

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

Paysys

**ECR Communication
Specification**

DOCUMENT WRITTEN BY				
Department	Name	Date	Version	Terminal Model
IT	Kavee Alagan	22/12/2020	V 3.10	X990

DOCUMENT APPROVED BY				
Department	Name	Date		
IT	Yogesh Goel	22/12/2020		

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
	Page 1/38		

Table of Content

1	INTRODUCTION	4
1.1	REQUIREMENTS	4
1.1.1	Serial Communication	4
1.1.2	TCP/IP Protocol	4
1.2	PROTOCOL BEHAVIOR	5
1.3	PROTOCOL EXAMPLES:	6
1.3.1	Serial Communication	6
1.3.2	TCP/IP Protocol	7
1.4	CARD CAPTURE HANDLING	8
1.5	NOTES ON RESPONSE	8
1.6	NOTES ON HOST NO	8
1.7	NON ISO8583 RESPONSE CODES: -	9
2	TRANSACTIONS MESSAGE PACKETS	10
2.1	C200 (SALE TRANSACTION MESSAGE C200)	10
2.2	C201 (VOID TRANSACTION MESSAGE C201)	14
2.3	C203 (REFUND TRANSACTION MESSAGE C203)	16
2.4	C204 (CASH ADVANCE TRANSACTION MESSAGE C204)	20
2.5	C205 (MYDEBIT CASH BACK TRANSACTION MESSAGE C205)	22
1.1	C220 (ADJUST TRANSACTION MESSAGE C220)	24
2.6	C290 (SALE TRANSACTION MESSAGE C290 FOR ALIPAY, GHL-MAH WALLET PAY) EXTERNAL SCANNER	26
2.7	C292 (REFUND TRANSACTION MESSAGE C292 FOR ALIPAY, GHLMAH-WALLET PAY) EXTERNAL SCANNER	30
2.8	C500 (SETTLEMENT TRANSACTION MESSAGE C500)	34
2.9	C902 (ECHO TEST MESSAGE)	36
3	ISO 8583 DEFINITION	37
4	CARD TYPE	38

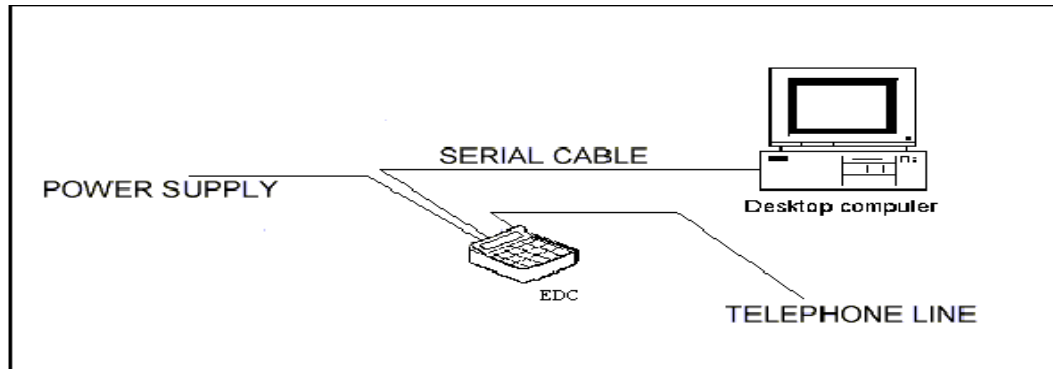
1 Introduction

The Ingenico serves as an EDC terminal to the ECR PC. It provides the functionality of a normal EDC with the difference that it is not manned. Actions will be prompted by the ECR PC as to perform sale transaction, via a RS232 cable or TCP/IP communication.

1.1 Requirements

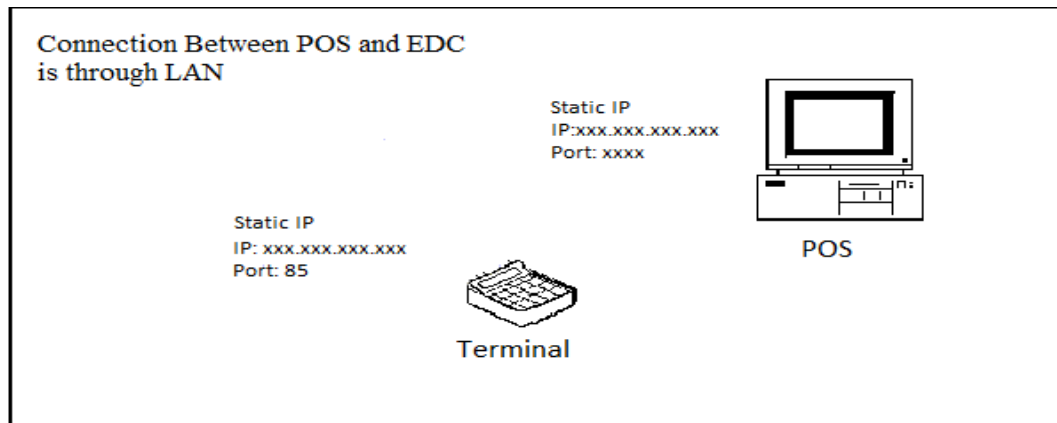
1.1.1 Serial Communication

The interface requires the PC to have a serial RS232 port to be used to connect to the Ingenico. The application interface to the terminal will be through message packets communicating at the baud rate of 9600, 8 bits, none parity & 1 stop bit.



