



# POS INTEGRATION SPECIFICATIONS

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VERIFONE Vx SERIES AND ENGAGE SERIES

**CLIENT:** Client  
**ADDRESS:** Address Line 1  
Address Line 2  
Address Line 3  
Address Line 4  
**TEL:** + 603 XXX XXXX  
**FAX:** + 603 XXX XXXX

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**Date Created:** 1 January 2009  
**Doc Reference:** Doc reference  
**Version:** 1.0.17  
**Last Printed:** Thursday, November 14, 2019

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## Document Version History

This section details the changes that were made to this document. The first author is the creator of this document.

#	Version	Date	Author	Description
1	1.0.7	2009 Jan 1	GHF	Initial Version
2	1.0.8	2010 Jul 20	GHF	Added Void process flow and message format
3	1.0.11	2016 Jan 22	GHF	Modified Appendix B to support new card type, description and card range
4	1.0.12	2016 May 26	GHF	Added Settlement process flow and message format
5	1.0.13	2016 June 17	GHF	Added Refund process flow and message format
6	1.0.16	2019 Jan 08	GHF	Added Card Name message field to support eWallet type (eg: Alipay, Wechat Pay etc)
7				Card Name reused for eWallet transaction reference number
8	1.0.17	2019 Nov 14	GHF	Added new message fields (TID, MID and Batch number)
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## 1 Introduction

### 1.1 About the Application

The proposed solution is to connect the POS Machine on the Cashier Counter to VeriFone terminal models either Vx510 or Vx520 (hereafter known as the Terminal), to enable payment by one-time swipe/insert for card payments.

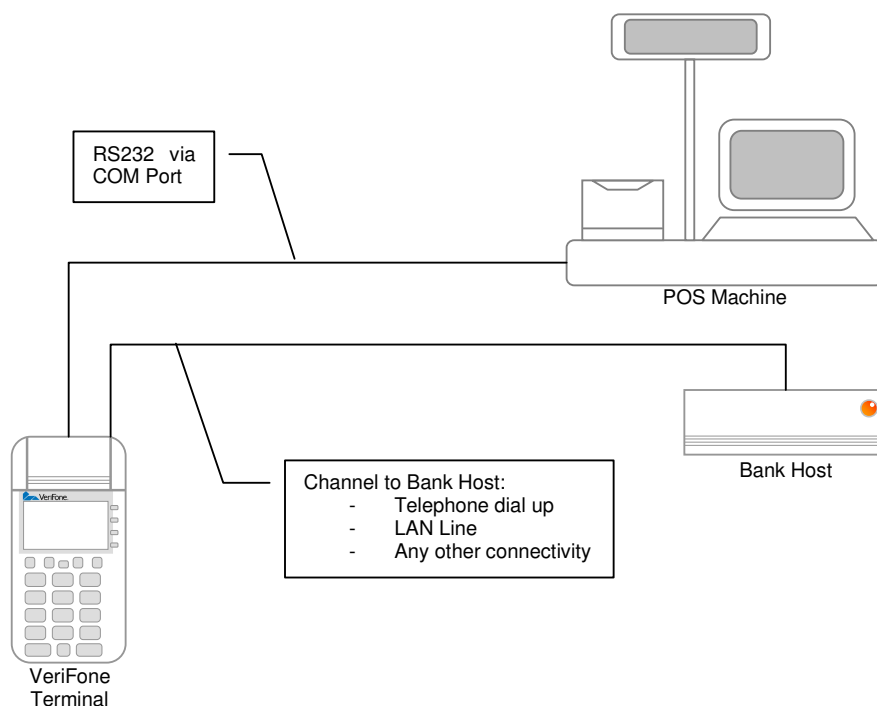
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## 2 Physical Connection

This section details the physical connection between the POS machine and the Verifone Terminal.



The Verifone Terminal will communicate with the POS Machine via RS232. The messaging protocol will be described in the sections below.

The Verifone Terminal will act as a slave device to the POS Machine. It will listen on its COM Port for instructions from the POS Machine.

