

# DynaPro

## MPPGV3 for WorldPay (Vantiv) Integration and Operation User Manual

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# MPPGV3 for WorldPay - DynaPro

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**Table 0.1 - Revisions**

Rev Number	Date	Notes
30	February 21, 2019	Consolidated references to Vantiv into WorldPay. Removed support for PIN processing. Minor edits.
20	March 2018	Initial Release

**The purpose of this document:**

This guide describes EMV (contact chip only) and magstripe operation mode. If the user wishes to ONLY process magstripe with DynaPro, do not use this guide. Please contact MagTek for more details.

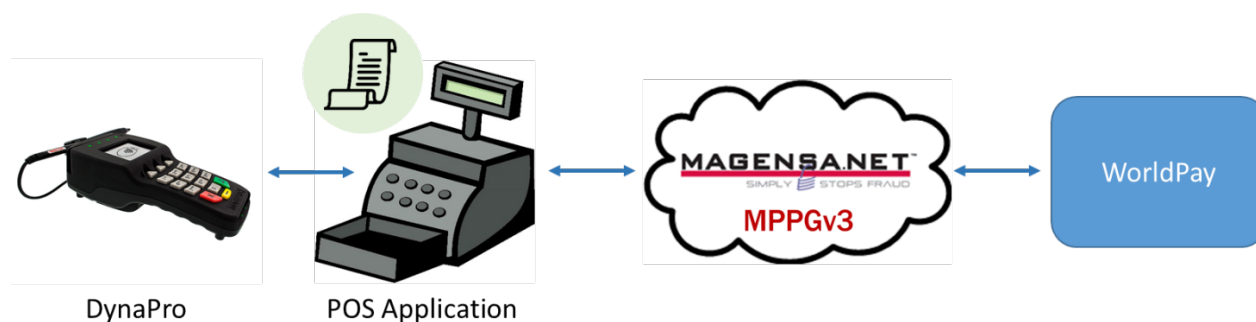
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## 1 Introduction

MPPGV3, a Magensa service, provides an interface to WorldPay (including Vantiv, now consolidated into WorldPay) through its Express platform for DynaPro EMV transactions in QwickDIP mode. This integration does not support PIN. The user of this guide is assumed to be a POS integrator, termed “user”. In order to use the interface, the user must have the following items:

1. A DynaPro (USB and Ethernet models including Part Numbers 30056001, 30056003, 30056013, 30056028, 30056005, 30056007, 30056030), configured as follows:
  - a. Firmware revision F5 or greater.
  - b. Configured as C5 (3C).
  - c. Injected with the MAGTEK DEFAULT EMV TEMPLATE tag load. This tag load will support Visa, MasterCard, American Express, and Discover. If you do not wish to support any of these card brands, please contact your MagTek representative for further information.
  - d. Injected with an encryption key supported by Magensa
2. A merchant account with WorldPay, configured with an Express account. Please see your WorldPay agent for more details. When obtaining a merchant account, you first must indicate this is for Magensa, VAR – MAGENSA ELPS ID: 11417.
3. Account credentials with Magensa for MPPGV3 in Pilot or Production mode. After obtaining your merchant account, you may request your credentials at [support@magensa.net](mailto:support@magensa.net) or contact your MagTek representative. A merchant account is not required to use Pilot mode.
4. A POS application that has the following functions:
  - a. Control of the DynaPro, via USB or IP, using byte-level commands, a MagTek SDK, or MagneFlex. In this role, the POS Application is the DynaPro’s “host”.
  - b. Posting to and reception from, via the Internet, Magensa’s MPPGV3 service.
  - c. Customer receipt generation, based on data returned by Magensa.



## 2 Operational Overview

The following operational regimes are described at a high-level to orient the user to payment transaction processing.

### 2.1 EMV

The DynaPro will exhibit the following behavior when used in accordance with this guide and EMV (chip card). When commanded by the host, the DynaPro will display a screen prompt asking the cardholder to “INSERT or SWIPE CARD” with a corresponding graphic. The cardholder may either swipe the card in the magstripe slot or insert the card.