1.1.2 TCP/IP Protocol

The interface requires the PC to have IP to be used to connect to the EDC. The application interface to the terminal will be through message packets communicating at configurable IP which should use static IP on both PC and EDC. POS should connect to **PORT 85** for the EDC.



ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

1.2 *Protocol Behavior*

Unless stated otherwise, the typical protocol between the terminal and the PC follows this behavior:

- Every command or response packet received shall be acknowledged with an ACK if the LRC is correct or a NAK if the LRC is incorrect.
- All commands will come in the form of Cxxx in the command field of the packet. Response will generate a response Rxxx in the response field to indicate a respond for that command.
- LRC is calculated based on the entire packet excluding the STX.
- All messages are fixed length are fixed length and this length is supposed to verified by the ECR as an additional check.

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
		Page 5/38	

1.3 Protocol Examples:

Below are some examples of the protocols that can happen.

1.3.1 Serial Communication

Typical Message Transmission

P.C.	Direction	Ingenico
ENQ	>	
	<	ACK
Sale Command C200 (STX,MSG,ETX,LRC)	>	
	<	ACK
Transaction is processed and sent to bank host for approval.		
	<	ENQ
ACK	>	
	<	Send R200 packet (STX,MSG,ETX,LRC)
ACK	>	
	<	EOT

Message Retry

P.C.	Direction	Ingenico
ENQ	>	
	<	ACK
Sale Command C200 (STX, MSG, ETX, LRC)	>	
	<	NAK (Reject Message)
Resend C200 (STX,MSG,ETX,LRC)	>	
	<	ACK
EOT	>	

1.3.2 TCP/IP Protocol

POS	Direction	Terminal (EDC)
ENQ	>	
	<	ACK
Sale Command C200 (STX,MSG,ETX,LRC)	>	
	<	ACK
<p><i>POS close the connection between POS and EDC</i> <i>And wait for the EDC to connect to POS.</i> Transaction will process and sent to bank host for approval. <i>After receive response from bank host,</i> <i>EDC will connect to POS in order to send the response packet message.</i></p>		
	<	ENQ
ACK	>	
	<	Send R200 packet (STX,MSG,ETX,LRC)
ACK	>	
	<	EOT

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

1.4 CARD CAPTURE HANDLING

The card swipe/insert handling is merged together with transaction messages, the terminal will automatically initiate a card swipe if there is a need to do so and return the Card Number to the PC therefore transaction such as SALE will automatically initiate a card swipe by itself. Please refer to the section of SAMPLE FLOW for further details. Not Applicable for Manual Entry Processing.

1.5 NOTES ON RESPONSE

In the Rxxx response packet the success or failure of the transaction will be based on the STATUS field, a 2 alphanumeric code representing the result of the transaction. It will be based on the ISO8583 return codes & also some other error condition codes describe in the following table. The response packet is always fixed sized, if there are no relevant data it will be replaced by spaces for alphanumeric & zeros for numeric.

1.6 NOTES ON HOST NO

For the host number to connect to this will be a table where the host number can be from 01-09. When the ECR Master chooses the host to connect to. The value set to 00 when the terminal will decide which host by itself. This setting need to be agreed upon before the terminal is deployed. As the mode must match on both the PC and terminal.

PC MODE=MANUAL SELECT then TERMINAL=MANUAL SELECT (Host# 01-09)

PC MODE=AUTOSELECT then TERMINAL=AUTO SELECT (Host#=00,terminal needs to program host selection based on Card Range.).

PC MODE = **CARD PAYMENTS** - send CP as host number for card payments only where the host will be determine by terminal.

PC MODE = **QR PAYMENTS** - send QR as host number for QR payments only where the host will be determine by terminal

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
		Page 8/38	

1.7 NON ISO8583 Response Codes: -

CODE	DESCRIPTION	ACTION
SE	Terminal Full	Initiate Settlement
PE	Pin Entry Error	Redo Transaction
IC	Invalid Card Swiped / Card Not Supported	Prompt for other Cards
EC	Card Expired	Prompt for other Cards
ZE	Zero Amount Settlement/No transaction	Already Settled
BU	Batch Not found during settlement on Host	FATAL ERROR Call Bank
CE	Comms Error or Connection Timeout	Retry Trans
RE	Record error ,Trace# not found during Void C201 or Sale Comp. C220	Check Trace#
HE	Host number Error applicable where msg includes <i>host number</i> field.	Check Host#
LE	Line Error ,No phone line.	Check Phone Line
VB	Transaction already Voided	
FE	File error, empty.	No trans. To void
WC	Card Number Not Matched	Check Card#
TA	Transaction Aborted	
AE	Amount not matched during Void and Adjust.	Check the amount.