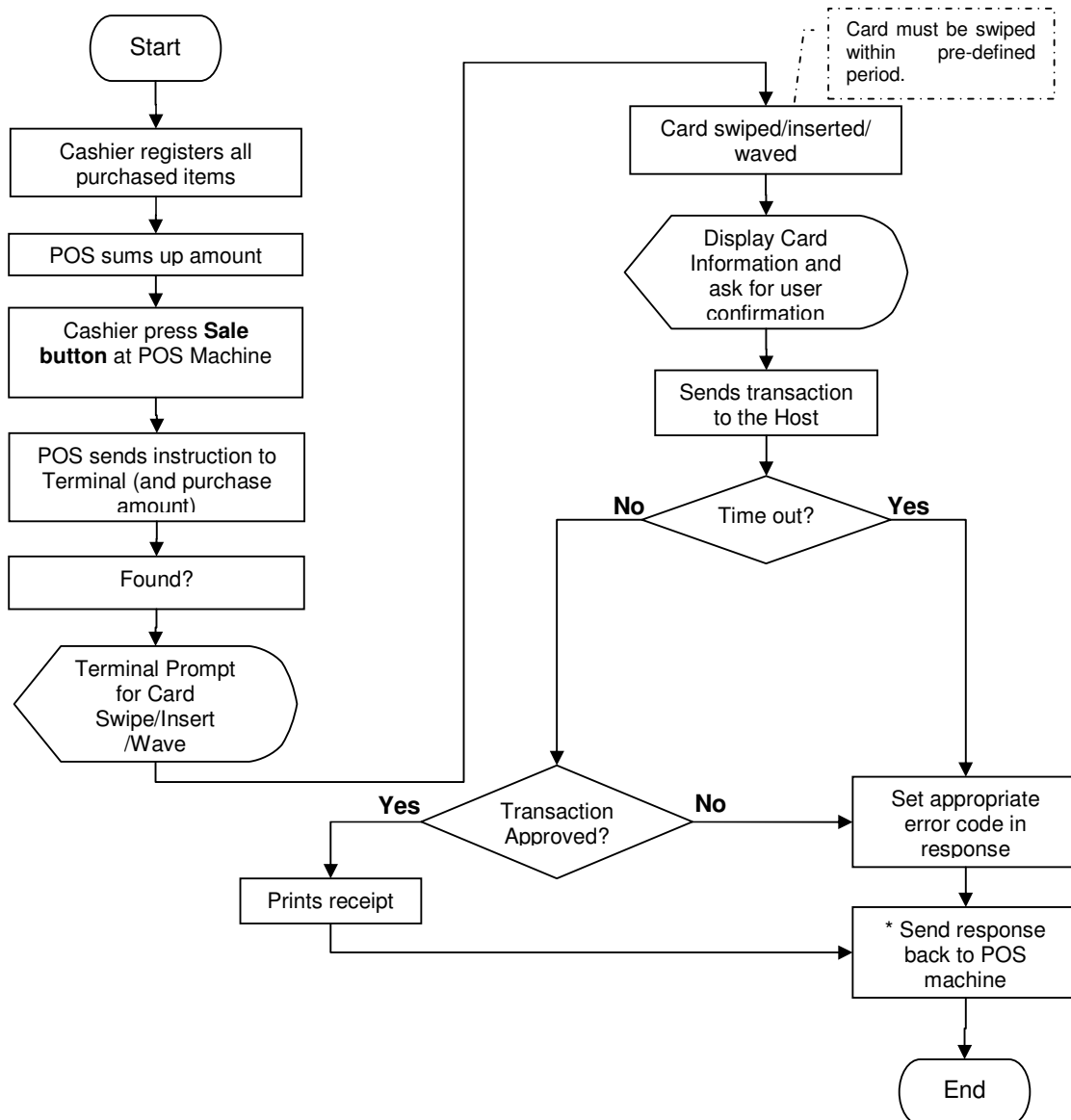
\*Please refer to Appendix C for each respective terminal's COM Port Settings.

