Ingeniería Electrónica

SMART IDENT

BHM-2200

BARCODE CARD DISPENSER

Specifications

User Manual

BHM-2200 Rev. B

REVISION HISTORY

NO.	DATE	DESCRIPTION	REV	PAGE
1	2012. 01. 12.	First Edition	A	27
	2019.09.20	USB Interface	B	30

MODEL NAME INFORMATION

B H M – 2 2 X X X

INTERFACE	FUNCTION	TYPE-	CAPACITY	THICKNESS	OPTION
RS-232C USB	2: DISPENSER	2:SINGLE STACKER FUNCTION-	1 : 100PCS 2 : 200PCS 3 : 300PCS 4 : 500PCS	4 : 0.76T 5: 0.84T 6 : 1.0T	0 : WITHOUT BEZEL 5 : SHUTTER 6 : SHORT BEZEL

C O N T E N T S

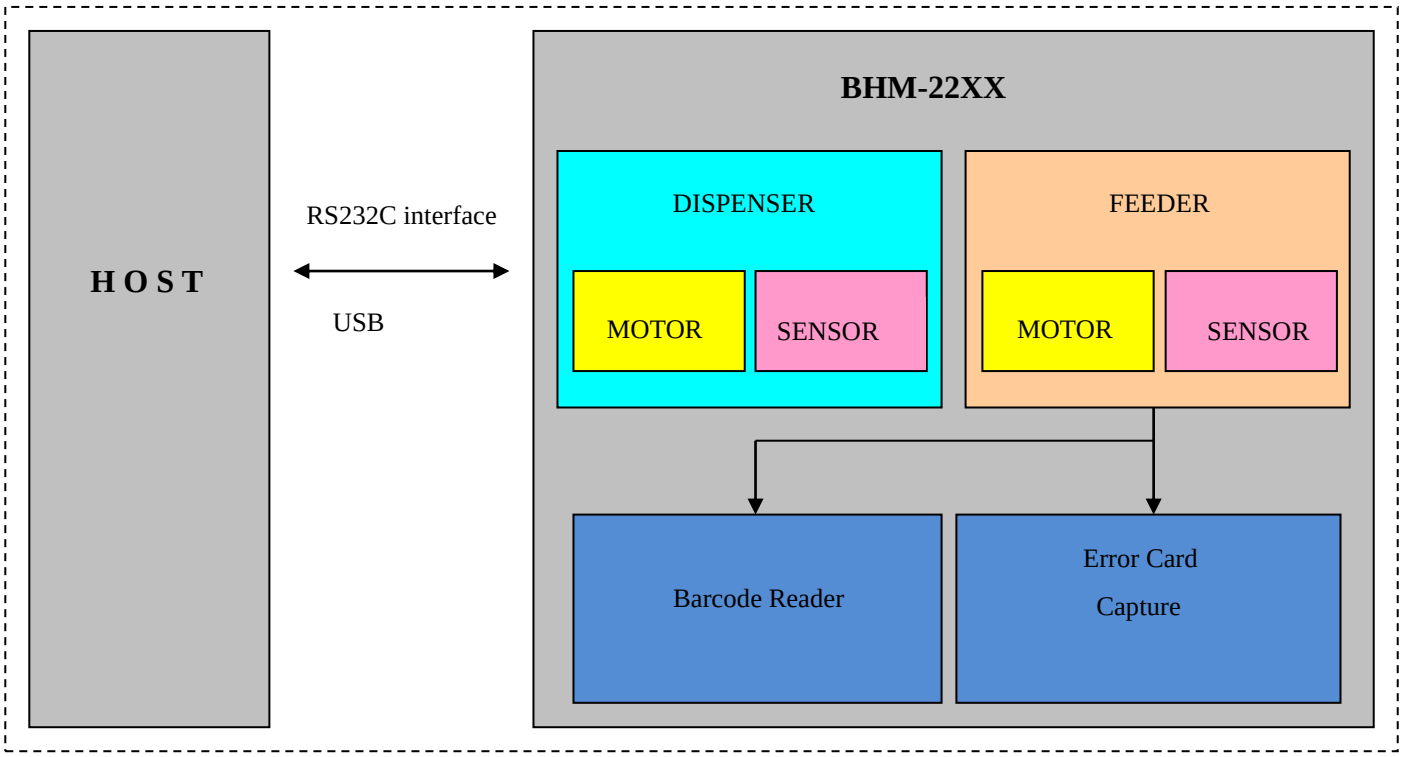
OVERVIEW

All the processes and operations of BHM-22XX are monitored by its intelligent Microprocessor, which makes itself self-recover function from faulty running.

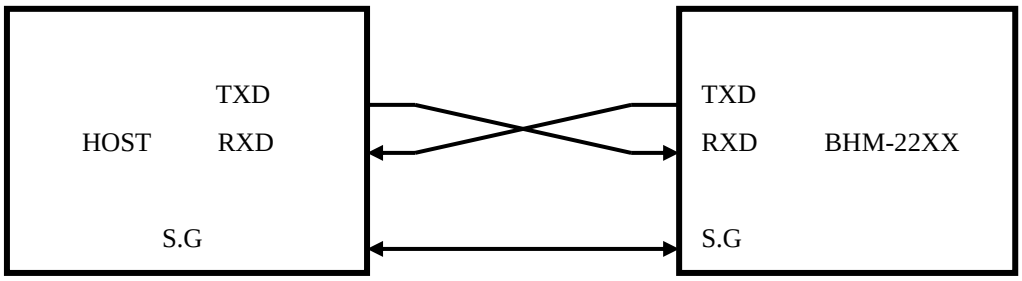
BHM-22XX has a function to takes an Error card back to the bin. This function is called “Capture“.

This model also can be used for Barcode reader.

SYSTEM BLOCK DIAGRAM



♦ *RS232C Connection*

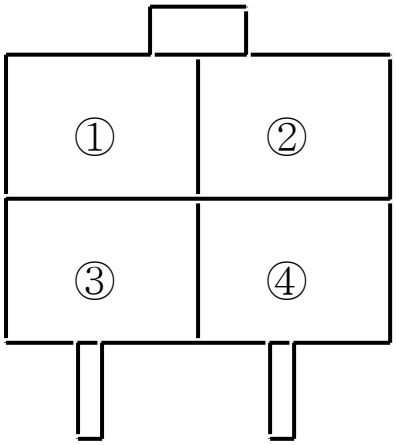


. Connector number: J1

Pin No.	INDEX	Remark
1	RXD	Receive
2	TXD	Transmit
3	S.G	Signal Ground

♦ *Power Connection*

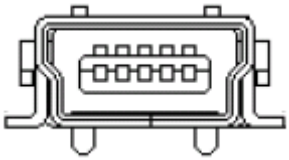
Front View (male)



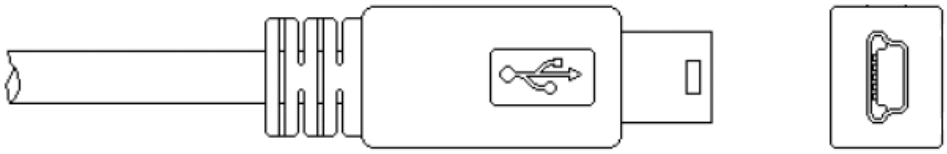
Pin No.	Signal Name	Direction
1	-	INPUT
2	DC +24V	
3	-	
4	GND	

♦ USB Interface.