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

2 Transactions Message Packets

This section will cover the transaction message packets that are supported:

Note**

The amount lengths for all transaction are fixed to 12 which will be left padded with 0.

2.1 C200 (Sale Transaction Message C200)

The request message sent to the EDC is a C200 (Sale Transaction Request) message type while the response message received from the EDC is a R210 (Sale Transaction Response) message type for normal transaction, G200 for GHMAH wallet pay and Q200 is using wallet through Maybank wallet host.

Packet Format:

Field	Length	Description
<STX>	1	Start of Packet
C200	4	Command
Host No.	2	Send: 00 - card and ewallet CP – for card payment QR – for QR payment
Amount	12	Amount of sale 9(10)v99
Additional Data	24	X(24) Additional Data
<ETX>	1	End of Packet
{LRC}	1	Checksum

Response Packet:

Field	Length	Description
<STX>	1	Start of Packet
R200	4	Response
Card Number	19	Credit Card Number (Masked)
Expiry Date	4	Card Expire Date (Masked)
Status Code	2	Refer to Appendix for more inf.
Approval Code	6	Approval Code from Bank
RRN	12	Retrieval Reference Number
Transaction Trace	6	Unique Transaction trace number
Batch Number	6	000000-999999
Host No.	2	Host number used to connect to
Terminal ID	8	Terminal ID (Receipt Printing)
Merchant ID	15	Merchant ID (Receipt Printing)
AID	14	EMV Application ID
TC	16	Transaction Cryptogram
Cardholder Name	26	Name on Card

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
		Page 10/38	

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

Card Type	2	Refer To Card Type Table
Prtnr TxnID	32	<i>Partner TransactionID</i> . This field will be present only for alipay transaction
Apay TxnID	64	<i>Alipay TransactionID</i> . This field will be present only for alipay transaction
CustomerID	32	<i>Alipay Customer ID</i> . This field will be present only for alipay transaction
<ETX>	1	End of Packet
{LRC}	1	Checksum

Response packet for GHM MAH Wallet pay: G200

Response Packet

Field	Length	Description
<STX>	1	Start of Packet
G200	4	Response
Status Code	2	Refer to Appendix for more inf.
Transaction Trace	6	Unique Transaction trace number
Batch Number	6	000000-999999
Host No.	2	Host number used to connect to
TID	8	Terminal ID
MID	15	Merchant ID
MAH Txn ID	40	Transaction ID assigned by MAH Host
Application Txn ID	40	Transaction ID assigned or provided by the Application Host.
Product Brand	40	MAH Product Brand. Eg: WECHATPAY
Total RMB	16	Amount in RMB currency. For Wechat and Alipay receipts. (This field will be present only for Alipay, Wechat wallets)
Exchange Rate	16	Exchange Rate between the transaction currency and the wallet currency. (This field will be present only for Alipay, Wechat wallets)
<ETX>	1	End of Packet
{LRC}	1	Checksum

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
		Page 11/38	

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

Response packet for MBB QR pay: Q200

Response Packet

Field	Length	Description
<STX>	1	Start of Packet
Q200	4	Response
Status Code	2	Refer to Appendix for more inf.
Status Desk	32	Service Result Description
Transaction Trace	6	Unique Transaction trace number
Batch Number	6	000000-999999
Host No.	2	Host number used to connect to
TID	8	Terminal ID
MID	15	Merchant ID
App ID	8	Wallet Application Identifier: Eg: MB000001-MBBQRPAY MB000002-WECHAT MB000003-ALIPAY
Currency	3	Complies with ISO4217 standards and uses 3 characters based code.
Total Amount	12	Specifies the total amount for transaction
Cash Fee Type	3	Complies with ISO 4217 standards and uses 3 characters based code. Eg: CNY
Cash Fee	12	Specifies the total amount for a transaction in the currency specified in the field "Cash Fee Type".
Order No	14	Unique number generated by the terminal. Also used for refund
MBB Transaction ID	LLLLValue	Maybank Payment system Transaction id. The first 4 bytes represent length of the transaction ID. The length is followed by transaction ID value.
End Time	14	Specifies transaction creation time in the format of yyyyMMddHHmmss
User Account	128	User account information
Card Type Desc	100	e.g MBB QR Pay Casa
<ETX>	1	End of Packet
{LRC}	1	Checksum

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
		Page 12/38	

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

SALE PROCESS

PC		EDC
<STX>C200 [Host#] [Amount] [Additional Data][ETX] {LRC}	>	Checks the LRC & validates the message type
	<	ACK if LRC ok
		<ul style="list-style-type: none"> • Swipe Card Prompt or Qrcode Scan prompt • Request for Pin if required • Connect to Host
	>	<ul style="list-style-type: none"> • Check Reversal & Clear If Any • Send & Received Response From Host • Send Response to PC
	<	<STX>R200[CRD#][EXP DATE][STATUS][Approval Code][RRN][Trace#][Batch#][Host#][TID][MID]<ETX>{LRC} <STX>G200[StatusCode][Transaction Trace][BatchNumber][HostNo][TID][MID][MAHTxnID][ApplicationTxnID][Product Brand][TotalRMB][ExchangeRate]<ETX>{LRC}

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
	Page 13/38		

2.2 C201 (VOID Transaction Message C201)

The request message sent to the EDC is a C201 (Void Transaction Request) message type while the response message received from the EDC is a R201 (Void Transaction Response) message type for normal transaction and for GHIL MAH Wallet Pay.

