



FlexPoint Integration API for Canada

Retail & Quick Service Restaurant (QSR)

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Programmers Guide

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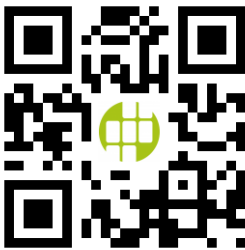
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Pivotal Product Management Press

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Revision Information

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1.0	.5	Jeremy Seitz	Product Manager	November 15, 2013	Document Creation
1.1	.51	Jeremy Seitz	Product Manager	November 27, 2013	Addition of section 3.5.1 explaining computation of message length
1.2	.51	Jeremy Seitz	Product Manager	November 27, 2013	Correction of message length structure in sample code snippets across the text. Examples of these changes are in sections 4.3.1, 4.3.2 and 4.3.3
1.3	0111	Richard Staley	Product Manager	March 16, 2015	Standardization of document format
1.4	0111	Richard Staley	Product Manager	April 10, 2015	- Modified section 2.5.1 Computing the Message Length to modify the <ETX> and <LRC> are 2 bytes each
1.5	0111	Richard Staley	Product Manager	August 20, 2015	- Added Appendix A: AID listing for mapping card type to AID numbers.
1.6	0111	Richard Staley	Product Manager	September 1, 2015	- Added section 2.5.2 Computing LRC - Updated section 3.1 FlexPoint Response Record Format Field ID Codes 11001 & 11006. - Removed 90001 as a

Doc Ver	S/W Ver	Name	Title	Date of Update	Summary of Changes
					mandatory field from section 2.2 table, "Refund" trans name.
1.7	0112	Richard Staley	Product Manager	November 3, 2015	- Modified section 3.4 FlexPoint Error Codes to add Code 111 - Batch Empty.
1.8	1.00.113	Richard Staley	Product Manager	February 10, 2016	- Updated section 3.4 FlexPoint Error Codes to add Code 113 - Not in Retail/QSR Mode.
1.9	1.00.113	Richard Staley	Product Manager	August 29, 2016	- Added a clarification "Note" to section 2.5.1 regarding the message length calculation.

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1. Introduction

Flex Point is Pivotal’s integrated payments solution which includes support for contactless payments, EMV and point-to-point encryption* (future enhancement).

This document details the integration between a POS and the FlexPoint platform. The primary purpose of FlexPoint is to authorize payments with a host and return the response back to the POS.

The message specifications and tables in this document define the full scope and extent of integration between the POS and the FlexPoint platform.

1.1 Terms and Definitions

Terms	Definitions
Ticket	Is the fundamental payable(what does this mean?) of FlexPoint. FlexPoint does not recognize hierarchies of payables (for example, recognizing ‘seat’ as falling under the concept of ‘table’). It is the integrator’s responsibility to program the POS system to manage relationships between payable amounts in the POS system and transmit them to FlexPoint under the auspices of a system that only recognizes one sort of payable, namely, the ticket. ‘Ticket’ is chosen as the generic nomenclature for any and all of the following terms: Master Check, Check, Sub-Check, Table, Seat, Folio, Transaction, Item, etc. . . The terms ‘Ticket’ and ‘Check’ may be used interchangeably throughout this document.
Retail/QSR	Retail/Quick Serve Restaurant. In the context of integration, a Retail/Quick Serve Restaurant environment is one where the integration between the POS and FlexPoint is such that the payment transaction is initiated by the POS by pushing it FlexPoint. The relationship between POS and FlexPoint is always one-to-one.
POS & ECR	Point-of-Sale and Electronic Cash Register. ‘POS’ and ‘ECR’ are used interchangeably and may be regarded as synonyms in this document.
Sales Receipt	A receipt printed by the POS system. This receipt enumerates the goods or services actually purchased. Very little (if any) payment information is printed on the sales receipt–sometimes it will indicate the tender type of the payment transaction.
Payment Receipt	Also referred to as ‘Payment Transaction Receipt’ is the receipt generated by the FlexPoint. It contains no information about the goods and services purchased (other than the total price paid), but it does contain data required by the credit-card associations. Whether printed by FlexPoint or by a POS, the payment transaction receipt is created from data output by FlexPoint.

Figure 1-1 Definitions and Terms Listing

1.2 Minimum Functional Model

This section describes the most basic integration possible. It is documented here to give the integrator an understanding of what a retail integration minimally entails.

1.3 POS → FlexPoint → POS Transaction Lifecycle

1. **Transaction Initiation** Upon completion of the sale tally on the POS, the clerk prompts the POS to initiate a card payment transaction.
2. **Transaction Authorization** If the POS' outgoing transaction request message is formatted properly and validation rules passed, FlexPoint will authorize the transaction at the host after engaging the cardholder to approve the transaction with their PIN (if required).
3. **Transaction Response** FlexPoint receives the host's transaction response, formulates a response message and sends the response message to the POS.
4. **Receipt Printing** FlexPoint will print both the Merchant Copy and Cardholder Copy of payment transaction receipt. The POS should print its own sales receipt after receiving the FlexPoint response message (but this can vary among different POS systems). Should we discuss verbatim receipt printing options here?
5. **POS Verification of Transaction** It will be important for the POS to know if a given transaction is approved or declined so that it may mark it as such in its transaction log, and also to advise the clerk that card payment for this transaction has been collected successfully. To this end, the POS must parse the response message to see if the error element is present to determine if the transaction was approved or declined.