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### 3 Process Flow

#### 3.1 Sale

The Sale process goes as below:



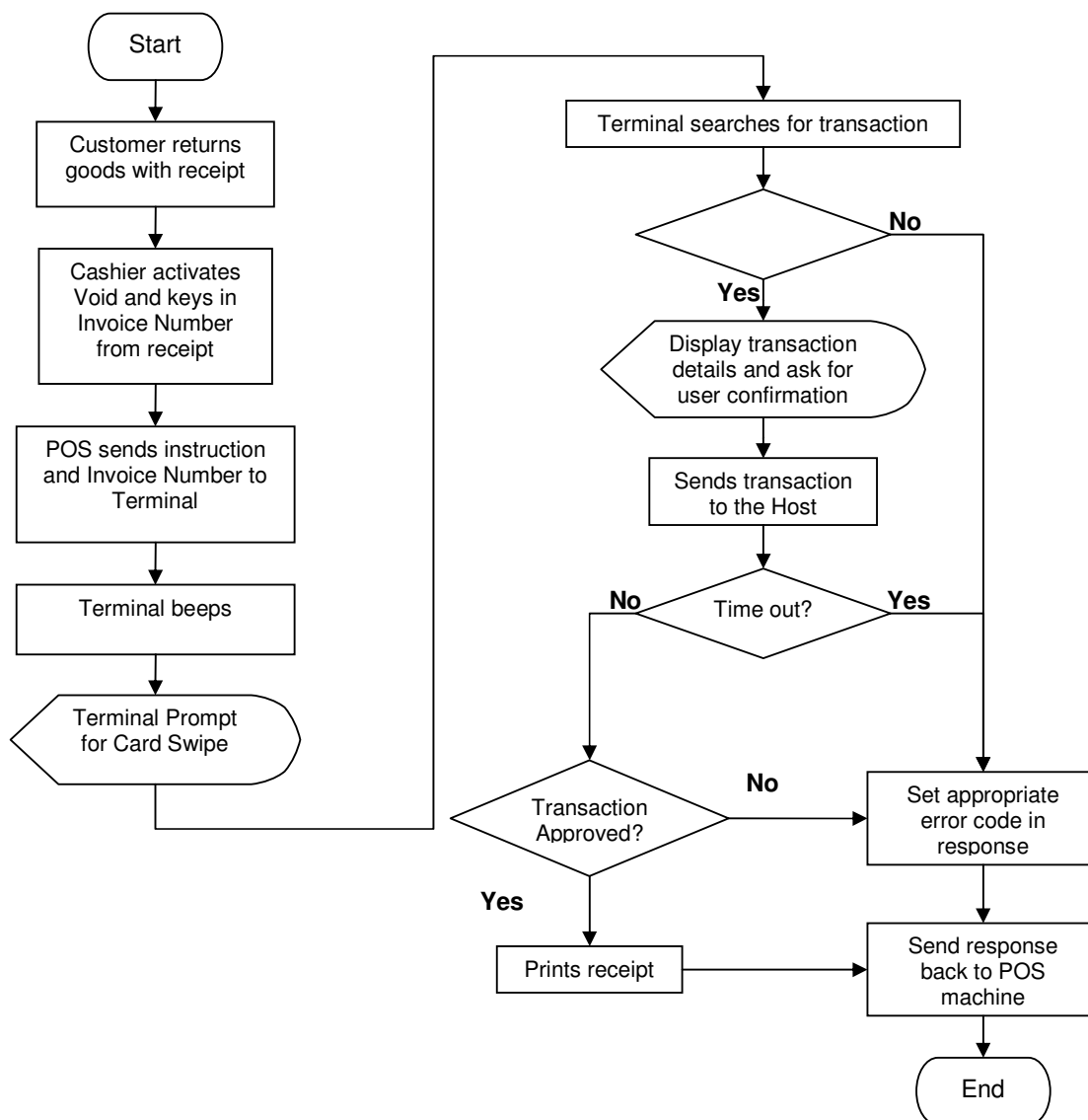
\* Assume POS machine did not receive any response sent from Terminal after transaction has approved, the POS machine will manually key-in the card detail and approval code get from the receipt.

\* Terminal will send both Gross amount and Net to POS Machine for Redemption. POS Machine will perform calculation to obtain the Redemption Amount.