Packet Format:

Field	Length	Description
<STX>	1	Start of Packet
C201	4	Command
Host No.	2	Host number used to connect to
Amount	12	Amount of sale 9(10)v99
Transaction Trace #	6	Trace# of the transaction from the R200 reply
<ETX>	1	End of Packet
{LRC}	1	Checksum

Response Packet:

Field	Length	Description
<STX>	1	Start of Packet
R201	4	Response
Amount	12	Amount of sale 9(10)v99
Status Code	2	Refer to Appendix for more inf.
Approval Code	6	Approval Code from Bank
RRN	12	Retrieval Reference Number
Transaction Trace	6	Unique Transaction trace number
Batch Number	6	000000-999999
Host No.	2	Host number used to connect to
Prtnr Txn ID	32	<i>Partner TransactionID</i> . This field will be present only for alipay transaction
Apay Txn ID	64	<i>Alipay TransactionID</i> . This field will be present only for alipay transaction
CustomerID	32	<i>Alipay Customer ID</i> . This field will be present only for alipay transaction
<ETX>	1	End of Packet
{LRC}	1	Checksum

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

VOID PROCESS

PC	EDC
<STX>C201[Host#] [AMOUNT] [Transaction Trace] [ETX]{LRC}	> Checks the LRC & validates the message type
	< ACK if LRC ok
	<ul style="list-style-type: none"> • Connect to Host • Send & Receive Response From Host • Send Response to PC
	< <STX>R201[AMOUNT][STATUS][Approval Code][RRN][Trace#][Batch#][Host#]<ETX>{LRC}

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
		Page 15/38	

2.3 C203 (Refund Transaction Message C203)

The request message sent to the EDC is a C203 (Refund/Topup Transaction Request) message type while the response message received from the EDC is a R203 (Refund/Topup Transaction Response) message type and G203 for GHM MAH Wallet Pay.

Packet Format:

Field	Length	Description
<STX>	1	Start of Packet
C203	4	Command
Host No.	2	Host number to connect to
Amount	12	Amount of Refund/Topup 9(10)v99
Original Amount	12	This is amount from the original sale transaction and only required for Alipay Host.
Additional Data	24	X(24) Additional Data
<ETX>	1	End of Packet
{LRC}	1	Checksum

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

Response Packet: R203

Field	Length	Description
<STX>	1	Start of Packet
R203	4	Response
Card Number	19	Credit Card Number (Masked)
Expiry Date	4	Card Expire Date(Masked)
Status Code	2	Refer to Appendix for more inf.
Approval Code	6	Approval Code from Bank
RRN	12	Retrieval Reference Number
Transaction Trace	6	Unique Transaction trace number
Batch Number	6	000000-999999
Host No.	2	Host number used to connect to
Terminal ID	8	Terminal ID (Receipt Printing)
Merchant ID	15	Merchant ID (Receipt Printing)
AID	14	EMV Application ID
TC	16	Transaction Cryptogram
Cardholder Name	26	Name on Card
Card Type	2	Refer To Card Type Table
Amount	12	<i>Amount refunded</i> (This field will be present only for alipay transaction)
Original Amount	12	<i>Original Sale Amount</i> (This field will be present only for alipay transaction)
Prtnr Txn ID	32	<i>Partner TransactionID</i> (This field will be present only for alipay transaction.)
Apay Txn ID	64	<i>Alipay Transaction ID</i> (This field will be present only for alipay transaction.)
CustomerID	32	<i>Alipay Customer ID</i> . This field will be present only for alipay transaction
<ETX>	1	End of Packet
{LRC}	1	Checksum

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
		Page 17/38	

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

GHL MAH Response packet: G203

Field	Length	Description
<STX>	1	Start of Packet
G203	4	Response
Status Code	2	Refer to Appendix for more inf.
Transaction Trace	6	Unique Transaction trace number
Batch Number	6	000000-999999
Host No.	2	Host number used to connect to
TID	8	Terminal ID
MID	15	Merchant ID
MAH Txn ID	40	Transaction ID assigned by MAH Host
Application Txn ID	40	Transaction ID assigned or provided by the Application Host.
Product Brand	40	MAH Product Brand. Eg: WECHATPAY
Total RMB	16	Amount in RMB currency. For Wechat and Alipay receipts. (This field will be present only for Alipay, Wechat wallets)
Exchange Rate	16	Exchange Rate between the transaction currency and the wallet currency. (This field will be present only for Alipay, Wechat wallets)
<ETX>	1	End of Packet
{LRC}	1	Checksum