- **SWIPE:** If the card is swiped, the DynaPro will collect the data on the magnetic stripe. It will examine the data and determine if the card has an EMV chip. If so, the DynaPro will prompt the user to insert the card. If not, the DynaPro will complete the transaction and send the data, encrypted, to the host. The interaction with the terminal is complete.
- **INSERT:** If the card is inserted (either at the beginning or as a result of a **SWIPE** above), the DynaPro will attempt to communicate with the chip on the card. If it is able, the screen will prompt the cardholder for the remaining steps. When complete, the data is sent to the host, encrypted. The interaction with the terminal is complete.
  - **FALLBACK:** If the DynaPro is unable to communicate with the chip on the card, it will prompt the cardholder to re-insert the card. If it fails three times to communicate with chip, it will prompt the cardholder to **SWIPE** the card, unless the cardholder originally swiped. In this case, it will simply output the **SWIPE** data it originally collected, encrypted.

### 2.2 KeyPad

The DynaPro can also accept card data entered directly into its keypad. When commanded to perform the **KeyPad** function, the DynaPro will prompt the user to enter the card number, expiration date, and CVV. When complete, the DynaPro will encrypt this data and send it to the host. The interaction with the terminal is complete. There is no EMV functionality in this mode.

### 2.3 MPPGV3

Once the host has collected the data from the DynaPro, it must process the data to the MPPGV3 service at Magensa over the Internet. General information about this service can be obtained from magtek.com, including the API documentation. For the use of the DynaPro with WorldPay as described by the document, the following operations should be used:

1. **ProcessEMVSRED:** Use this method to process a transaction to WorldPay that originated with **SWIPE** or **INSERT** or was processed via **FALLBACK**.
2. **ProcessKeyPadEntry:** Use this method to process card data that was entered directly into the DynaPro’s keypad.
3. **ProcessReferenceID:** Use this method to process VOID, REFUND or CAPTURE to WorldPay. This method requires no interaction with the DynaPro.

### 2.4 Receipt

Upon the completion of a transaction to MPPGV3, the user may be required to create a receipt for the cardholder, in either printed form or delivered electronically. MPPGV3 will return the data required to create the receipt.



- *option:00* (MagneFlex only)

### 3.2.1 DynaPro Output

Upon a successful interaction with the cardholder, the DynaPro will respond with a TLV-formatted data container containing TLV tags. TLV parsing routines are available on the Internet. The container will include, at a minimum the following TLV tags (see the DynaPro Programmer's Manual or MagneFlex documentation for further details):

- DFDF39 (Encrypted Track 2) – The encrypted cardholder data.
- DFDF50 (Key Serial Number) – The serial number of the key used to encrypt the data.

## 4 Processing Transaction Data to MPPGV3

### 4.1 POS Transactions supported

- **SALE** – A request for funds from the cardholder's account to satisfy a purchase. MPPGV3 will return data approving or declining the **SALE**.
- **AUTHORIZE** – A request that funds be held in a cardholder's account in anticipation of the completion of a purchase at a later time. This transaction is often used in restaurant environments where a tip is collected after the presentation and processing of the card. MPPGV3 will return data approving or declining the **AUTHORIZE**.
- **CAPTURE** – A request that the funds held by **AUTHORIZE** be released to the merchant, along with additional funds in the case of restaurant tips. In that case, the **CAPTURE** amount is the total of the original **AUTHORIZE** amount plus the tip. The merchant must be set up at WorldPay as a restaurant to use **CAPTURE** in this way. Please see your WorldPay representative for further information and restrictions on the use of **CAPTURE** for tips. If the tip amount is known before the card is processed, then **SALE** may be used instead of the **AUTHORIZE/CAPTURE** pair. This transaction is processed using the **TransactionID** returned on the original **AUTHORIZE** transaction. No interaction with the DynaPro is required. MPPGV3 will return data approving or declining the **CAPTURE**.
- **VOID** – A request that a previously processed **SALE** or **AUTHORIZE** transaction be deleted by WorldPay. This transaction will only work the same day as the original transaction up to 8:00pm Eastern Time (This the standard WorldPay settlement cutoff. See your WorldPay representative if you wish to change this time). This transaction is processed using the **TransactionID** returned on the original transaction. No interaction with the DynaPro is required. MPPGV3 will return data approving or declining the **VOID**.
- **REFUND** – A request that funds received by the merchant from a previously processed **SALE** transaction or **AUTHORIZE/ CAPTURE** pair be deducted from the merchant and returned to the cardholder. This transaction is not available before the 8:00pm Eastern Time (This the standard WorldPay settlement cutoff. See your WorldPay representative if you wish to change this time). This transaction is processed using the **TransactionID** returned on the original **SALE** or **AUTHORIZE** transaction. The funds will be returned to the card account that was originally used. MPPGV3 does not support the return of data to another card, nor can it process a **REFUND** using any other data than the **TransactionID**. No interaction with the DynaPro is required. MPPGV3 will return data approving or declining the **REFUND**.