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## 3.2 Void

The Void transaction will proceed as follows:

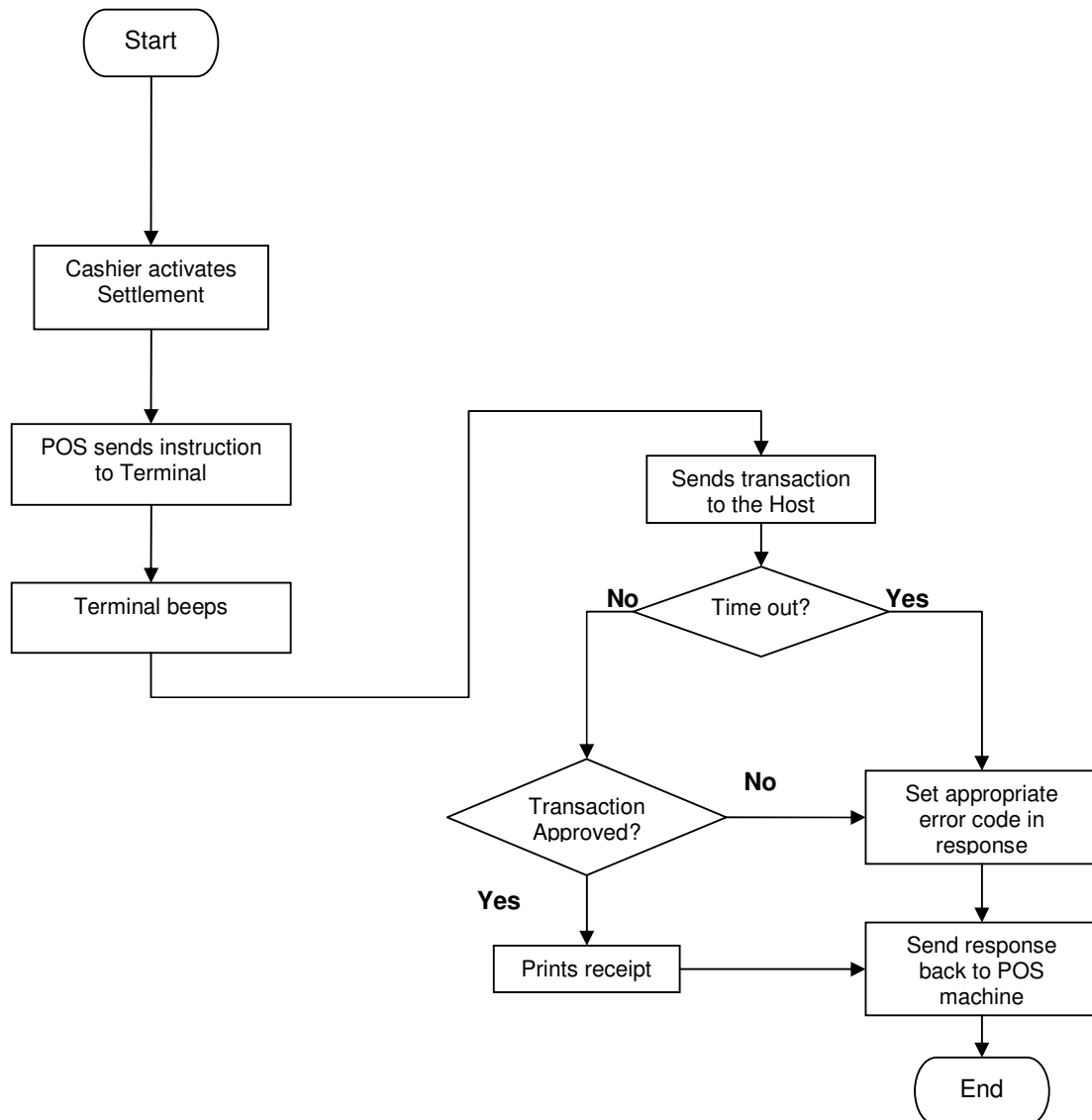


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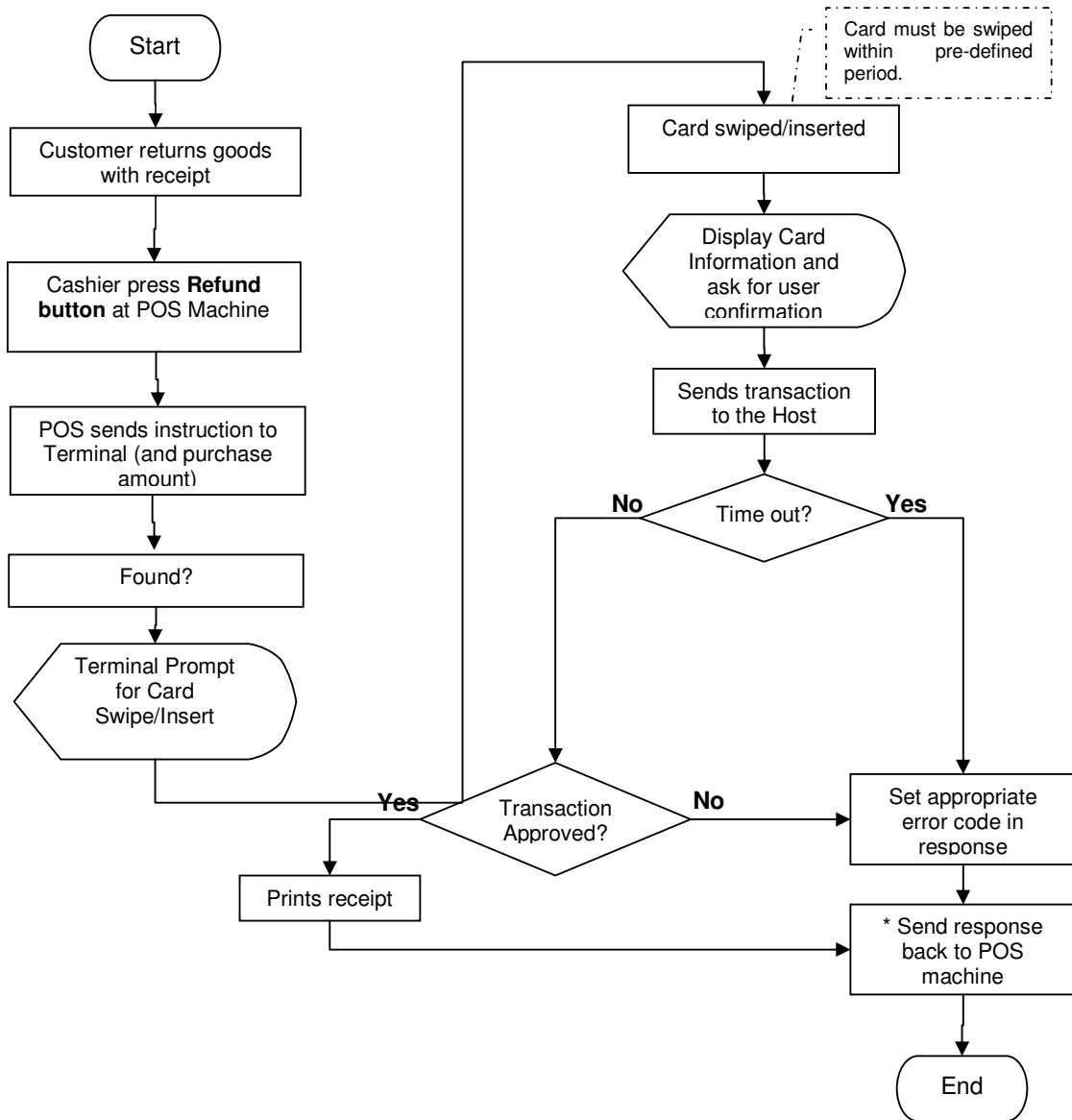
### 3.3 Settlement

The Settlement transaction will proceed as follows:



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### 3.4 Refund



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## 4 Message Format

All messages are fixed-length formatted.

### 4.1 From POS to Terminal

Message Field	Length	Notes
STX	1	Start of Text (0x02)
Command	N3	Command; "020" for Sale, "022" for Void, "050" for Settlement, "026" for Refund
Transaction Amount	N12	Amount to be transaction, 2 decimal points implied. For example, for RM12.28, the following will be sent: "000000001228". For Redemption, the transaction amount as the gross amount prior to redemption. For Settlement, pad with all 0s.
Invoice Number	N6	Invoice number, sent only during Void transaction. For Sale, pad with all 0s. For Settlement, pad with all 0s. For Refund, pad with all 0s.
Cashier Number	ANS4	Cashier Number. ( <i>Right-justified*, pad extra bytes with spaces</i> )
Check Digit	ANS8	Check digit.
ETX	1	End of text (0x03)