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
		Page 18/38	

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

REFUND PROCESS

PC		EDC
<STX>C203 [Host#] [Amount] [Additional Data][ETX] {LRC}	>	Checks the LRC & validates the message type
	<	ACK if LRC ok
		<ul style="list-style-type: none"> • Swipe Card Prompt or Scan barcode • If Debit Request for Pin • Connect to Host • Check Reversal & Clear If Any
	>	<ul style="list-style-type: none"> • Send & Received Response From Host • Send Response to PC
	<	<STX>R203[CRD#][EXP DATE][STATUS][Approval Code][RRN][Trace#][Batch#][Host#][TID][MID]<ETX>{LRC} <STX>G203[StatusCode][Transaction Trace][BatchNumber][HostNo][TID][MID][MAHTxnID][ApplicationTxnID][Product Brand][TotalRMB][ExchangeRate]<ETX>{LRC}

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
	Page 19/38		

2.4 C204 (Cash Advance Transaction Message C204)

The request message sent to the EDC is a C204 (Cash Advance Transaction Request) message type while the response message received from the host is a R204 (Cash Advance Transaction Response) message type.

Packet Format:

Field	Length	Description
<STX>	1	Start of Packet
C204	4	Command
Host No.	2	Host number to connect to
Amount	12	Amount of sale 9(10)v99
Additional Data	24	X(24) Additional Data
<ETX>	1	End of Packet
{LRC}	1	Checksum

Packet:

Field	Length	Description
<STX>	1	Start of Packet
R204	4	Response
Card Number	19	Credit Card Number (Masked)
Expiry Date	4	Card Expire Date (Masked)
Status Code	2	Refer to Appendix for more inf.
Approval Code	6	Approval Code from Bank
RRN	12	Retrieval Reference Number
Transaction Trace	6	Unique Transaction trace number
Batch Number	6	000000-999999
Host No.	2	Host number used to connect to
Terminal ID	8	Terminal ID (Receipt Printing)
Merchant ID	15	Merchant ID (Receipt Printing)
AID	14	EMV Application ID
TC	16	Transaction Cryptogram
Cardholder Name	26	Name on Card
Card Type	2	Refer To Card Type Table
<ETX>	1	End of Packet
{LRC}	1	Checksum

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

CASH ADVANCE PROCESS

PC		EDC
<STX>C204 [Host#] [Amount] [Additional Data][ETX] {LRC}	>	Checks the LRC & validates the message type
	<	ACK if LRC ok
	>	<ul style="list-style-type: none"> • Swipe Card Prompt • Connect to Host • Check Reversal & Clear If Any • Send & Received Response From Host • Send Response to PC
	<	<STX>R204[CRD#][EXP DATE][STATUS][Approval Code][RRN][Trace#][Batch#][Host#][TID][MID]<ETX>{LRC}
ACK if received packet	>	<ul style="list-style-type: none"> • If after 3xRetry or connect timeout the PC failed to send an ACK to signal it's received the packet, terminal still will proceed to print out the receipt

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
	Page 21/38		

2.5 C205 (MyDebit Cash Back Transaction Message C205)

The request message sent to the host is a C205 (CashOut Transaction Request) message type while the response message received from the host is a R205 (CashOut Transaction Response) message type.

Packet Format:

Field	Length	Description
<STX>	1	Start of Packet
C205	4	Command
Host No.	2	Host number to connect to
Amount	12	Amount of sale 9(10)v99
CashBack Amount	12	Amount of Cash 9(10)v99
Additional Data	24	X(24) Additional Data
<ETX>	1	End of Packet
{LRC}	1	Checksum

Response Packet:

Field	Length	Description
<STX>	1	Start of Packet
R205	4	Response
Card Number	19	Credit Card Number (Masked)
Expiry Date	4	Card Expire Date (Masked)
Status Code	2	Refer to Appendix for more inf.
Approval Code	6	Approval Code from Bank
RRN	12	Retrieval Reference Number
Transaction Trace	6	Unique Transaction trace number
Batch Number	6	000000-999999
Host No.	2	Host number used to connect to
Terminal ID	8	Terminal ID (Receipt Printing)
Merchant ID	15	Merchant ID (Receipt Printing)
AID	14	EMV Application ID
TC	16	Transaction Cryptogram
Cardholder Name	26	Name on Card
Card Type	2	Refer To Card Type Table
<ETX>	1	End of Packet
{LRC}	1	Checksum

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

CASH ADVANCE PROCESS

PC		EDC
<STX>C205 [Host#] [Amount][Cash] [Additional Data][ETX] {LRC}	>	Checks the LRC & validates the message type
	<	ACK if LRC ok
	>	<ul style="list-style-type: none"> • Present Card • Connect to Host • Check Reversal & Clear If Any • Send & Receive Response From Host • Send Response to PC
	<	<STX>R205[CRD#][EXP DATE][STATUS][Approval Code][RRN][Trace#][Batch#][Host#][TID][MID]<ETX>{LRC}
ACK if received packet	>	<ul style="list-style-type: none"> • If after 3xRetry or connect timeout the PC failed to send an ACK to signal it's received the packet, then a reversal will be sent to the host during the next online transaction.