### 4.2 Using MPPGV3 Methods to Process a Transaction

To determine which MPPGV3 method to use, first determine the POS transaction desired. Then determine if card data is required from the DynaPro and collect that data. Then process the transaction using one of the following methods (only required or important fields are shown, see the MPPGV3 API documentation for further information):

#### 4.2.1 ProcessEMVSRED

This method is used when processing a **SALE** or **AUTHORIZE** transaction that originated with **SWIPE** or **INSERT** or was processed via **FALLBACK**. The following data elements are used (\* denotes a required field):

##### 4.2.1.1 Input

- **Amount\*** – The amount being requested, with decimal.
- **Username\*** – Assigned to a specific merchant by Magensa in conjunction with that Merchant’s account at WorldPay.
- **Password\*** – Assigned to a specific merchant by Magensa in conjunction with that Merchant’s account at WorldPay.
- **CustomerCode\*** – Assigned to a specific merchant by Magensa in conjunction with that Merchant’s account at WorldPay.
- **CustomerTransactionID** – a user-defined number that will be echoed by WorldPay through the MPPGV3 response. Maximum length of 50.
- **EMVSREDData\*** - TLV tag DFDF59 (Encrypted Data Primitive) returned by the DynaPro.
- **EncryptionType\*** - “80”
- **KSN\*** - TLV tag DFDF56 (Key Serial Number) returned by the DynaPro.
- **NumberofPaddedBytes\*** - TLV tag DFDF58 (Number of Bytes of Padding) returned by the DynaPro.
- **PaymentMode\*** – If TLV tag DFDF53 is “00” use “EMV”. Any other value, use “MagStripe”.
- **ProcessorName\*** - “VantivExpress – Production” or “VantivExpress – Pilot”. The former is for production use. The latter may be used when testing on the MPPGV3 Pilot system. See the [Testing](#) section.
- **TransactionType\*** - “SALE” or “AUTHORIZE”.

##### 4.2.1.2 Output

- **AuthCode** – If the transaction is approved by the card issuing institution, this numeric field is returned and is unique to this transaction.
- **AuthorizedAmount** – The amount of funds actually authorized by the card issuing institution. The amount *may be* less than that requested. If so, the merchant must ask the cardholder for the difference in funds via a different payment type (such as cash) or a different card. If the cardholder does not wish to provide the additional funds, the transaction may be deleted using **VOID**.
- **CustomerTransactionID** – Echoed from the input.
- **IsTransactionApproved** – A boolean representing the approval status of the transaction.