\*Example for Right-justified, Cashier Number "10" will be sent as " 10"

N – Denotes Numeric

AN – Denotes Alpha Numeric

ANS – Denotes Alpha Numeric with Special Characters

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## 4.2 From Terminal to POS

Message Field	Length	Notes
STX	1	Start of Text (0x02).
Command	N3	Command; "021" for Response to Sale, "023" for Response to Void, "051" for Response to Settlement, "027" for Response to Refund
Error Code	AN2	Error code. Denotes the status of the transaction.
Card Number	N22	<p>Card number for the card used. The first two bytes denote the length of the card number. Card number will be left-justified, and the extra bytes will be padded with zeroes.</p> <p>Terminal will send first 6 and last 4 digits of the card number in clear form to POS Machine. The digits in between will be masked with "X". For example, "4123456789012345" will be sent as "412345XXXXXX2345".</p> <p>For Settlement, pad with all 0s. For eWallet type, eWallet transaction reference number will be sent in clear format instead of card number</p>
Expiry Date	N4	<p>Expiry date of the card. (MMYY) For Settlement, pad with all 0s. For eWallet type, pad with all 0s</p>
Card Type	N2	<p>Type of card used in the transaction. For Settlement, pad with all 0s.</p>
Approval Code	ANS8	<p>Approval Code sent by the bank. (<i>Left-justified*</i>, pad extra bytes with spaces) For Settlement, pad with all spaces. For eWallet type, pad with all spaces</p>
Transaction Amount (Also called Gross Amount)	N12	<p>Amount for transaction, 2 decimal points implied. For example, for RM12.28, the following will be sent: "000000001228". For Settlement, pad with all 0s.</p>
Net Amount	N12	<p>Net Amount for transaction, 2 decimal points implied. For example, for RM12.28, the following will be sent: "000000001228". For Settlement, pad with all 0s.</p>
Trace Number	N6	<p>Trace number sent to the bank. (<i>Right-justified**</i>, pad extra bytes with 0s) For Settlement, pad with all 0s.</p>
Invoice Number	N6	<p>Invoice number used internally. (<i>Right-justified**</i>, pad extra bytes with 0s) For Settlement, pad with all 0s.</p>
Cashier Number	ANS4	Cashier Number. ( <i>Right-justified**</i> , pad extra bytes with spaces)
Card Name	AN15	Card type or eWallet type description ( <i>Right-justified**</i> , pad extra bytes with spaces)
Terminal ID	AN8	Terminal identifier ( <i>Right-justified**</i> , pad extra bytes with spaces)
Merchant ID	AN15	Merchant identifier ( <i>Right-justified**</i> , pad extra bytes with spaces)
Batch Number	N6	Batch number ( <i>Right-justified**</i> , pad extra bytes with 0s)

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**Functional Specification**

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Message Field	Length	Notes
Check Digit	ANS8	Check digit.
ETX	1	End of text (0x03).

\* Example of Left-justified, Approval Code "ABCDEF" will be sent as "ABCDEF "

\*\*Example for Right-justified, Trace Number "123" will be sent as "000123"