2. POS Outgoing Transaction

2.1 Transaction ID Reference Table

The following transaction types are recognized by FlexPoint. A single 'Trans ID' must be inserted into field 10002 of the POS Outgoing Request Message.

Trans Name	Trans ID	Applicability	Description
Purchase	1	DB, CR	To affect a sale to the cardholder
Refund	16	DB, CR	To credit the cardholder with funds
Force <i>Future Implementation</i>	5	CR	To submit a credit card force post to the host where the transaction was EMV approved offline.
Pre-Auth	2	CR	To hold funds for the amount specified. It is the POS system's responsibility to add 'over lift' to the amount when needed. Pre-Auths (Pre-Auths) may be voided by sending a Pre-Auth Completion for \$0. Pre-Auths not completed within the allotted timeframe (typically 5 days) will expire
Pre-Auth Completion	3	CR	Used to capture the final amount of a credit-card Pre-Authorization
Void	10, 21, 26	DB, CR	10 – Used for cancelling a credit card purchase, refund, pre-auth completion, or force transaction that has not been settled (i.e. that is in the current batch). 21 – Debit Purchase Correction. 26 – Debit Refund Correction
Cancel Transaction	0	DB, CR	Prompts FlexPoint to cancel the current transaction. This transaction request will be denied if FlexPoint already received a response from the host
Reprint Receipt	31	DB, CR	Prompts FlexPoint to resend the last transaction response to the POS for receipt reprinting.
Close Batch	41	DB, CR	Requests settlement at the host for transactions in the current batch
Reset Interface	66	DB, CR	Resets a frozen or unresponsive connection to the interface. See Section 3.5 for more information

Figure 2-1 FlexPoint Transaction Types

2.2 Validation Rules by Transaction ID

The following table lists the mandatory fields by Trans ID type in a POS outgoing transaction request. All transactions must include the Start Sentinel, Message Length, End Sentinel, and LRC.

Trans Name	Trans ID	Applicability	Mandatory Fields	Integration Note
Purchase	1	DB, CR	11111, 10002, 10007	
Refund	16	DB, CR	11111, 10002, 10007	
Force <i>Future Implementation</i>	5	CR	11111, 10002, 10007, 10030	
Pre-Auth	2	CR	11111, 10002, 10007	
Pre-Auth Completion	3	CR	11111, 10002, 10007, 90001	Field 90001 (Invoice number) serves to identify the transaction to be completed and was received by the POS in field 10009 of the FlexPoint response.
Void	10, 21, 26	DB, CR	11111, 10002, 10007, 90001	Field 90001 (Invoice number) serves to identify the transaction to be voided and was received by the POS in field 10009 of the FlexPoint response.
Cancel Transaction	0	DB, CR	11111, 10002	
Reprint Receipt	31	DB, CR	11111, 10002	
Close Batch	41	DB, CR	11111, 10002	
Reset Interface	66	DB, CR	11111, 10002	

Figure 2-2 Mandatory Message Fields by Transaction Type

2.3 POS Outgoing Request Record

This section describes the message request sent from a POS system to initiate a transaction on FlexPoint.

- If message length (Len) is blank, then variables lengths of 0 - 99 are permitted. If the field contains a value, that value must be respected.

- Req'd denotes whether this field is Mandatory (Y) or Optional (N).
- FlexPoint will raise an error 112 and disallow a transaction if length requirements are violated or if required fields are not populated in the transaction message.
- Values placed in optional fields 10010 (OPERATOR_ID) and 10012 (MER_REF_NUMBER) will be made available in Pivotal360. Reports pulled from Pivotal360 containing this data may be used by the merchant to reconcile POS/ECR, processor, transaction, and accounting data.
- Fields calling for money values (ex. TRANSACTION_AMOUNT) must be populated without decimals. For example, '25' equates to twenty-five cents (\$0.25), while '2500' is \$25.00. Values returned from FlexPoint in its response messages will be in this format as well.

2.4 Request Record

Field ID	Field ID Code	Description	Date Type	Len	Req'd
Start Sentinel	<STX>	Mandatory Start Sentinel			Y
MESSAGE_LENGTH	11111	Message length in bytes	N		Y
EXTERNAL_APP_NAME	10079	Name and or version of POS software	AN		N
TRANSACTION_ID	10002	Transaction Type. See table of Transaction IDs in section 3.1	N	≤ 3	Y
TRANSACTION_AMOUNT	10007	(\$\$\$\$\$\$). Mandatory for all sale types, refunds, voids.	N	≤ 8	N
OPERATOR_ID	10010	Cashier/Clerk/Server/Driver/Employee ID assigned by the merchant's POS system	AN	≤ 12	N
MER_REF_NUMBER	10012	Reference Number generated by POS.	AN	≤ 26	N
POS_TRANSACTION_DATE	10027	YYYYMMDD	N	8	N
POS_TRANSACTION_TIME	10028	HHMMSS (24hr clock)	N	6	N
APPROVAL_CODE <i>Future Implementation</i>	10030	Approval Code obtained offline (ex. by phone). Used for force transactions only	AN	6	N
INVOICE	90001	Invoice number received from FlexPoint. Used for Voids, Refunds, and for Pre-Auth Completions to refer to	AN	7	N

Field ID	Field ID Code	Description	Date Type	Len	Req'd
		the initial transaction			
End Sentinel	<ETX>	Mandatory End Sentinel			Y
LRC	<LRC>	Longitudinal Redundancy Check			Y

Figure 2-3 Transaction Request Message sent from the POS to FlexPoint

2.5 Transaction Packet Format

The POS must send transaction packets to FlexPoint in the format described in this section. FlexPoint will return responses to the POS in identical format. The Field ID and Field Data should be sent as strings.