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
	Page 23/38		

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

1.1 C220 (Adjust Transaction Message C220)

The request message sent to the EDC is a C220 (Adjust Transaction Request) message type.

Packet Format:

Field	Length	Description
<STX>	1	Start of Packet
C220	4	Command
Host No.	2	Host number used to connect to
Transaction Trace	6	Unique Transaction trace number
TIP Amount	5	Tip Amount of sale 9(3)v99
Original Amount	12	Original Amount of sale 9(10)v99
<ETX>	1	End of Packet
{LRC}	1	Checksum

Response Packet:

Field	Length	Description
<STX>	1	Start of Packet
R220	4	Response
Status Code	2	Refer to Appendix for more inf.
Approval Code	6	Approval Code from Bank
RRN	12	Retrieval Reference Number
Transaction Trace	6	Unique Transaction trace number
Batch Number	6	000000-999999
Host No.	2	Host number used to connect to
<ETX>	1	End of Packet
{LRC}	1	Checksum

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
		Page 24/38	

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

ADJUST PROCESS

PC		EDC
<STX>C220[Host#] [Transaction Trace] [TIP AMOUNT] [ORG AMOUNT] [ETX]{LRC}	>	Checks the LRC & validates the message type
	<	ACK if LRC ok
		<ul style="list-style-type: none"> • Search For Transaction • Connect to Host • Check Reversal & Clear If Any • Send & Received Response From Host • Send Response to PC
	<	<STX>R220[STATUS][Approval Code][RRN][Trace#][Batch#] [Host#]<ETX>{LRC}
ACK if received packet	>	<ul style="list-style-type: none"> • If after 3xRetry or connect timeout the PC failed to send an ACK to signal it's received the packet, terminal still will proceed to print out the receipt.

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
	Page 25/38		

2.6 C290 (Sale Transaction Message C290 For Alipay, GHL-MAH Wallet Pay) *external scanner*

The request message sent to the EDC is a C290 message type while the response message received from the EDC is a R290 message type. Here, the qrcodeID, qrcodeNo will be scanned and sent from POS. For GHL MAH Wallet Pay G290 is received from EDC.

Packet Format:

Field	Length	Description
<STX>	1	Start of Packet
C290	4	Command
Host No.	2	Host number to connect to
Amount	12	Sale amount
Qrcode ID	2	Alipay =01, GHLMAH=03
Qrcode No	LLLLValue	<p>Scanned qrcode value.</p> <p>The first 4 bytes represent length of the qrcode. The length is followed by Qrcode value.</p> <p>Eg:</p> <p>If the qrcode value is 288586278523612821</p> <p>then QrcodeNo field will be filled as follows:</p> <p>0018288586278523612821 ,</p> <p>where 18 is the length of the qrcode.</p>
Additional Data	24	Additional Data
<ETX>	1	End of Packet
{LRC}	1	Checksum

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

Response Packet: R290

Field	Length	Description
<STX>	1	Start of Packet
R290	4	Response
Status Code	2	Refer to Appendix for more inf.
Approval Code	6	Approval Code from Bank
Transaction Trace#	6	Unique Transaction trace number
Batch Number	6	000000-999999
Host No.	2	Host number used to connect to
Terminal ID	8	Terminal ID (Receipt Printing)
Merchant ID	15	Merchant ID (Receipt Printing)
Prtnr Txn ID	32	<i>Partner TransactionID</i> (Required for receipt printing)
Apay Txn ID	64	<i>Alipay TransactionID</i> (Required for receipt printing)
CustomerID	32	<i>Alipay Customer ID</i>
<ETX>	1	End of Packet
{LRC}	1	Checksum

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
		Page 27/38	

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

Response packet for GHL MAH Wallet pay: G290

Field	Length	Description
<STX>	1	Start of Packet
G290	4	Response
Status Code	2	Refer to Appendix for more inf.
Transaction Trace	6	Unique Transaction trace number
Batch Number	6	000000-999999
Host No.	2	Host number used to connect to
TID	8	Terminal ID
MID	15	Merchant ID
MAH Txn ID	40	Transaction ID assigned by MAH Host
Application Txn ID	40	Transaction ID assigned or provided by the Application Host.
Product Brand	40	MAH Product Brand. Eg: WECHATPAY
Total RMB	16	Amount in RMB currency. For Wechat and Alipay receipts. (This field will be present only for Alipay, Wechat wallets)
Exchange Rate	16	Exchange Rate between the transaction currency and the wallet currency. (This field will be present only for Alipay, Wechat wallets)
<ETX>	1	End of Packet
{LRC}	1	Checksum