N – Denotes Numeric

AN – Denotes Alpha Numeric

ANS – Denotes Alpha Numeric with Special Characters

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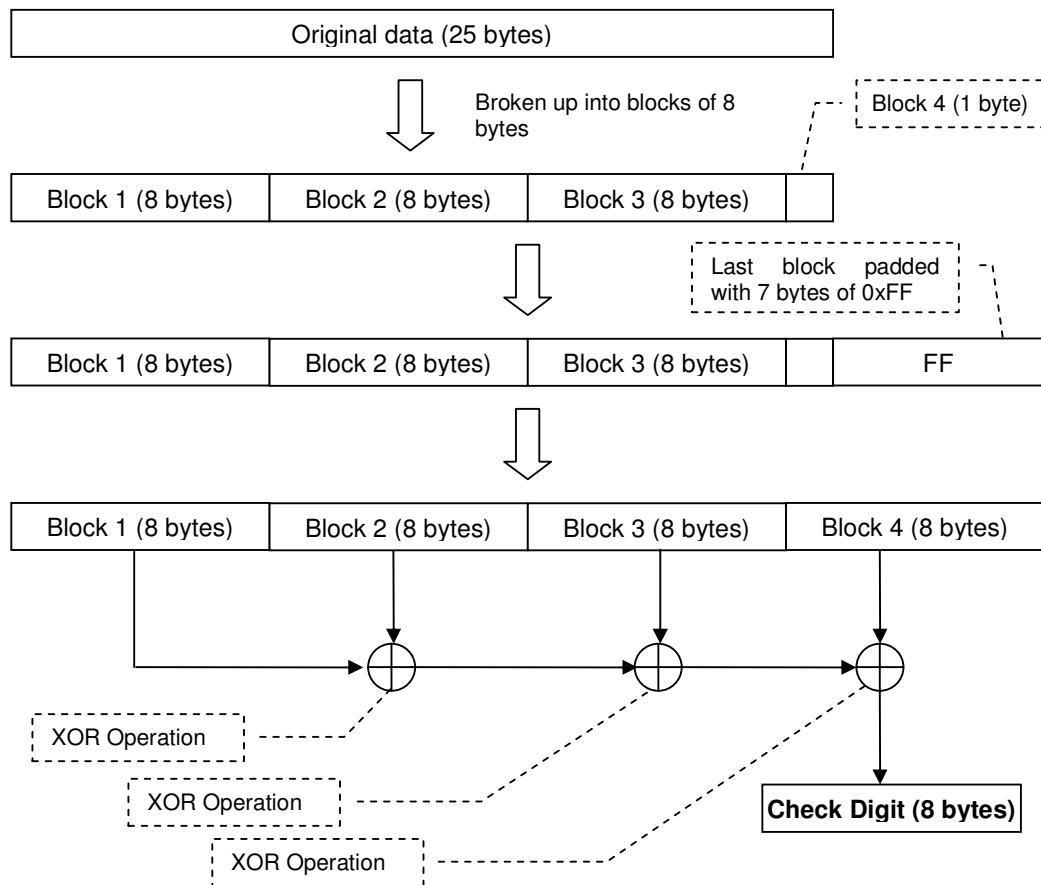
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## 5 Calculation of Check Digit

The check digit is calculated using all the fields after STX till the field just before the check digit. All the data for those fields are concatenated, and broken into blocks of 8 bytes. If the last block does not make up to 8 bytes, pad with bytes of 0xFF to make up the full 8 bytes.

Each of the blocks of 8 bytes are then XORed with one another, and the result of the operation is the 8-byte check digit.



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## Appendix A – Error Codes

The following error codes are used in the system.

Error Code	Description
BT	The transaction timed out from Bank's end
CT	The transaction timed out from Terminal's end (i.e. card was not swiped within a predefined period after command is received from POS). The transaction is cancelled on the terminal.
CD	Invalid Check Digit
00	Successful
01 - 99	Error from host

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## Appendix B – Card Type

Card Number	Description	Card Range (First 6 Digits)
04	VISA	400000 - 499999
05	MasterCard	510000 – 559999, 222100 - 272099
06	Diners	300000 – 308382, 308384 – 308532, 308534 – 309999, 360000 – 369999, 380000 – 399999, 601100 – 601109, 601120 – 601149, 601174 – 601174, 601177 – 601179, 601186 – 601199, 644000 – 659999
07	Amex	340000 – 349999, 370000 -- 37999
08	MyDebit	000000 – 999999
09	JCB	352800 - 358999
10	UnionPay	000000 - 999999
11	eWallet	N/A **

\*\* If eWallet (card number 11) is returned, refer to Card Name message field for wallet type description (eg: Alipay, Wechat Pay etc)

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**Appendix C – Communication Connection Setting**

Setting Type	Setting and Description
Comm Port	The communication Port use in the Terminal Comm Port 1 (Labeled with Arrow logo) – Engage Comm Port 1 (Labeled with RS232) – Vx Comm Port 2 (Labeled with PinPad logo) – Omni 3750
Baud Rate	5 - Rt_9600
Data Format	4 - Fmt_A8N1 (async, 8 data bits, no parity, one stop)
Protocol	0 - P_char_mode

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**Appendix D – Acceptance****POS Technical Specifications**

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