- <STX>
- Field ID
- 0x5e (caret)
- Field data
- 0x5e
- Field ID
- 0x5e
- Field data
- 0x5e
- <ETX>
- <LRC>

2.5.1 Computing the Message Length

As observed in the table in section 3.4, MESSAGE_LENGTH is a required field in that and all other FlexPoint messages. This subsection will unpack how the message should be calculated.

For example, in the following sample outgoing request message:

```
<STX>11111^00024^10002^1^10007^14718^<ETX><LRC>
```

The following rules should apply to the calculation of the message length:

- Message length should be expressed in a fixed block of 5 bytes. A 24 byte message should be expressed as '00024' as in the example above.
- Message length count should begin immediately after the caret preceding the numeric message count in bytes. In the case of the example above, begin counting message length after

```
<STX>11111^00024^
```

'1' is therefore the first character to count in the sample string above.

- Carets falling after the first countable character (again, '1' from the example) should be counted when computing message length.
- <ETX> and <LRC> are 2 bytes each (see note below).
- <ETX> and <LRC> must be counted in the message length.
- The partial string <STX>11111^nnnnn^ does not count as part of message length.



Note: The actual packet must have ONE byte each for ETX and LRC, but the length calculation must count these as 2 bytes each. In other words, when calculating packet length, add 2 to the result. For instance, in the example above, the length you would get is 22, but adding 2 would yield the correct 24.

2.5.1 Computing LRC

LRC is calculated by XOR'ing each byte in the request. STX is not included in this calculation, but ETX is. Here's a code snippet for reference:

```
// LRC calculation is pretty standard, only the STX is not calculated. XOR
each byte.
byte LRC(byte[] st)
{
    byte LRCResponse = 0;
    for (int i = 1; i < st.Length; i++)
    {
        LRCResponse ^= st[i];
        if (st[i] == ETX) break;
    }
    return (LRCResponse);
}
```

2.6 Example Transaction Packets: POS → FlexPoint

2.6.1 POS Outgoing Sale Request for \$147.18

```
<STX>11111^00050^10002^1^10007^14718^10010^65613^10012^1234567
^<ETX><LRC>
```

2.6.2 POS Auxiliary Transactions

Message Type	Message
Close Batch	<STX>11111^00013^10002^41^<ETX><LRC>
Reprint Last Receipt	<STX>11111^00013^10002^31^<ETX><LRC>

Message Type	Message
Reset Interface	<STX>11111^00013^10002^66^<ETX><LRC>

Figure 2-4 POS Auxiliary Transactions

2.6.3 Minimum Working Example - Sale Transaction

Referencing the 'Req'd' column from the Outgoing Message Request Table in section 2.1 , the following is the simplest transaction message possible for a payment transaction.

This message contains only the minimally required fields to successfully transmit a sale transaction to FlexPoint for processing at the host:

```
<STX>11111^00024^10002^1^10007^14718^<ETX><LRC>
```

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3. FlexPoint Response Record

This table defines the elements of a response transaction message returned by FlexPoint to the POS system.

- Nearly all fields presented in the table below are returned with every FlexPoint response message.
- Some fields specific to debit transactions are not returned in credit transactions responses. See the 'DB, CR' column.
- TIP and/or surcharges will not be returned in a response message if not applicable to the transaction.

3.1 FlexPoint Response Record Format

Field ID	Field ID Code	Description	Len	DB, CR
Start Sentinel	<STX>	Start Sentinel		
MESSAGE_LENGTH	11111	Message length in bytes		DB, CR
MER_NAME	11800	DBA Name	≤ 24	DB, CR
MER_STREET_ADDR	11801	Merchant Street Address	≤ 24	DB, CR
MER_CITY_PROV_PC	11802	Merchant City, Province, Postal Code	≤ 24	DB, CR
MER_TEL	11803	Merchant Telephone Number	≤ 20	DB, CR
<CR><LF>		Carriage Return/Line Feed		DB, CR
FIXED_MESSAGE_1	11804	"TRANSACTION RECORD"	≤ 24	DB, CR
<CR><LF>		Carriage Return/Line Feed		DB, CR
TRANS_TYPE	11805	(Ex. Sale, Void, Refund, etc. . .)	≤ 24	DB, CR
CARD_NUMBER	11001	Card Account Number (masked with first 6 and last 4 digits displayed)	≤ 19	DB, CR
TENDER_TYPE	11006	For Credit (0) transactions it will display the card type such as VISA, MASTER, AMEX, JCB, DINERS, DISCOVER, and PL., otherwise it will display Debit (1), Gift/Loyalty (2)	≤ 24	DB, CR
CARDHOLDER_DEBIT_ACCOUNT	11806	Ex. Chequing, Savings, Other	≤ 24	DB, CR
ENTRY_METHOD	11807	Keyed', 'Swiped', 'Dipped', or 'Contact-less'	≤ 24	DB, CR
TIP_AMOUNT	11808	Tip Amount	≤ 9	DB, CR
SURCHARGE_AMOUNT	11809	Transaction Surcharge Amount	≤ 9	DB