*** Mini USB : B TYPE CONNECTOR 5PIN**



● Mini USB B & C TYPE CABLE (5PIN)



SPECIFICATIONS

♦ *Basic functions*

	Spec.	Remark
Dimension	Refer to page 16	
Input power	DC 24V 3A	
Card Feeding Speed	2 ~ 5(Sec.)	

♦ *Environment Requirements*

Operating Locus: in door use only

Ambient Temperature

Storage: -20 °C to 70 °C (No functional error to be found in 12 hours after returning to normal environment)

Operating: 5 °C to 50°C (In 0°C to +5°C range, all specifications but 'Warped card' to be satisfied)

Ambient Relative Humidity

Storage: 0% to 95% RH (No functional error to be found in 12 hours after returning to normal environment)

Operating: 5 % 90% RH (No Condensation)

Vibration

: Amplitude 2mm, 10 to 50 Hz in X, Y, Z directions for 30min, 2G or less

Shock Endurance

: 30G, 11ms

COMMUNICATION INTERFACE

♦ *Communication Method*

- Asynchronous, Half duplex.
- Baud Rate: 9600 – 57600Bps, Default: 38400Bps
- Start Bit: 1Bit
- Data Length: 8Bit
- Parity: None
- Stop Bit: 1Bit

♦ *Communication Protocol Format*

1. Command Frame Format.

SOH	Null	Length	STX	CMD	DATA	ETX	BCC
1BYTE	1BYTE	2BYTE	1BYTE	3BYTE	N-BYTE	1BYTE	1BYTE

2. Positive Response Frame Format

SOH	Null	Length	STX	CMD	GOOD	0x01	DATA	ETX	BCC
1BYTE	1BYTE	2BYTE	1BYTE	3BYTE	1BYTE	1BYTE	N-BYTE	1BYTE	1BYTE

3. Negative Response Frame Format

SOH	Null	Length	STX	CMD	E-Code	0x00	ETX	BCC
1BYTE	1BYTE	2BYTE	1BYTE	3BYTE	2BYTE	1BYTE	1BYTE	1BYTE

4. BCC (Check Sum)

SOH	Null	Length	STX	CMD	DATA	ETX	BCC

Command Frame BCC = Null ^ Length ^ STX ^ CMD ^ DATA ^ ETX.

Positive Response BCC = Null ^ Length ^ STX ^ CMD ^ GOOD ^ 0x01 ^ DATA ^ ETX.

Negative Response BCC = Null ^ Length ^ STX ^ CMD ^ E-Code ^ ETX.

N BYTE: Variable Length

5. Explanatory note of technical words

Name	Detail
NULL	Reserved. Always 0x00.
LENGTH	Data Length from the CMD to DATA.
CMD	Instruction Code (3 Bytes)
GOOD	Normal Execution : 0x0000 (2 Bytes)
E-Code	Command Failed: Refer to "Error Code" (2 Bytes)
BCC	Check Sum.

<Length>, <E-Code>

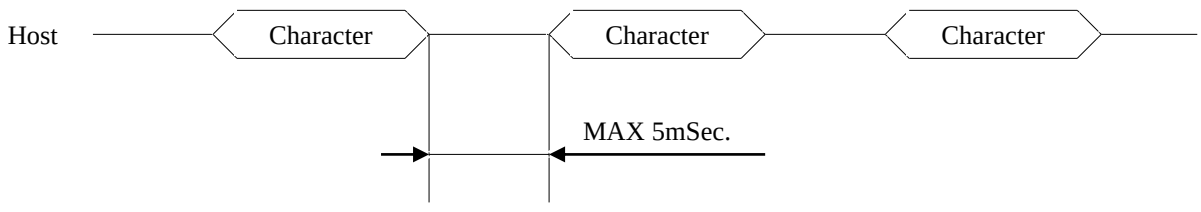
High Byte	Low Byte

6. Control Characters

Name	Hex Value	Detail
SOH	0x01	Start of Heading Character
STX	0x02	Start of Text Character
ETX	0x03	End of Text Character
ENQ	0x05	Enquiry Character
ACK	0x06	Acknowledge Character
NAK	0x15	Negative Acknowledge Character
CAN	0x18	Cancel Character

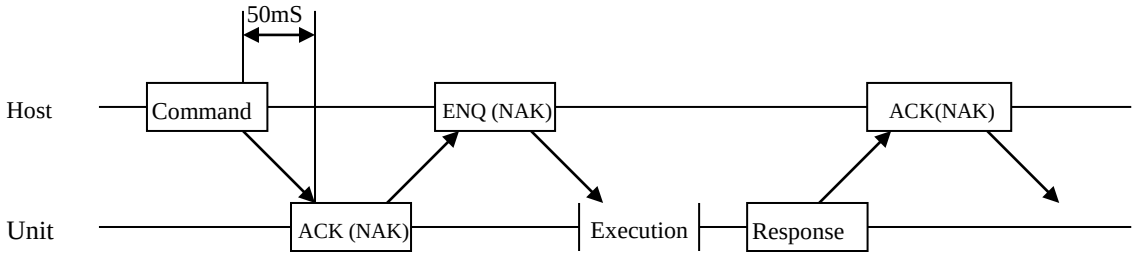
7. COMMUNICATION SEQUENCE / TIMING

7.1 CHARACTER GUIDE TIME

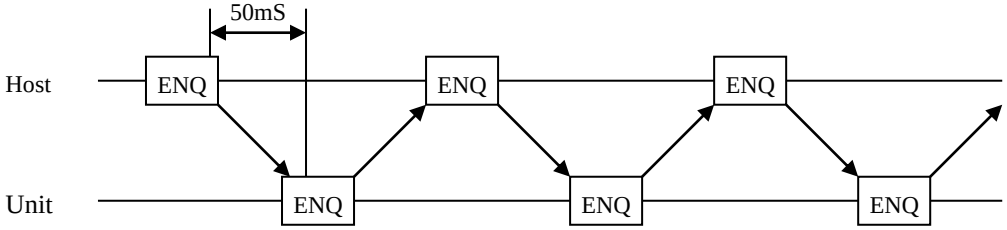


If no consecutive character within 5mSec, do time out.