- **AuthorizedAmount** – The amount of funds actually authorized by the card issuing institution. The amount *may be* less than that requested. If so, the merchant must ask the cardholder for the difference in funds via a different payment type (such as cash) or a different card. If the cardholder does not wish to provide the additional funds, the transaction may be deleted using **VOID**.
- **CustomerTransactionID** – Echoed from the input.
- **IsTransactionApproved** – A boolean representing the approval status of the transaction.
- **MagTranID** – The unique ID assigned by Magensa to identify this interaction with MPPGV3.
- **TransactionID** – Provided by WorldPay to be used with **CAPTURE**, **VOID**, or **REFUND**.
- **TransactionMessage** – A message (String) from WorldPay concerning the status of this transaction.
- **TransactionStatus** – A numeric code from WorldPay concerning the status of this transaction. See the [WorldPay Response Codes](#) section.
- **ProcessorResponse** – An XML-encoded response from WorldPay. Contains data required to create a customer receipt. See the [Receipt](#) section.

### 4.2.3 ProcessReferenceID

This method is to be used with **CAPTURE**, **VOID**, or **REFUND**. This transaction requires the TransactionID from the original transaction. No interaction with the DynaPro is required to use this method.

#### 4.2.3.1 Input

- **Amount\*** – The amount being requested, including decimal.
- **Username\*** – Assigned to a specific merchant by Magensa in conjunction with that Merchant’s account at WorldPay.
- **Password\*** – Assigned to a specific merchant by Magensa in conjunction with that Merchant’s account at WorldPay.
- **CustomerCode\*** – Assigned to a specific merchant by Magensa in conjunction with that Merchant’s account at WorldPay.
- **CustomerTransactionID** – a user-defined number that will be echoed by WorldPay through the MPPGV3 response. Maximum length of 50.
- **ReferenceTransactionID\*** – The **TransactionID** returned from the original transaction.
- **ProcessorName\*** - “VantivExpress – Production” or “VantivExpress – Pilot”. The former is for production use. The latter may be used when testing on the MPPGV3 Pilot system. See the [Testing](#) section.
- **TransactionType\*** - “CAPTURE”, “VOID” or “REFUND”.

#### 4.2.3.2 Output

- **AuthorizedAmount** – The amount requested.
- **CustomerTransactionID** – Echoed from the input.
- **IsTransactionApproved** – A boolean representing the approval status of the transaction.

- **MagTranID** – The unique ID assigned by Magensa to identify this interaction with MPPGV3.
- **TransactionMessage** – A message (String) from WorldPay concerning the status of this transaction.
- **TransactionStatus** – A numeric code from WorldPay concerning the status of this transaction. See the [WorldPay Response Codes](#) section.

## 5 Receipts

Merchants are required to create receipts in compliance with EMV and card brand rules when a transaction is authorized (no receipt is required for **VOID** or if a transaction is declined). Data required to create receipts are provided as outputs of MPPGV3 methods ProcessEMVSRED and ProcessKeyPadEntry. TLV tag data can be found in the MPPGV3 field **EMVSREDDataMasked**. The following section provides receipt samples and rules that must be applied to this data to produce compliant receipts. Receipts must minimally contain these elements, though they may be formatted as desired and additional data may be added. Prepended row numbers are for reference only.

### SALE

```
1: Merchant Name
2: 123 Anywhere Street
3: Merchantville, CA, 12345
4: 123-456-7890

5: SALE

6: Term: 001
7: Ref Num: 1228171757
8: 12/29/17    2:14PM

9: Auth Code: 400101
10: AMEX
11: XXXXXXXXXXXXX1003
12: CHIP

13: AMOUNT: $39.50

14: X_____

15: AID: A000000025010801
16: AMERICAN EXPRESS
17: AMERICAN EXPRESS
18: TVR: 8040008000
19: TSI: 6800
```