Field ID	Field ID Code	Description	Len	DB, CR
CASHBACK_AMOUNT	11810	Cashback Requested by Cardholder	≤ 9	DB
TRANSACTION_AMOUNT	11811	Transaction Amount excluding sur-charge and tips added by cardholder on FlexPoint (value sent from POS in field 10007)	≤ 9	DB, CR
TOTAL_AMOUNT	11003	Total amount charged to cardholder	≤ 9	DB, CR
<CR><LF>		Carriage Return/Line Feed		DB, CR
INVOICE_NUMBER	11009	Invoice Number Generated by FlexPoint or by Host	≤ 7	DB, CR
TID	11812	Terminal ID Number	≤ 8	DB, CR
OPERATOR_ID	11813	Clerk/Server/Driver ID Number (field 10010 from POS outgoing request)	≤ 12	DB, CR
MER_REF_NUMBER	11814	Merchant's own Reference Number (field 10012 from POS out- going request)	≤ 24	DB, CR
SEQUENCE	11815	Host Sequence Number	≤ 7	DB, CR
AID ¹	11816	Application ID	≤ 24	DB, CR
CRYPTOGRAM_TYPE_INFO	11817	Cryptogram Type and Info	≤ 24	DB, CR
TSI	11818	Transaction Status Information	≤ 24	DB, CR
HOST_TRANS_DATE	11007	Transaction Date in YYYY-MM-DD Format	10	DB, CR
HOST_TRANS_TIME	11008	Transaction Time in HH:MM:SS (24-hour) Format	8	DB, CR
AUTHORIZATION_NUMBER	11004	Authorization/Approval Code	≤ 6	DB, CR
<CR><LF>		Carriage Return/Line Feed		DB, CR
ISO_RESPONSE_CODE	11819	2 Digit ISO Code. Will be present for Debit only. Should not be used to determine Transaction Approved/Declined disposition	2	DB
POS_RESULT_CODE	11011	3 Digit Host Response Code. Note: SHOULD BE USED TO DETERMINE TRANSACTION APPROVED/DECLINED DISPOSITION. '000' indicates an APPROVED transaction, all other values indicate a NOT APPROVED transaction	3	DB, CR
RECEIPT_RESULT_MESSAGE	11824	Approved/Declined Message to print on Cardholder Receipt	≤ 24	DB, CR

Field ID	Field ID Code	Description	Len	DB, CR
<CR><LF>		Carriage Return/Line Feed		DB, CR
RECEIPT_COPY_TYPE	11821	'CARDHOLDER COPY' or 'MERCHANT COPY'	≤ 24	DB, CR
RECEIPT_COPY_DISPOSITION	11822	'ORIGINAL RECEIPT' or 'REPRINTED RECEIPT'	≤ 24	DB, CR
FlexPoint_COMM_ERROR	11010	For Communication Errors, Message Formatting Errors, or User-Initiated Cancellations	3	DB, CR
FlexPoint_COMM_ERROR_DISPLAY	21010	COMM Error message to display on FlexPoint screen. Corresponds to errors described in Section 3.4	≤ 30	DB, CR
POR_RESPONSE	11888	Response provided only when a 'Reset Interface' (TRANSACTION ID 66) is initiated by the POS.	≤ 99	N/A
VERBATIM_TRANSACTION_RECEIPT_CH_COPY	11998	For verbatim transaction receipt printing. Cardholder copy	≤ 2000	DB, CR
VERBATIM_TRANSACTION_RECEIPT_MER_COPY	11999	For verbatim transaction receipt printing. Merchant copy	≤ 2000	DB, CR
End Sentinel	<ETX>	End Sentinel		
LRC	<LRC>	Longitudinal Redundancy Check		

Figure 3-1 FlexPoint Resonse Record Format



Note: 1. For a list of AID's please see Appendix A.

3.2 Response Message Conventions and Instructions

The following bullets compliment the information provided in the outgoing and response message tables.

- FlexPoint will return a response message for each request submitted by the POS.
- For sample response packets, please refer to section 3.3 .
- The VERBATIM_TRANSACTION_RECEIPT field, if activated in the configuration settings, will return a verbatim copy of the transaction receipt in fields 11998 (Cardholder Copy) and 11999 (Merchant Copy) of the FlexPoint response message. Each line of the transaction receipt will be separated by a carriage return and line feed <CR><LF> (0x0A 0x0D). The POS should print this receipt verbatim.
- The DB, CR column in table 4 indicates whether the specific field will be returned in the FlexPoint response message for Debit Transactions only (DB) or for both Debit Transactions and Credit transactions (CR, DB), or neither in select cases such as POR Resets.

