interface Requirements, Version 4.3 November 2011* and is provided for reference only.

Annex A: Coding of Terminal Data Elements

This annex provides the coding for the Terminal Type, Terminal Capabilities, Additional Terminal Capabilities, CVM Results, Issuer Script Results, and Authorization Response Code.

Coding of data (bytes or bits) indicated as RFU shall be '0'.

Neither the terminal nor the card shall check the data indicated as RFU.

A1: Terminal Type

Environment	Operational Control Provided By:		
	Financial Institution	Merchant	Cardholder
Attended			
Online only	11	21	-
Offline with online capability	12	22	-
Offline only	13	23	-
Unattended			
Online only	14	24	34
Offline with online capability	15	25	35
Offline only	16	26	36

Application Version Numbers

	Mastercard	Visa	Discover	Amex	INTERAC	JCB	UnionPay	DNA
Terminal Application Version Number	A0000000041010: 0002	0096	0001 ² 0002 ³	0001	01	0200 (v4.x)	0020/ 0030 ¹	0001
	A0000000042203: 0002					0120 (v3.1.1)		
	A0000000043060: 0002							

1. Some legacy cards use AVN 0020 while newer cards use 0030
2. Discover 0001 is used for Discover D-PAS.
3. Discover 0002 is used for Discover D-PAS Connect.

Card Brand Transaction Limits

Contact Worldpay compliance to get the latest card brand transaction limits.

Reversal Time-out Values

As EMV transaction may take longer to process than mag-stripe transactions, it is recommended that time-out values be reviewed. Worldpay recommends the following time-out values:

- At least 30 seconds for credit
- At least 45 seconds for debit

For credit transactions, Worldpay will send to the primary network and wait 15 seconds and then will reroute to the secondary for 10 seconds.

For debit transactions, Worldpay will send to the primary network and wait 20 seconds, and then will reroute to the secondary for 20 seconds.