7.2 Command

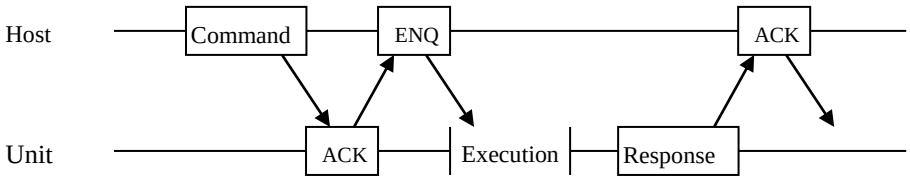


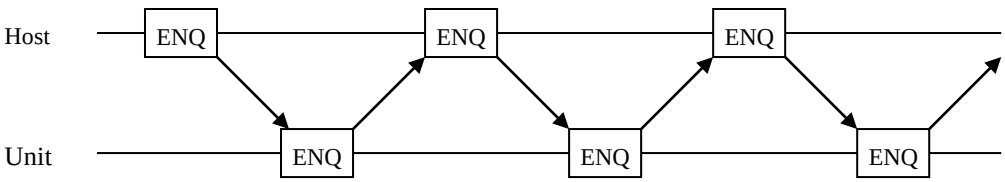
7.3 Inquiry



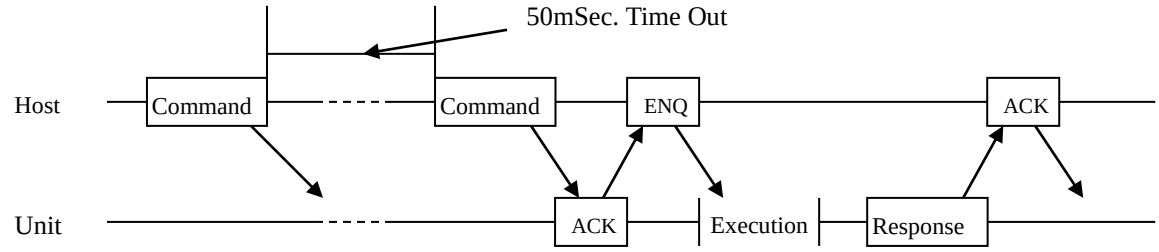
7.4 Sequence

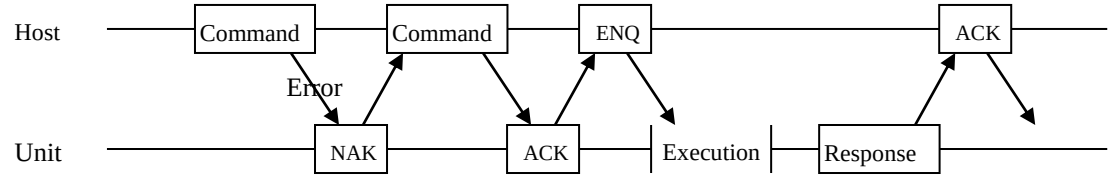
7.3.1 General

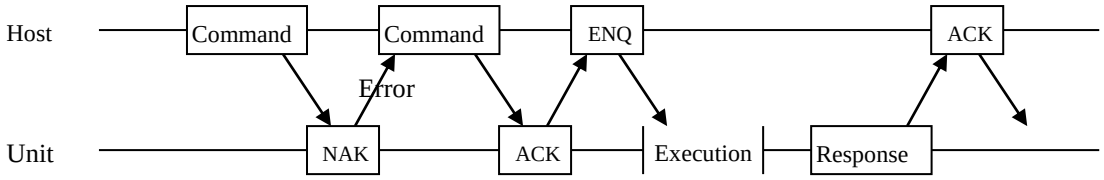


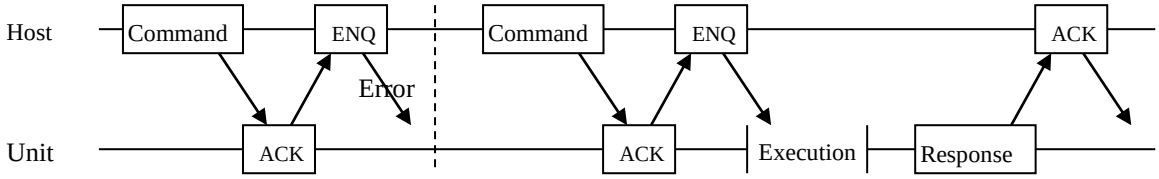


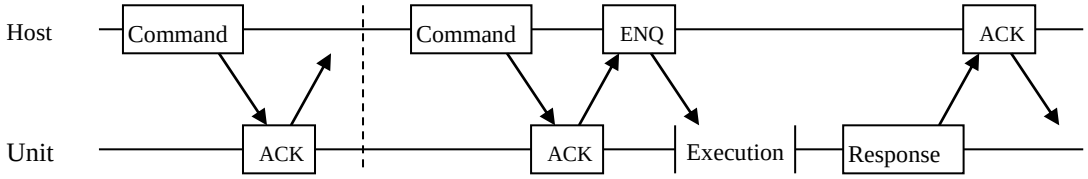
7.3.2 Error1

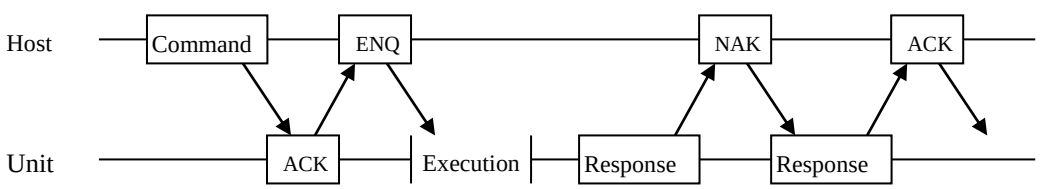

50mSec. Time Out
Host
Command
Command
ENQ
ACK
Unit
ACK
Execution
Response

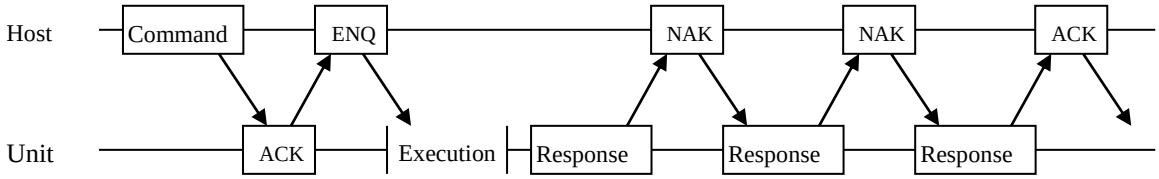

Host
Command
Command
ENQ
ACK
Error
Unit
NAK
ACK
Execution
Response

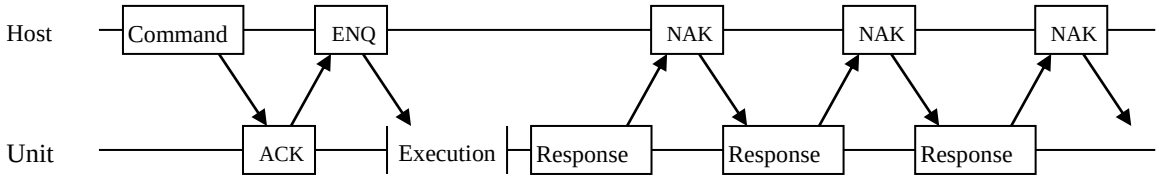

Host
Command
Command
ENQ
ACK
Error
Unit
NAK
ACK
Execution
Response

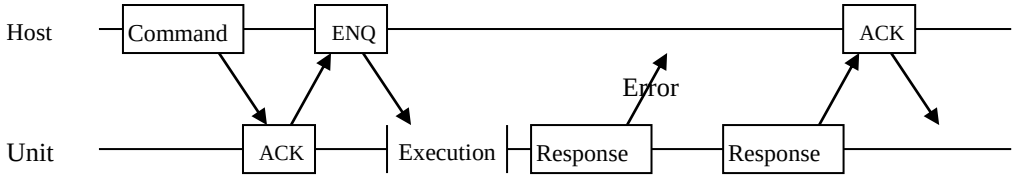

Host
Command
ENQ
Command
ENQ
ACK
Error
Unit
ACK
ACK
Execution
Response

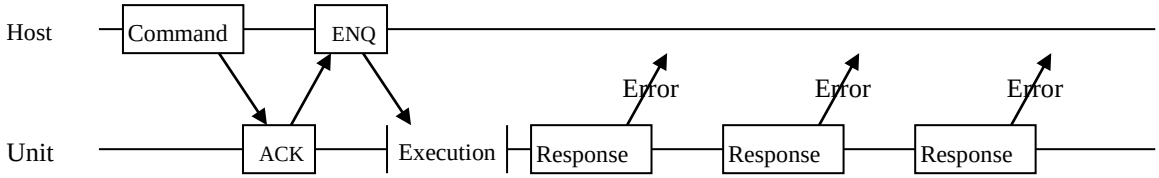