- Parse POS_RESULT_CODE (field 11011) to know if a transaction is approved or declined. '000' means Approved, all other codes mean NOT APPROVED.
- Despite the existence of two possible debit surcharges - the 'Retail Purchase Surcharge Fee' and the 'Cashback Surcharge Fee', only one of the two fees may be charged for any given transaction. There is, therefore, only one generic field for this surcharge (Field 11809) in the transaction response message.

3.3 Example Transaction Packets: FlexPoint → POS

3.3.1 Approved Sale Response (With Verbatim Receipt Fields)

The following sample response message is for a debit transaction, with a debit surcharge of \$0.25 and debit cashback of \$20.00. This fictitious transaction has no tip amount. As such, the tag is excluded from the message.

```
<STX>11111^02611^11800^MAIN MART^11801^123 MAIN ST.^11802^
MOOSE JAW SK F6T 6T6^11803^306-555-1212^^11804^TRANSACTION
RECORD^^11805^SALE^11001^XXXXXXXXXX7722^11006^DEBIT^11806^
CHEQUING^11807^DIPPED^11809^025^11810^2000^11811^1595^11003^
3620^^11009^2123456^11812^87654321^11813^001167^11814^12345678
9012^11815^5678901^11816^A0000002771010^11817^
AAC2E51243D4C7E551^11818^6800^11007^2013-11-
13^11008^16:54:13^11004^000789^^11819^11^11011^000^11824^00
APPROVED 000 THANKYOU^^11821^CARDHOLDER COPY^11822^ORIGINAL
RECEIPT^11998^
MAIN MART <CR><LF>
123 MAIN ST. <CR><LF>
MOOSE JAW SK F6T 6T6 <CR><LF>
306-555-1212 <CR><LF>
<CR><LF>
TRANSACTION RECORD <CR><LF>
<CR><LF>
TRANS TYPE: SALE<CR><LF>
CARD NO: XXXXXXXXXXXXX7722<CR><LF>
CARD TYPE: DEBIT<CR><LF>
ACCOUNT: CHEQUING<CR><LF>
ENTRY METHOD: DIPPED<CR><LF>
SURCHARGE: $0.25<CR><LF>
CASHBACK: $20.00<CR><LF>
TRANS: $15.95<CR><LF>
TOTAL: $36.20<CR><LF>
<CR><LF>
INVOICE: 2123456<CR><LF>
TID: 87654321<CR><LF>
OPERATOR: 001167<CR><LF>
```

```
REFERENCE: 123456789012<CR><LF>
SEQUENCE: 5678901<CR><LF>
AID: A0000002771010<CR><LF>
CTI: AAC2E51243D4C7E551<CR><LF>
TSI: 6800<CR><LF>
DATE: 2013-11-13<CR><LF>
TIME: 16:54:13<CR><LF>
AUTHORIZATION: 000789<CR><LF>
<CR><LF>
00 APPROVED 000 THANKYOU<CR><LF>
<CR><LF>
CARDHOLDER COPY <CR><LF>
ORIGINAL RECEIPT^11999^
MAIN MART <CR><LF>
123 MAIN ST. <CR><LF>
MOOSE JAW SK F6T 6T6 <CR><LF>
306-555-1212 <CR><LF>
<CR><LF>
TRANSACTION RECORD <CR><LF>
<CR><LF>
TRANS TYPE: SALE<CR><LF>
CARD NO: XXXXXXXXXXXX7722<CR><LF>
CARD TYPE: DEBIT<CR><LF>
ACCOUNT: CHEQUING<CR><LF>
ENTRY METHOD: DIPPED<CR><LF>
SURCHARGE: $0.25<CR><LF>
CASHBACK: $20.00<CR><LF>
TRANS: $15.95<CR><LF>
TOTAL: $36.20<CR><LF>
<CR><LF>
INVOICE: 2123456<CR><LF>
TID: 87654321<CR><LF>
OPERATOR: 001167<CR><LF>
REFERENCE: 123456789012<CR><LF>
SEQUENCE: 5678901<CR><LF>
AID: A0000002771010<CR><LF>
CTI: AAC2E51243D4C7E551<CR><LF>
TSI: 6800<CR><LF>
DATE: 2013-11-13<CR><LF>
TIME: 16:54:13<CR><LF>
AUTHORIZATION: 000789<CR><LF>
<CR><LF>
00 APPROVED 000 THANKYOU<CR><LF>
<CR><LF>
MERCHANT COPY <CR><LF>
```

ORIGINAL RECEIPT <ETX><LRC>

3.3.2 Declined Sale Response

```
<STX>11111^00529^11800^MAIN MART^11801^123 MAIN ST.^11802^
MOOSE JAW SK F6T 6T6^11803^306-555-1212^^11804^TRANSACTION
RECORD^^11805^SALE^11001^XXXXXXXXXX7722^11006^DEBIT^11806^
CHEQUING^11807^DIPPED^11809^025^11810^2000^11811^1595^11003^
3620^^11812^87654321^11813^001167^11814^123456789012^11815^567
8901^11816^A0000002771010^11817^AAC2E51243D4C7E551^11818^6800^
11007^2013-11-13^11008^16:54:13^^11819^51^11011^551^11824^51
TX NOT APPROVED 551^^11821^CARDHOLDER COPY^11822^ ORIGINAL
RECEIPT^<ETX><LRC>
```

Note that in this decline response no invoice or authorization numbers are provided. Decline codes, decline descriptions, and association sanctioned messages are provided in the response.