- 1: The merchant's name
- 2-3: The merchant's address

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- 4: The merchant's telephone number
- 5: SALE
- 6: The terminal ID, as provided by WorldPay and used when boarding this merchant on Magensa.
- 7: The MPPGV3 **CustomerTransactionID** generated by the merchant or the **TransactionID** returned by MPPGV3.
- 8: The local date and time of the transaction.
- 9: The MPPGV3 **AuthCode**.
- 10: The brand of the card presented by the cardholder. This can be determined by analyzing TLV tag 9F06 and matching its contents using a regular expression as follows (for use with Java, other platforms may require minor modifications to syntax):
  - VISA: “^.\*((31010)|(32010)|(33010)).\*\$”
  - MASTERCARD: “^.\*((41010)|(43060)).\*\$”
  - DISCOVER: “^.\*1523010.\*\$”
  - AMEX: “^.\*2501.\*\$”
- 11: The masked card number. This can be found in the MPPGV3 **ProcessorResponse** field in XML node: <CardNumberMasked>
- 12: The card entry method. This can be determined by examining TLV tag DFDF53. If the value is “00”, then “CHIP” should be used. Else, use “MAGSTRIPE”. For **KeyPad**, use “MANUAL ENTRY”.
- 13: The authorized amount from the MPPGV3 **AuthorizedAmount** field.
- 14: Signature line. For all major card brands, collection of a signature is optional.
- 15: The EMV Application Identifier (“AID”), found in TLV tag 9F06.
- 16: The EMV Application Preferred Name, found in TLV tag 9F12. The tag contains the byte encoded application name, per ISO/IEC 8859-1 (ASCII equivalent). Decode for display on the receipt. If the tag does not exist, print nothing.
- 17: The EMV Application Label, found in TLV tag 50. The tag contains the byte encoded application label, per ISO/IEC 8859-1 (ASCII equivalent). Decode for display on the receipt. If the tag does not exist, print nothing.
- 18: TLV tag 95 (Terminal Verification Results or “TVR”).
- 19: TLV tag 9B (Transaction Status Information or “TSI”).

**AUTHORIZE** to process a restaurant tip

Same as **SALE**, with the addition of:

TIP: \_\_\_\_\_  
Total: \_\_\_\_\_

### **REFUND**

1: Merchant Name  
2: 123 Anywhere Street  
3: Merchantville, CA, 12345  
4: 123-456-7890

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5: REFUND

6: Term: 001

7: Ref Num: 1228171757

8: 12/29/17 2:14PM

9: Auth Code: 400101

10: AMOUNT: \$39.50

- 1: The merchant's name
- 2-3: The merchant's address
- 4: The merchant's telephone number
- 5: REFUND
- 6: The terminal ID, as provided by WorldPay and used when boarding this merchant on Magensa.
- 7: The MPPGV3 **CustomerTransactionID** generated by the merchant or the **TransactionID** returned by MPPGV3.
- 8: The local date and time of the transaction.
- 9: The MPPGV3 **AuthCode**.
- 10: The amount refunded.

## 6 Technical Assistance

Technical assistance in using this guide or integrating to MPPGV3 may be requested via email at [support@magensa.net](mailto:support@magensa.net).

## 7 Testing

MPPGV3 has a **ProcessorName**, "VantivExpress – Pilot", that connects to the WorldPay test region. This will allow you to send transactions to the WorldPay authorization simulator and see test output. To use "VantivExpress – Pilot", you must first obtain EMV test cards and MPPGV3 test credentials from Magensa. Please see your MagTek sales representative for further information.

## 8 TLV Parsing

ProcessEMVSRED returns EMV data, in TLV (Tag-Length-Value) format, that is required to create receipts. The data is contained in **EMVSREDDataMasked**. TLV is a scheme to label data that includes its length. A TLV primitive is usually expressed as a sequence of bytes beginning with the label, followed by the length of the value (as one byte), followed by the value itself. For instance, EMV tag 95 might be "95050000008000". TLV has additional structures to embed groups of tags within larger container tags. TLV parsing routines are available on the Internet. MagTek can also provide source code for a JAVA TLV parsing class as a reference. Please contact [support@magensa.net](mailto:support@magensa.net) for details.

### 9 WorldPay Response Codes

#### Code Description

0 Approved / Success  
5 Partial Approval  
20 Decline  
21 Expired card  
22 Duplicate approved  
23 Duplicate  
24 Pick up card  
25 Referral / Call Issuer  
30 Balance Not Available  
90 Not defined  
101 Invalid data  
102 Invalid account  
103 Invalid request  
104 Authorization failed  
105 Not Allowed  
120 Out of Balance  
1001 Communication error  
1002 Host error  
1009 Error