Host
Command
Command
ENQ
ACK
Unit
ACK
ACK
Execution
Response

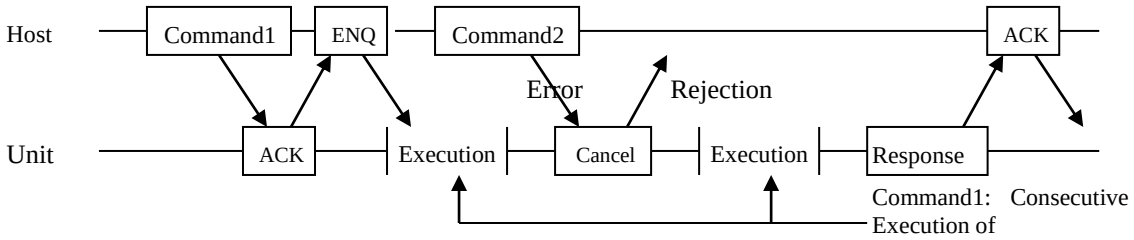

Host
Command
ENQ
NAK
ACK
Unit
ACK
Execution
Response
Response

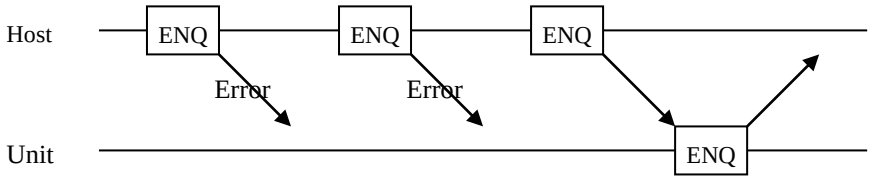

Host
Command
ENQ
NAK
NAK
ACK
Unit
ACK
Execution
Response
Response
Response


Host
Command
ENQ
NAK
NAK
NAK
Unit
ACK
Execution
Response
Response
Response


Host
Command
ENQ
ACK
Error
Unit
ACK
Execution
Response
Response

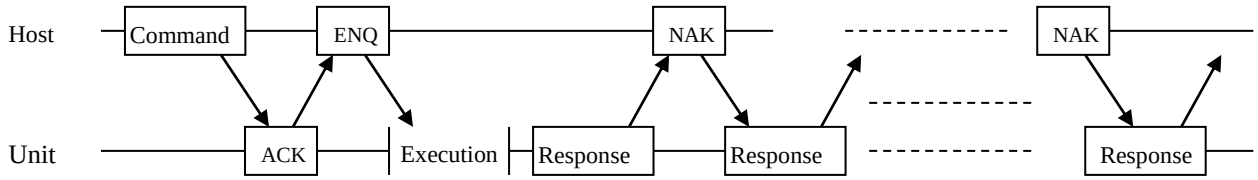

Host
Command
ENQ
Error
Error
Error
Unit
ACK
Execution
Response
Response
Response


Host
Command1
ENQ
Command2
ACK
Error
Rejection
Unit
ACK
Execution
Cancel
Execution
Response
Command1: Consecutive
Execution of

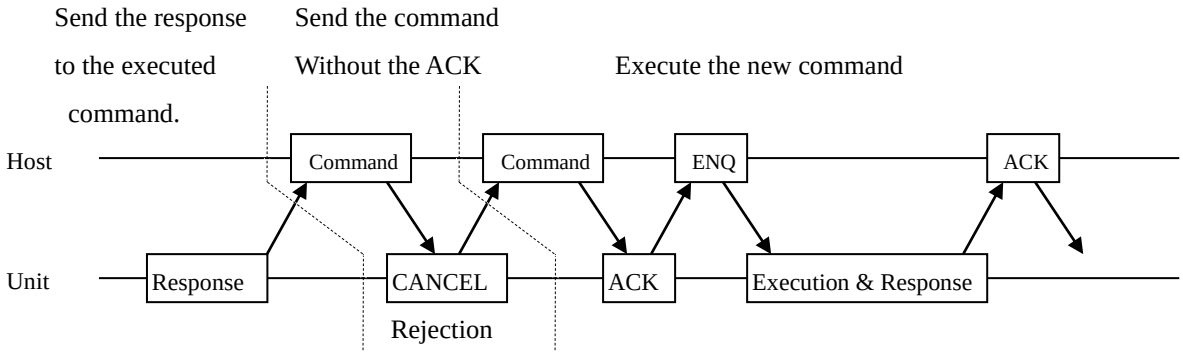

Host
ENQ
ENQ
ENQ
Error
Error
Unit
ENQ

7.3.3 Error2

- When received the NAK packet consecutively.