If verbatim sales receipts were activated, this message would contain the verbatim sales receipts in tags 11998 and 11999.

3.3.3 Error Response

```
<STX>11111^00035^11010^101^21010^CANCELLED BY USER^<ETX><LRC>
```

Please refer to the list of error codes in Table 5 for error code descriptions.

3.3.4 POR (Power on Reset)

```
<STX>11111^00071^11888^ZIPTALK1.4|532234532134|192.168.1.127^<
ETX><LRC>
```

A POR transaction response shall contain a single pipe-delimited field (11888) consisting of the following elements: FlexPoint software name and version number, FlexPoint serial number, and device IP (where applicable – otherwise this field is omitted). Please see section 3.5 for more information.

3.4 FlexPoint Error Codes

This table defines the error codes returned in the ECR_COMM_ERROR (11010) field.

Code	Description	Result/Action	Display
101	User cancelled (on FlexPoint) during FlexPoint processing	User Cancelled. Retry transaction, alternative payment method, change of mind, etc. . .	Cancelled by User
102	Formatting error in the POS's transaction packet	Retry	Error - Retry

Code	Description	Result/Action	Display
103	Error occurred during FlexPoint processing	Comm waiting for next transaction. Verify connecting cables	Retry or Check Connection
104	FlexPoint rejects current transaction because it is waiting for a response to the previous transaction	Operator should retry after 10 seconds	Retry Transaction
105	Not able to communicate with the POS application	Waiting for next transaction	Reboot FlexPoint
108	POS message violates field character type or length rules	Check POS outgoing message for non-conforming field values	Message Format Violation
110	Gift/Loyalty Card not recognized	FlexPoint does not accept the brand of Gift/Loyalty card presented for payment	Card not Supported
111	Batch Empty	When sending a Batch Settlement command and the batch is empty the error code will be returned to POS.	Batch Empty
112	Mandatory field missing or message length violation	FlexPoint cannot process the transaction. Mandatory field(s) missing from POS outgoing transaction request	Message Format Violation
113	Not in Retail/QSR Mode	Terminal is presently in "Core" mode, load Retail/QSR by pressing the "Red" button and try transaction again.	No Display, message sent back to POS

Figure 3-2 Error Codes

A transaction containing an ECR_COMM_ERROR code is not successful, and has not been approved by the card issuer. If this field is left blank in a response message, it means that the transaction was formatted properly, no communication issues are present and that POS_RESULT_CODE should be checked for approval or decline response.

It is the integrator's responsibility to decide how the POS shall behave in response to an error code.

3.5 FlexPoint POR (Power on Reset) Procedure

Transmission of TRANSACTION_ID '66' to FlexPoint will cause the FlexPoint to reboot. If a transaction is submitted by the POS and no FlexPoint response or error code is returned after some requisite waiting period determined by the POS, then the POS should initiate a reset and wait for FlexPoint to complete a POR procedure. Initial integration testing will reveal how long this procedure takes and it will vary among different POS systems.

Upon completion of the rebooting procedure, FlexPoint will send a POR transaction response packet to the POS. The packet is confirmation that FlexPoint is ready to receive

transactions. It is at this point that the POS should resend the last transaction (if on had failed to be processed successfully and is the reason for the POR transaction).

The POR response transaction packet is also sent by FlexPoint as an unsolicited message each time FlexPoint is booted (regardless of whether it is prompted to reset by the POS via TRANSACTION_ID 66).

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4. Communication Protocols between POS and FlexPoint

- All messages will be framed beginning with an <STX>, and MESSAGE_LENGTH, ending with an <ETX>, followed by a one-byte LRC.
- The application that receives a framed packet must respond with either an <ACK> or a <NAK> depending on whether the packet is properly formatted and has a valid LRC.
- If FlexPoint sends the response packet to the POS and receives a <NAK> then FlexPoint will resend the response packet.
- If FlexPoint receives a <NAK> for each of 3 attempted transmissions of the same response packet then it will discard the response packet and return to its idle state. WARNING: If this response packet represents a successful FlexPoint transaction then FlexPoint will become out of balance relative to the POS.
- If the POS has forwarded a transaction packet to FlexPoint then, while the POS is waiting for FlexPoint's response packet, FlexPoint should receive another transaction packet from the POS, FlexPoint will respond to the POS with an Error 104. In short, FlexPoint will only support the handling of one transaction at a time.
- The POS can send a reset interface transaction packet in order to force FlexPoint to stop waiting for a FlexPoint response and start receiving new transactions from the POS. The FlexPoint response will be dropped and FlexPoint will wait for the next POS request. WARNING: If this reset command is sent while FlexPoint is still processing the previous transaction then FlexPoint will become out of balance relative to the POS.
- FlexPoint will first save a copy of any response packet before attempting to transmit it to the POS. If FlexPoint is aborted (i.e., FlexPoint loses power) prior to completing a successful transmission of the response packet, then upon restart it will retrieve the saved copy of the packet and continue attempting to transmit it to the POS. FlexPoint will delete the saved copy of the response packet when one of the following events occurs: (a) Successful transmission of the next response packet, (b) three consecutive <NAK> failures, or (c) No response from the POS after 9 consecutive transmission attempts.