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
		Page 28/38	

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

SALE PROCESS

PC		EDC
<STX>G290[Host#][Amount][*itemdescription][ETX] {LRC}	>	Checks the LRC & validates the message type
	<	ACK if LRC ok
		<ul style="list-style-type: none"> • Qrcode Scan prompt • Connect to Host • Send & Receive Response From Host • Send Response to PC
	>	<STX>[R290][STATUS][Approval Code][Trace#][Batch#][Host#][TID][MID][Prtnr Txn ID][Apay Txn ID]<ETX>{LRC}
		<STX>G290[StatusCode][Transaction Trace][BatchNumber][HostNo][TID][MID][MAHTxnID][ApplicationTxnID][Product Brand][TotalRMB][ExchangeRate]<ETX>{LRC}

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
	Page 29/38		

2.7 C292 (Refund Transaction Message C292 for Alipay, GHLMAH-Wallet Pay) external scanner

The request message sent to the EDC is a C292 (Refund Transaction Request) message type while the response message received from the host is a R292 (Refund Transaction Response) message type for Alipay Host and G292 message type for GHLMAH Wallet Pay. Here, *Partner Transaction ID (for Alipay Host)/MAH Transaction ID* will be scanned and sent by the POS.

Packet Format:

Field	Length	Description
<STX>	1	Start of Packet
C292	4	Command
Qrcode ID	2	Alipay =01, GHLMAH=03
Amount	12	Amount to refund
Original Amount	12	Original Amount of transaction that needed refund
Prtnr Txn ID (Alipay) OR MAH Txn ID(GHLMAH)	32 LLLLValue	Partner Transaction ID of the transaction to be refunded. (left padded with spaces) MAH Transaction ID. (This field is used only for GHLMAH host) The first 4 bytes represent length of the MAHTxnID. The length is followed by MAHTxnID value. Eg: If the value of MAHTxnID is GWCP0000000219 then MAH Txn ID field will be filled in as follows: 0014GWCP0000000219 , where 14 is the length of the qrcode.
Additional Data	24	Additional Data
<ETX>	1	End of Packet
{LRC}	1	Checksum

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

Response Packet: R292

Field	Length	Description
<STX>	1	Start of Packet
R292	4	Response
Amount	12	Amount refunded
Original Amount	12	Original amount
Status Code	2	Refer to Appendix for more inf.
Transaction Trace	6	Unique Transaction trace number
Batch Number	6	000000-999999
Host No.	2	Host number used to connect to
Terminal ID	8	Terminal ID (Receipt Printing)
Merchant ID	15	Merchant ID (Receipt Printing)
Prtnr Txn ID	32	<i>Partner TransactionID</i>
Apay Txn ID	64	<i>Alipay TransactionID</i>
CustomerID	32	<i>Alipay Customer ID.</i>
<ETX>	1	End of Packet
{LRC}	1	Checksum

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
		Page 31/38	

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

Response packet for GHL MAH Wallet pay: G292

Field	Length	Description
<STX>	1	Start of Packet
G292	4	Response
Status Code	2	Refer to Appendix for more inf.
Transaction Trace	6	Unique Transaction trace number
Batch Number	6	000000-999999
Host No.	2	Host number used to connect to
MID	15	Merchant ID
MAH Txn ID	40	Transaction ID assigned by MAH Host
Application Txn ID	40	Transaction ID assigned or provided by the Application Host.
Product Brand	40	MAH Product Brand. Eg: WECHATPAY
Total RMB	16	Amount in RMB currency. For Wechat and Alipay receipts. (This field will be present only for Alipay, Wechat wallets)
Exchange Rate	16	Exchange Rate between the transaction currency (This field will be present only for Alipay, Wechat wallets)
<ETX>	1	End of Packet
{LRC}	1	Checksum

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
		Page 32/38	

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

Refund Process

PC		EDC
<STX>[C292] [Host#] [Amount] [Partner Transaction ID] [Additional Data] [ETX] {LRC}	>	Checks the LRC & validates the message type
	<	ACK if LRC ok
		<ul style="list-style-type: none"> The terminal receives the Partner transaction ID from ECR. Connect to Host Check Reversal & Clear If Any
	>	<ul style="list-style-type: none"> Send & Received Response From Host Send Response to PC
	<	<STX>[R292[Amount][Original Amount][STATUS][Approval Code][Trace#][Batch#][Host#][TID][MID][Prtnr Txn ID][Apay Txn ID]<ETX>{LRC} <STX>G292[StatusCode][Transaction Trace][BatchNumber][HostNo][TID][MID][MAHTxnID][ApplicationTxnID][Product Brand][TotalRMB][ExchangeRate]<ETX>{LRC}

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
	Page 33/38		

2.8 C500 (Settlement Transaction Message C500)

The request message sent to the EDC is a C500 (Settlement Transaction Request) message type while the response message received from the EDC is a R500 (Financial Transaction Response) message type.