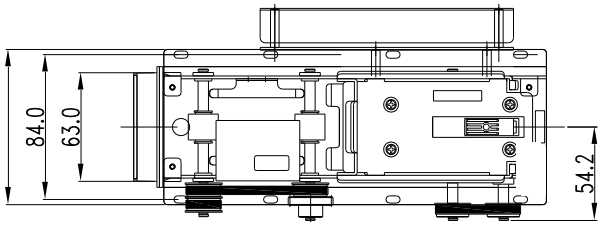


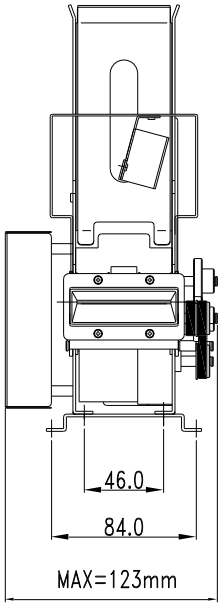
- When the Host sends the command without the ACK packet.

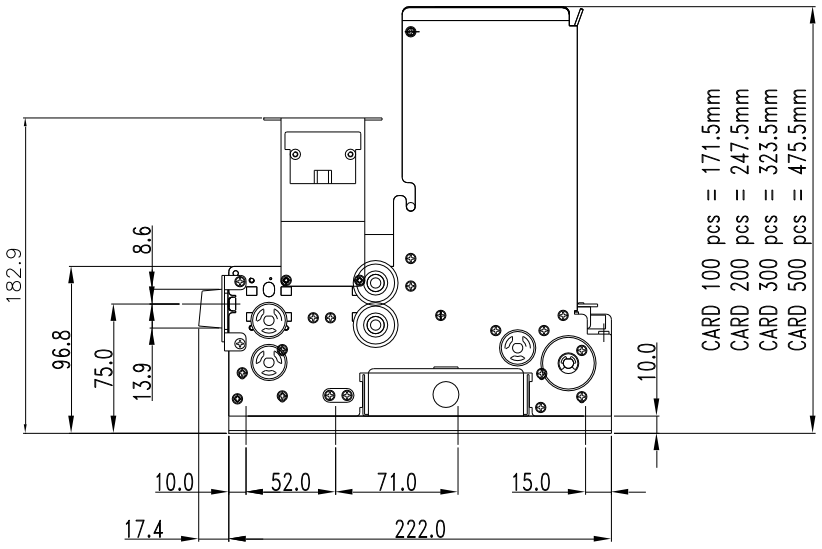


The terminal should ignore the command received before it sends the ACK packet, send the CANCEL packet. The second command will be treated as the ACK packet and executed with no ACK.

TECHNICAL DRAWING







COMMAND DETAIL

♦ *Command List*

	Item	Cm 0	Cm 1	Cm 2	Detail	Note
COMMON	STATUS1	'C'	'1'	'1'	Get Model	
		'C'	'1'	'2'	Get Firmware Version	
		'C'	'1'	'3'	Get Stacker	
		'C'	'1'	'6'	Get Card position	
	SETTING1	'C'	'2'	'6'	Set Baud Rate	
	MOVE	'C'	'3'	'1'	Card Move From Stacker	
		'C'	'3'	'2'	Card Move To …	
		'C'	'3'	'3'	Card Eject	Forward
		'C'	'3'	'4'	Card Capture	Backward
		'C'	'3'	'6'	Card Drop **1)**	Forward
		B	'3'	'1'	Card Move From Stacker	
		B	'3'	'2'	Card Move To …	
Barcode		'B'	'0'	'1'	Barcode Reader	

1) The BHM-22XX model with bezel or shutter can't use "C36" command.

♦ *Common*

1. STATUS / SETTING

1.1 “C11”: It is to check out Model number of BHM-22XX.

☞ Command Format

SOH	Null	Length	STX	“C11”	ETX	Bcc

☞ Positive Response Format

SOH	Null	Length	STX	“C11”	GOOD	0x01	DATA	ETX	Bcc

☞ Negative Response Format

SOH	Null	Length	STX	“C11”	E-Code	0x00	ETX	Bcc

☞ Response Data Structure

Model No
8Byte (ASCII)

1.2 “C12”: It is to check out Firmware Version of BHM-22XX.

☞ Command Format

SOH	Null	Length	STX	“C12”	ETX	Bcc

☞ Positive Response Format

SOH	Null	Length	STX	“C12”	GOOD	0x01	DATA	ETX	Bcc

☞ Negative Response Format

SOH	Null	Length	STX	“C12”	E-Code	0x00	ETX	Bcc

☞ Response Data Structure

Firmware Version
9Byte (ASCII)

1.3 “C13”: It is to check out status of Stacker of BHM-22XX.

☞ Command Format

SOH	Null	Length	STX	“C13”	ETX	Bcc

☞ Positive Response Format

SOH	Null	Length	STX	“C13”	GOOD	0x01	DATA	ETX	Bcc

☞ Negative Response Format

SOH	Null	Length	STX	“C13”	E-Code	0x00	ETX	Bcc

☞ Response Data Structure

Stacker	0x00
1Byte (Hex)	1Byte (Hex)

☞ Data Variable

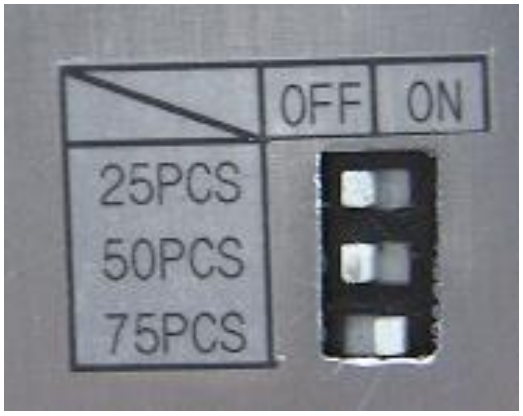
<Stacker>

Code	Status	Note
0x01	Stacker Good	
0x02	Card Warning	
0x03	Stacker Empty	

☞ Note

Stacker Status	Detail
‘Stacker Good’	Good.
‘Card Warning’	A few Card in the stacker
‘Stacker Empty’	No cards in the stacker

-Warning Sensor Setting



Set Value	25pcs	50pcs	75pcs
Set to 25pcs cards	ON	OFF	OFF
Set to 50pcs cards	OFF	ON	OFF
Set to 75pcs cards	OFF	OFF	ON

1.4 “C16”It is to check the card by existent location.