4.1 Transactions

Transactions can be initiated on the POS and sent to FlexPoint. For each of these transactions the POS should send the appropriate Transaction ID values presented in Table 1. Mandatory fields and corrected disposition of optional fields in the message is required.

4.2 All Card Activity Takes Place on FlexPoint

All EMV/CHIP card insertions, Mag-stripe card swipes, or manual key-entries shall take place exclusively on the FlexPoint hardware. FlexPoint is incapable of receiving card

numbers transmitted from an POS in its outgoing transaction request.

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5. Retail Receipt Printing on the POS

FlexPoint has the ability to return a sales receipt to an POS system for storage and/or receipt printing on that system. The following information is useful in scenarios where the payment transaction receipt will not be printed by FlexPoint.

5.1 Receipt Printing Requirement

There is an important distinction to draw between the printed **sales receipt** produced by a POS system and the printed **payment transaction receipt** produced by FlexPoint. Receipts printed by certified hardware contain all of the required fields and information mandated by the Credit and Debit card associations.

Association rules dictate that cardholders must be provided with a printed payment transaction receipt originating from FlexPoint. FlexPoint is configured to print these receipts.

Alternatively, the POS may print the FlexPoint receipt instead of (or in addition to) FlexPoint by using the verbatim receipt fields in the FlexPoint response message.

5.2 Verbatim Receipts

Verbatim Receipts are output by FlexPoint in fields 11998 and 11999 of the response message. These fields are composed of a data string containing carriage returns and line feeds in rows of 24 characters. The POS need only read the <CR> and <LF>, and print the text verbatim. To turn Verbatim Receipt forwarding on, set VERBATIM RECEIPT to 'Yes' in the FlexPoint Configuration Variables.

Field 11998 contains the 'Cardholder Copy' of the verbatim transaction receipt and Field 11999 contains the 'Merchant Copy' of the verbatim transaction receipt.

5.3 Payment Receipt Example

```

1 RECEIPTRECEIPTRECEIPTREC
2 012345678901234567890123
3   Zigby's Fish N Chips
4   1234 Main St.
5   Toronto, ON, M0H 0H0
6   416-555-1212
7   ●
8   TRANSACTION RECORD
9
10  TRANS TYPE:      SALE
11  CARD NO:  XXXXXXXXXXXX1234
12  CARD TYPE:      DEBIT
13  ACCOUNT:       CHEQUING
14  ENTRY METHOD:   DIPPED
15  TIP:           $12.34
16  SURCHARGE:    $12.34
17  CASHBACK:     $123.45
18  TRANS:        $1234.56
19  TOTAL:        $1234.34
20
21  INVOICE:       0123456
22  TID:          01234567
23  OPERATOR:    012345678901
24  REFERENCE:   012345678901
25  SEQUENCE:    012345678901
26  AID:         A0000002771010
27  CTI:         AAC47354736237
28  TSI:         6800
29  DATE:        2013-06-25
30  TIME:        13:41:14
31  AUTHORIZATION: 000456
32
33  00 APPROVED 000 THANKS
34
35  CARDHOLDER COPY
36  ORIGINAL RECEIPT
37  0123456789012345678901234
38
39