Packet Format:

Field	Length	Description
<STX>	1	Start of Packet
C500	4	Command
Host Number	2	Host number used to connect to
<ETX>	1	End of Packet
{LRC}	1	Checksum

Response Packet:

Field	Length	Description
<STX>	1	Start of Packet
R500	4	Response
Host No.	2	Host number used to connect to
Status Code	2	Refer to Appendix for more inf.
Batch Number	6	000000-999999
Batch Count	3	000-999 Approved Transactions
Batch Amount	12	9(10)v99 Total Amount
<ETX>	1	End of Packet
{LRC}	1	Checksum

SETTLEMENT PROCESS

PC		EDC
<STX>C500[HOST#][ETX]{LRC}	>	Checks the LRC & validates the message type
	<	ACK if LRC ok
		<ul style="list-style-type: none"> • Search For Transaction • Connect to Host • Check Reversal & Clear If Any • Send & Received Response From Host • Batch Xfer if Required • Send Response to PC
	<	<STX>R500[Host#][STATUS][BATCH#][BATCH COUNT][BATCHAMOUNT][SOC]<ETX>{LRC}
ACK if received packet	>	<ul style="list-style-type: none"> • If after 3xRetry or connect timeout the PC failed to send an ACK to signal it's received the packet, terminal still will proceed to print out the receipt.

2.9 C902 (Echo Test Message)

The request message sent to the EDC is a C902 (Echo Test Message) message type while the response message received from the EDC is a R902 (Echo Test Message Response) message type.

Packet Format:

Field	Length	Description
<STX>	1	Start of Packet
C902	4	Command
<ETX>	1	End of Packet
{LRC}	1	Checksum

Response Packet:

Field	Length	Description
<STX>	1	Start of Packet
R902	4	Response
Status Code	2	Refer to Appendix for more inf.
<ETX>	1	End of Packet
{LRC}	1	Checksum

ECHO TEST MESSAGE PROCESS

PC		EDC
<STX>C902[ETX]{LRC}	>	Checks the LRC & validates the message type
	<	ACK if LRC ok
		<ul style="list-style-type: none"> Send Response to PC
	<	<STX>R902[STATUS]<ETX>{LRC}
ACK if received packet	>	

3 ISO 8583 DEFINITION

The following table lists the response codes that may be sent to the terminal by the host in response to a request.

STATUS CODE	ISO DEFINITION	ACTION
00	APPROVED	NO ACTION
01	REFER TO CARD ISSUER	CALL BANK
02	REFER TO CARD ISSUER'S SPECIAL CONDITION	CALL BANK
03	INVALID MERCHANT	CALL PAYSYS
05	DECLINED	CALL BANK
12	INVALID TRANSACTION	CALL PAYSYS
13	INVALID AMOUNT	CALL PAYSYS
14	INVALID CARD NUMBER	CHECK CARD#
19	RE-ENTER TRANSACTION	RESUBMIT
25	UNABLE TO LOCATE RECORD ON FILE	CALL PAYSYS
30	FORMAT ERROR	CALL PAYSYS
31	BANK NOT SUPPORTED BY SWITCH	CALL BANK
41	LOST CARD	CALL BANK
43	STOLEN CARD PICK UP	CALL BANK
51	NOT SUFFICIENT FUNDS	CALL BANK
54	EXPIRED CARD	CHECK CARD#
55	INCORRECT PIN	REENTER PIN
58	TRANSACTION NOT PERMITTED IN TERMINAL	CALL PAYSYS
76	INVALID PRODUCT CODES	CALL PAYSYS
77	RECONCILE ERROR	CALL BANK
78	TRACE# NOT FOUND	CALL PAYSYS
80	BATCH NUMBER NOT FOUND	CALL PAYSYS
89	BAD TERMINAL ID	CALL PAYSYS
91	ISSUER/SWITCH INOPERATIVE	CALL BANK
94	DUPLICATE TRANSMISSION	CALL PAYSYS
95	BATCH UPLOAD	NO ACTION
96	SYSTEM MALFUNCTION	CALL PAYSYS
Y1	EMV APPROVED	NO ACTION
Y3	EMV APPROVED	NO ACTION
Z1	EMV DECLINED	NO ACTION
Z3	EMV DECLINED	NO ACTION

ECR COMMUNICATION SPECIFICATION	INTERNAL
Paysys	

4 CARD TYPE

CODE	Range / Criterion	Name
01	0000000000 – 9999999999	UPI
04	4000000000 – 4999999999	VISA
05	5100000000 – 5599999999	MASTER
05	2221000000 – 2720999999	MASTER
06	3000000000 – 3999999999	DINERS
07	3400000000 – 3499999999 3700000000 – 3799999999	AMEX
08	0000000000 – 9999999999	DEBIT (BANKKARD)
10	3083830000 – 3083899999 3085330300 – 3085330999	GENTING CARD
11	3528000000 – 3529999999	JCB

(C) Copyright 2020 PAYSYS(M) Sdn Bhd.
All rights reserved.

No part of the specifications may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual or otherwise, without the prior written permission of PAYSYS(M) Sdn Bhd.

Creation Date:	22/12/2020	Last modification Date:	22/02/2021
This document and the information it contains are Paysys (M) Sdn. Bhd. Property. They may not be reproduced, executed or communicated without a written authorization.			
		Page 38/38	