☞ Command Format

SOH	Null	Length	STX	“C16”	ETX	Bcc

☞ Positive Response Format

SOH	Null	Length	STX	“C16”	GOOD	0x01	DATA	ETX	Bcc

☞ Negative Response Format

SOH	Null	Length	STX	“C16”	E-Code	0x00	ETX	Bcc

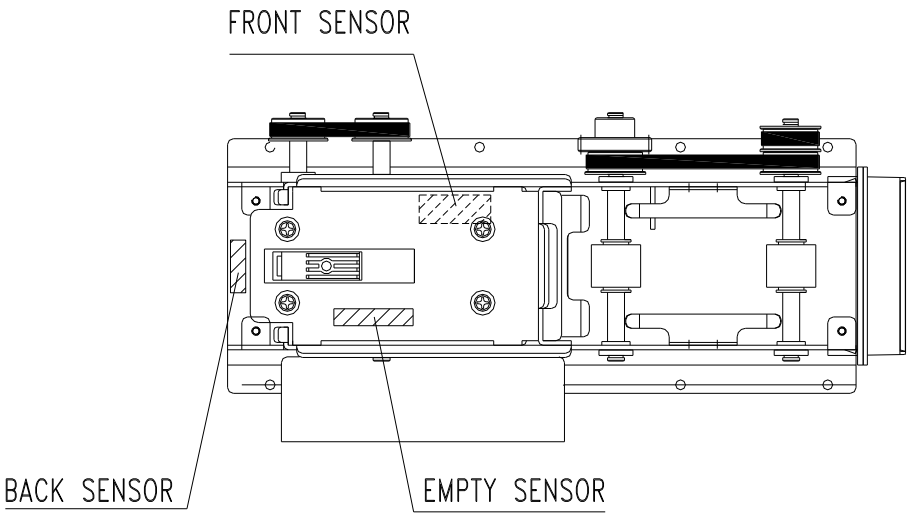
☞ Response Data Structure

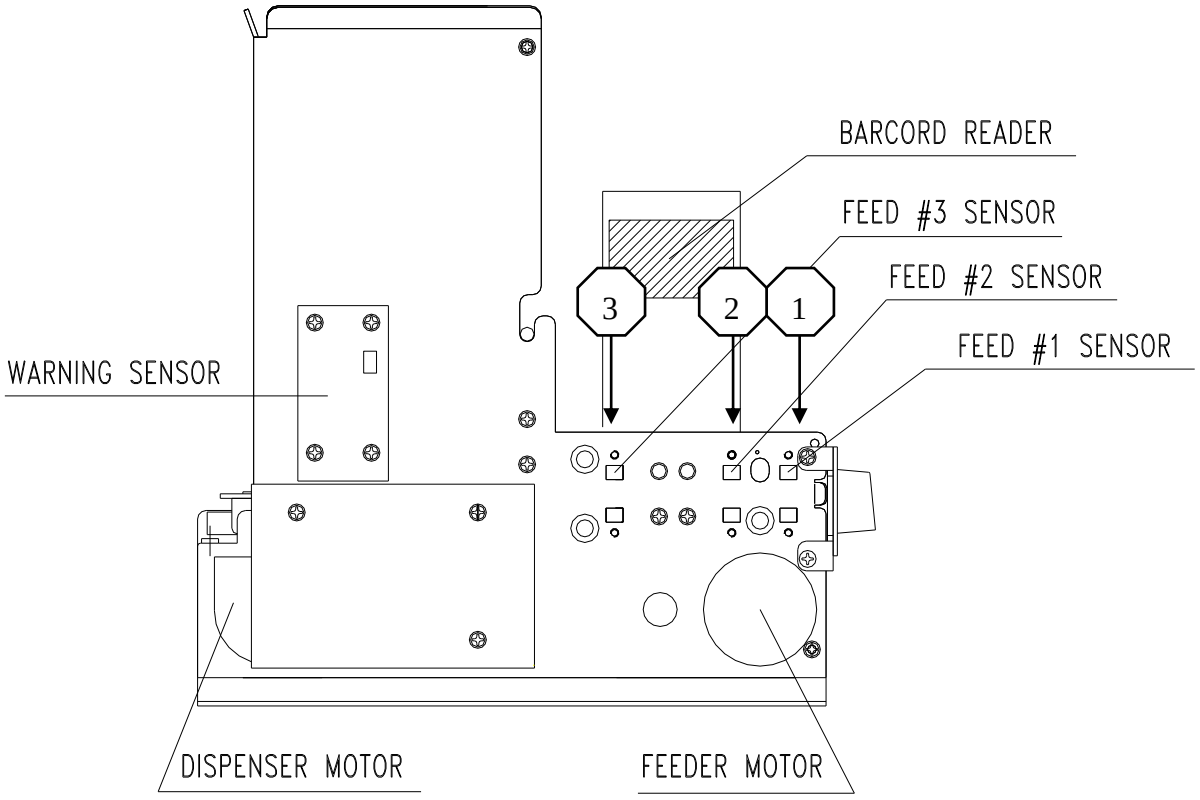
Card Position
1Byte (Hex)

☞ Data Variable

<Card Position>

Code	Sensor	Detail
0x01	SEN1	The card is locate NO.1
0x02	SEN2	The card is locate NO.2
0x04	SEN3	The card is locate NO.3


FRONT SENSOR
BACK SENSOR
EMPTY SENSOR


BARCORD READER
FEED #3 SENSOR
FEED #2 SENSOR
FEED #1 SENSOR
3
2
1
WARNING SENSOR
DISPENSER MOTOR
FEEDER MOTOR

2. SETTING

2.3 “C26”: It is to change ‘Baud Rate’.

☞ Command Format

SOH	Null	Length	STX	“C26”	DATA	ETX	Bcc

☞ Command Data Structure

Baud Rate
1Byte (Hex)

☞ Positive Response Format

SOH	Null	Length	STX	“C26”	GOOD	0x01	ETX	Bcc

☞ Negative Response Format

SOH	Null	Length	STX	“C26”	E-Code	0x00	ETX	Bcc

☞ Response Data Structure

☞ Data Variable

<Baud Rate>

Code	Setting	Detail	Note
0x01	9600Bps	Set Baud Rate to be 9600Bps	
0x02	19200Bps	Set Baud Rate to be 19200Bps	
0x04	38400Bps	Set Baud Rate to be 38400Bps	Default
0x05	57600Bps	Set Baud Rate to be 57600Bps	

3. MOVE

3.1 “C31”: It is to take a card from Stacker and to move it to Barcode Reader.