```

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Figure 5-1 Receipt Sample

6. Communication, Configuration, Reporting

6.1 Communication Ports, Protocols and Cables

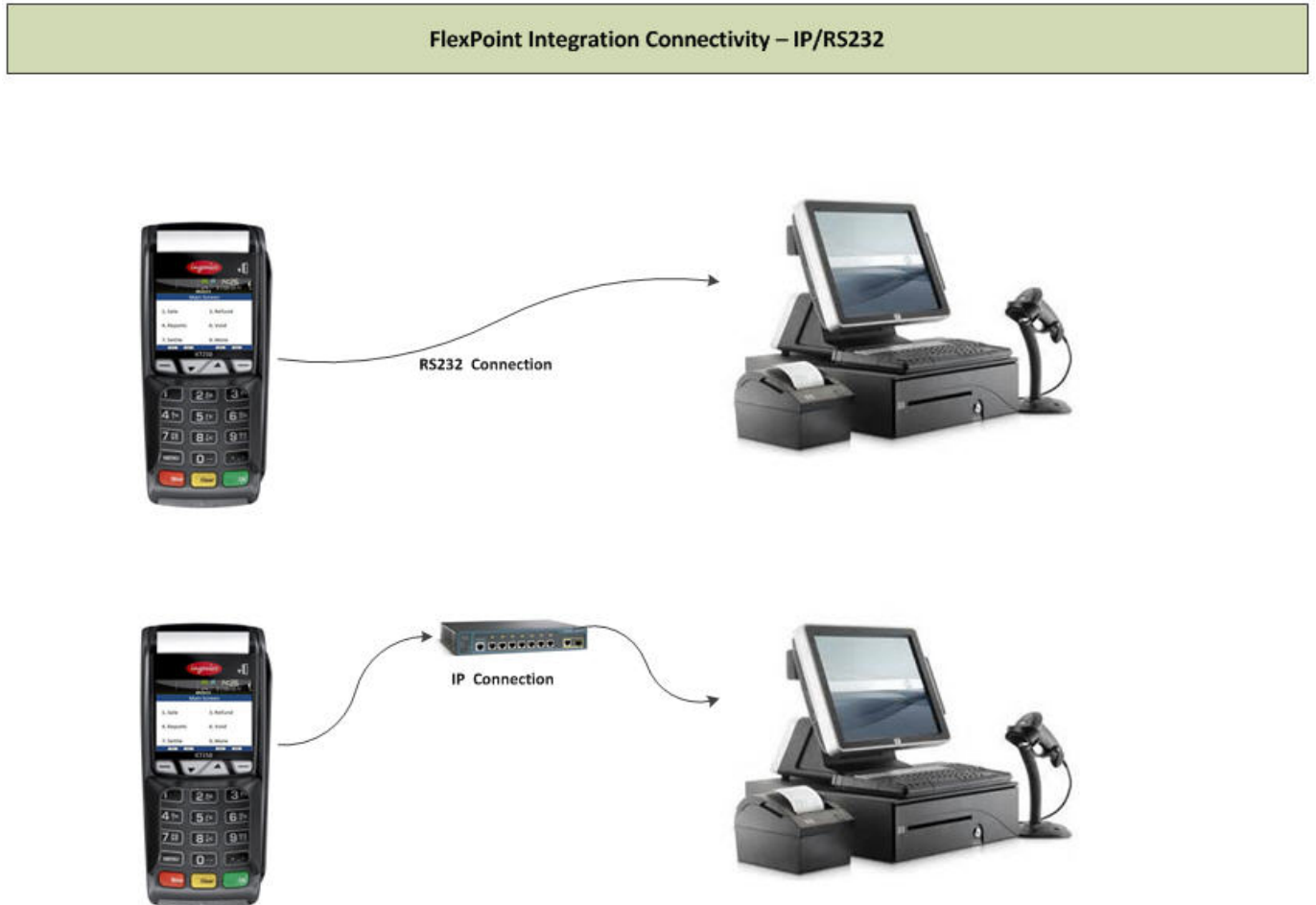


Figure 6-1 FlexPoint Integration Connectivity

6.1.1 Protocols for RS232 Serial Interface

Message protocol is 8 bits, no parity. Compatible baud settings listed in the Table 6 below.

6.1.2 Communication Ports

Depending on the FlexPoint model, Ethernet and RS232 are the available media for device-to-device communication.

6.1.3 RS232

- No hardware handshaking, no hardware or software flow control.
- 3-wire cable must be used.

6.1.4 Ethernet

- FlexPoint should be configured with a static IP.
- The device TID should be used as network name.

6.2 Configuration Variables

The following settings may be adjusted to modify the functionality of the integration using the specific configuration parameters defined in this table. They are adjusted in the admin settings screens on FlexPoint.

Config Label	Description	Values	Default
RETAIL MODE	Activate or deactivate integration	0 - Off 1 - On	Off
BEEP	Enable/disable application interface beep: (a) when a packet is received from the POS (b) when a packet is sent to the POS. N.B. This parameter is intended for troubleshooting purposes and should not normally be enabled in a production environment	0 - Off 1 - On	Off
RCVTO	POS receive timeout. Amount of time FlexPoint should wait to receive ACK packet from POS (in milliseconds)	User Defined	1000 ms
BAUD	Baud rate used to communicate with the POS	9600, 19200, 38400, 57600, 115200	19200
COMPRT	Comm port used to connect the POS to FlexPoint	1 - COM1 2 - COM2 3 - Ethernet 4 - Inter-App	COM1
VERBATIM RECEIPT	When set to 'On', FlexPoint will send a verbatim transaction receipt in fields 11998 and 11999 of the response message.	0 - Off 1 - On	Off
PRINT RECEIPT	Specifies which (if any) payment transaction receipts a FlexPoint device should print (not applicable to pin pads)	0 - both 1 - cardholder 2 - merchant 3 - none	0

Figure 6-2 Configuration Settings

Appendix A - AID's

To identify the card type by the associated AID's please refer to the below table for the Registered Application Identifier (RID).

Card Type	AID (RID + PIX)	RID	PIX
Amex	A00000002501	A000000025	01
Diners	A0000001523010	A000000152	3010
Discover	A0000003241010	A000000324	1010
Interac	A0000002771010	A000000277	1010
JCB	A0000000651010	A000000065	1010
MasterCard Credit	A0000000041010	A000000004	1010
MasterCard International Maestro	A0000000043060	A000000004	3060
MasterCard US Maestro	A0000000042203	A000000004	2203
Visa Credit	A0000000031010	A000000003	1010
Visa Debit International	A0000000031010	A000000003	1010
Visa Electron	A0000000032010	A000000003	2010
Visa Interlink	A0000000033010	A000000003	3010

The AID that is returned will include the RID + PIX (Proprietary Application Identifier Extension). The PIX is either a 2 or 4 digit number that is appended to the RID, for example MasterCard Credit PIX would be 1010 so the full AID would be A0000000041010. By parsing the AID you will be able to tell the card type such as Amex, Visa, Interac so you can identify that for the POS system.

- Registered Application Identifier (RID) - Represents the payment scheme (e.g. Visa, MasterCard, etc.)
- Proprietary Application Identifier Extension (PIX) - Represents the payment application type (i.e. credit, debit, prepaid, ATM-only, etc.)