☞ Command Format

SOH	Null	Length	STX	“C31”	DATA	ETX	Bcc

☞ Command Data Structure

0x00	Module
1Byte (Hex)	1Byte (Hex)

☞ Positive Response Format

SOH	Null	Length	STX	“C31”	GOOD	0x01	ETX	Bcc

☞ Negative Response Format

SOH	Null	Length	STX	“C31”	E-Code	0x00	ETX	Bcc

☞ Data Variable

<Module>

Code	Setting	Detail
0x03	Barcode	Card transport to Barcode Module

3.2 “C32”: It is to take card to Barcode Reader

☞ Command Format

SOH	Null	Length	STX	“C32”	DATA	ETX	Bcc

☞ Command Data Structure

Module
1Byte (Hex)

☞ Positive Response Format

SOH	Null	Length	STX	“C32”	GOOD	0x01	DATA	ETX	Bcc

☞ Negative Response Format

SOH	Null	Length	STX	“C32”	E-Code	0x00	ETX	Bcc

☞ Data Variable

<Module>

Code	Setting	Detail
0x03	Barcode	Card transport to Barcode Module

3.3 “C33”: It is to dispense out card to the front.

☞ Command Format

SOH	Null	Length	STX	“C33”	ETX	Bcc

☞ Positive Response Format

SOH	Null	Length	STX	“C33”	GOOD	0x01	ETX	Bcc

☞ Negative Response Format

SOH	Null	Length	STX	“C33”	E-Code	0x00	ETX	Bcc

3.4 “C34”: It is to take card to Bin Box (Capture)

☞ Command Format

SOH	Null	Length	STX	“C34”	ETX	Bcc

☞ Positive Response Format

SOH	Null	Length	STX	“C34”	GOOD	0x01	ETX	Bcc

☞ Negative Response Format

SOH	Null	Length	STX	“C34”	E-Code	0x00	ETX	Bcc

3.5 “C36”: It is to dispense the card to front and drop it out of the unit.

☞ Command Format

SOH	Null	Length	STX	“C36”	ETX	Bcc

☞ Positive Response Format

SOH	Null	Length	STX	“C36”	GOOD	0x01	ETX	Bcc

☞ Negative Response Format

SOH	Null	Length	STX	“C36”	E-Code	0x00	ETX	Bcc

☞ Note

The BHM-22XX model with bezel or shutter can’t use “C36” command.

3.6 “B31”: It is to take a card from Stacker and to move it to Barcode Reader.

☞ Command Format

SOH	Null	Length	STX	“B31”	DATA	ETX	Bcc

☞ Command Data Structure

0x00	Module
1Byte (Hex)	1Byte (Hex)

☞ Positive Response Format

SOH	Null	Length	STX	“B31”	GOOD	0x01	ETX	Bcc

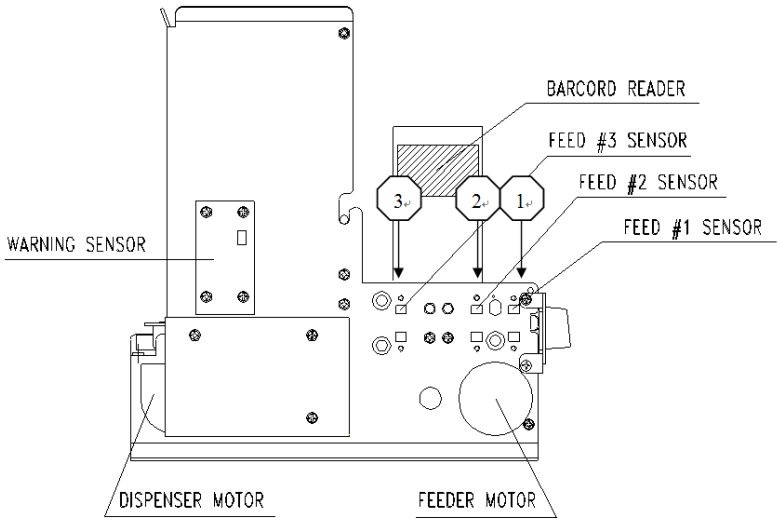
☞ Negative Response Format

SOH	Null	Length	STX	“B31”	E-Code	0x00	ETX	Bcc

☞ Data Variable

<Module>

Code	Setting	Detail
0x01	Barcode	Feed#3,Feed#2 : ON, #Feed1 : OFF
0x02		Feed#3,Feed#2, #Feed1 : ON
0x03		Feed#3 : OFF, #Feed#2, #Feed1 : ON



3.7 “B32”: It is take card to Barcode Reader

☞ Command Format

SOH	Null	Length	STX	“B32”	DATA	ETX	Bcc

☞ Command Data Structure

Module
1Byte (Hex)

☞ Positive Response Format

SOH	Null	Length	STX	“B32”	GOOD	0x01	DATA	ETX	Bcc

☞ Negative Response Format

SOH	Null	Length	STX	“B32”	E-Code	0x00	ETX	Bcc

☞ Data Variable

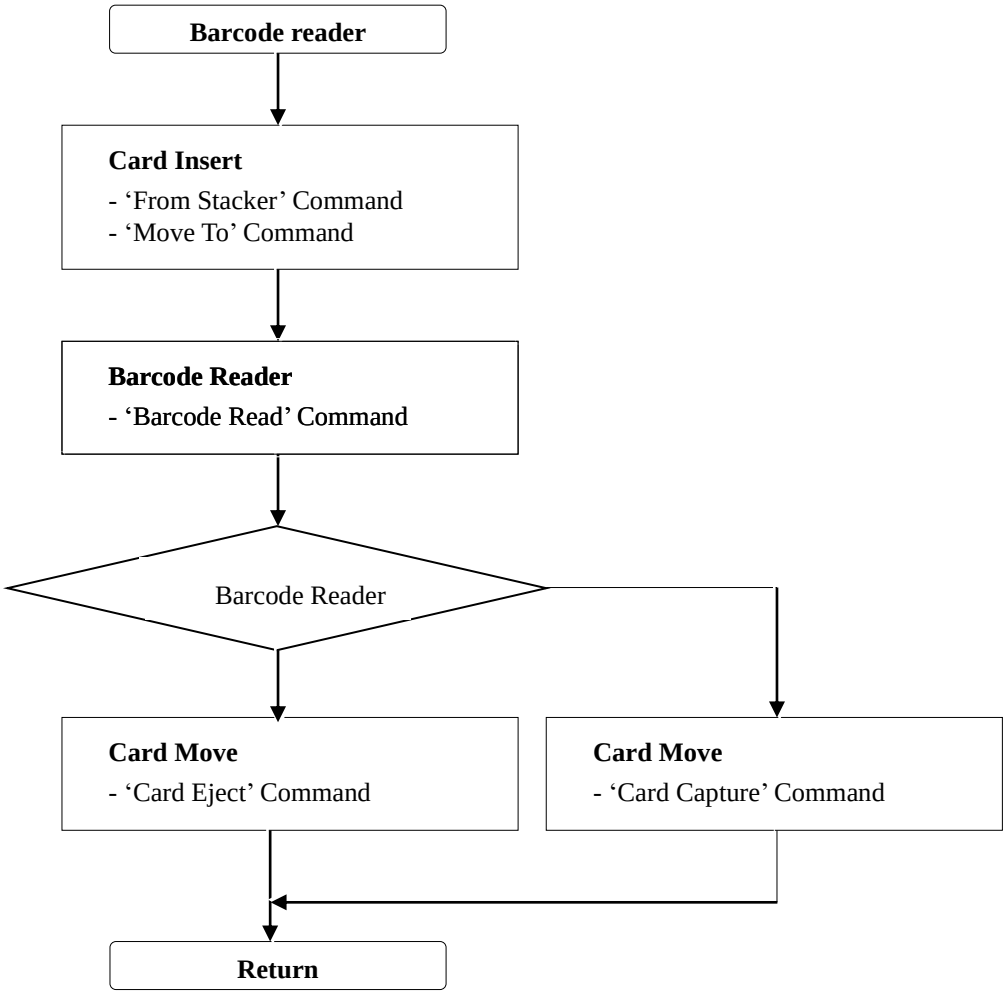
<Module>

Code	Setting	Detail
0x02	Barcode	Feed#3,Feed#2, #Feed1 : ON
0x03		Feed#3 : OFF, #Feed#2, #Feed1 : ON

♦ *Barcode Module*

This section describes the commands that can use at the ‘Barcode.

Item	Cm0	Cm1	Cm2	Detail	Note
Barcode READ	‘B’	‘0’	‘1’	Barcode reader	



1. Barcode Reader.

1.1 “B01”: Read RF card data & Secret Key in block range

☞ Command Format

SOH	Null	Length	STX	“B01”	ETX	Bcc

☞ Positive Response Format

SOH	Null	Length	STX	“R31”	GOOD	0x01	DATA	ETX	Bcc

☞ Negative Response Format

SOH	Null	Length	STX	“R31”	E-Code	0x00	ETX	Bcc

☞ Response Data Structure

Barcode Read Data

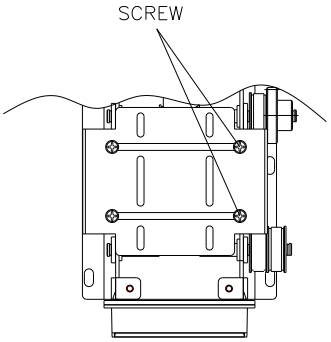
- Readable Symbologies

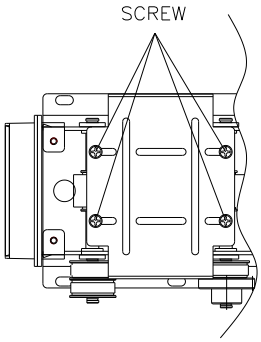
1D Barcode Symbologies	Coda Bar	2D Barcode Symbologies	PDF417
	Telepen		microPDF417
	Code 128		Data Matrix
	GS128		QR Code
	Code 93		AZTEC
	Korean Post		Maxi Code
	Code 39		
	Code 39 Start/Stop Characters		
	Tri-Optic		
	Code 11		
	MSI/Plessey		
	Interleaved 2 of 5		
	Straight 2 of 5		
	Matrix 2 of 5		
	IATA 2 of 5		
	Chinese Post		
	All of UPC/EAN/JAN		

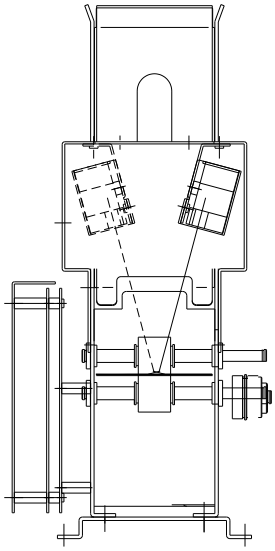
- Barcode Location.

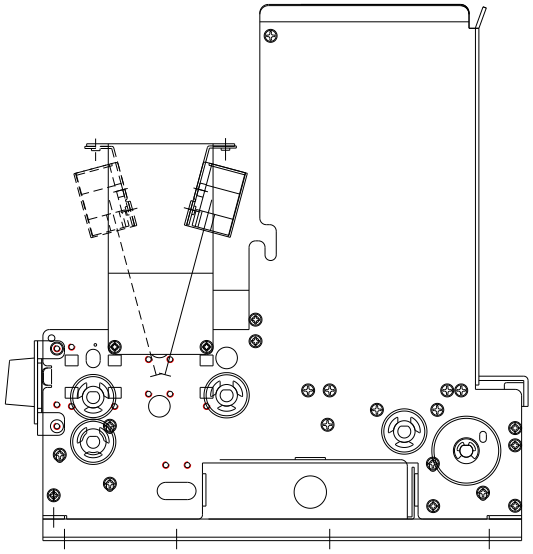
  The barcode scanner can be set according to the customer's need.(see the following drawings)

  The barcode scanner is anchored with small screws. So, the operator can easily change the barcode scanner position.









ERROR DETAIL

<GOOD>

Code: 0x0000

Description: Normal Execution

Procedures: None

<NOT_DEFINE_COMMAND>

Code: 0x2001

Description: Using the command that does not defined in this model.

Action: Use the valid command in this model.

<NOT_USE_COMMAND>

Code: 0x2002

Description: Not available command in this model.

Action: Use the valid command in this model.

<COMM_FRAME_ERROR>

Code: 0x2003

Description: Sending the command that has the invalid communication frame.

Action: Check the data format and the corresponding module specification.

<CARD_JAM>

Code: 0x2004

Description: When the card is jammed.

Action: Remove the jammed card.

<NO_CARD>

Code: 0x2005

Description: No cards.

Action: Insert the card.

<CARD_PRESENT>

Code: 0x2006

Description: When the card exists already in the terminal.

Action: Eject the card.

<TWO_MORE>

Code: 0x2009

Description: When more than two cards exit in the terminal simultaneously.

Action: Remove the Card.

<ALL_EMPTY>

Code: 0x2104

Description: No cards at stacker.

Action: Load the card in the stacker.

<Barcode Read Error>

Code : 0x3500