



Ingeniería Electrónica
SMART IDENT

TIM-1000
TICKET ISSUING MACHINE
WHIT PRINTER
Specifications

User Manual

TIM1000.UM.F.EN.doc

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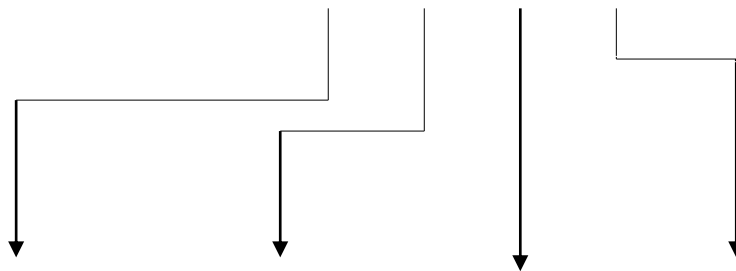
REVISION HISTORY

No	Date	Description	Revision	Page
1	2012.07.	First Edition.	A	49
2	2014.09	Dimension is changed. And Command "P35" is added.	B	51
3	2014.10	"T32" command is added.	C	52
4	2014.12	"M3D" and "M3E" Commands are added	D	53
5	2015.02	Shutter and Warning sensor functions are added	E	54
6	2017.01	Warning Sensor function is added	F	56

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MODEL NAME INFORMATION

T I M - 1



Interface	MS Ticket	MS Ticket Track	Option	Option II	Option III
RS232C	0 : - 1 : MS Read/Write	0 : Without Magnetic 1 : ISO 1 Track 2 : ISO 2 Track 3 : ISO 3 Track 4 : ISO 1,2 Track 5 : ISO 1,3 Track 6 : ISO 2,3 Track 7 : ISO 1,2,3 Track	1: LOW-CO Short bezel 2: HI-CO Short bezel 6: Short Bezel 7: LOW-CO Without Bezel 8: HI-CO Without Bezel	0 : without Printer 1: with Printer	S: Single charge D: Dual charge

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OVERVIEW

TIM Series is a set of ticket issuing machine for the magnetic fanfold paper ticket with Thermal Printer.

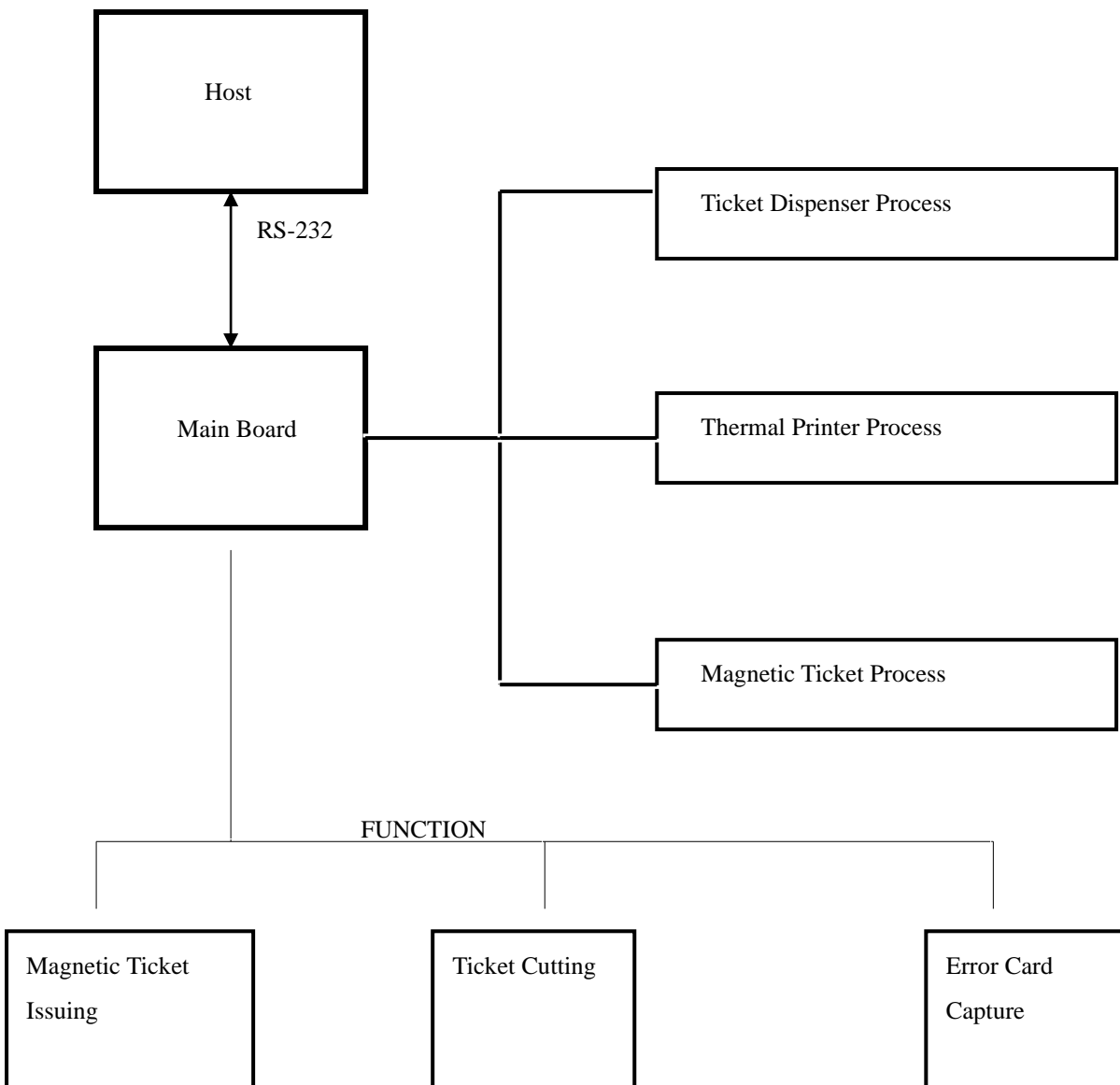
Starting from a ticket inlet, this model is run in the order of cutting, encoding, verification, printing and ejecting or capturing. And this model improved the speed due to structure to encode, verify and print at one pass, and simplified the command for magnetic Ticket, minimize the delay time occurs in the communication data processing and Ticket moving.

TIM series are applied and integrated to following products and systems;

- Parking system
- Fare and Toll Collection system
- Control Access system
- Ticket vending machine
- Public Transportation system
- And more

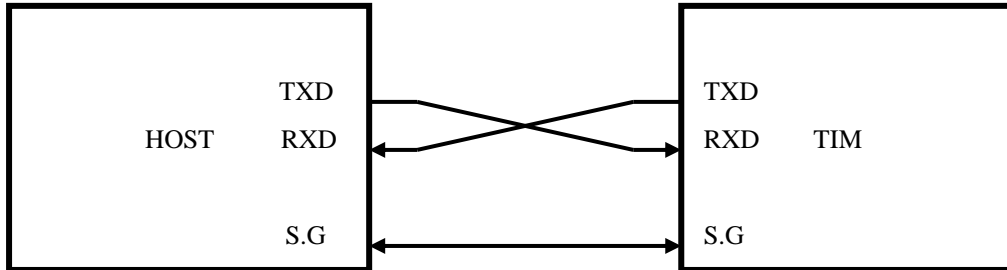
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SYSTEM BLOCK DIAGRAM



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◆ *RS – 232 Connection*

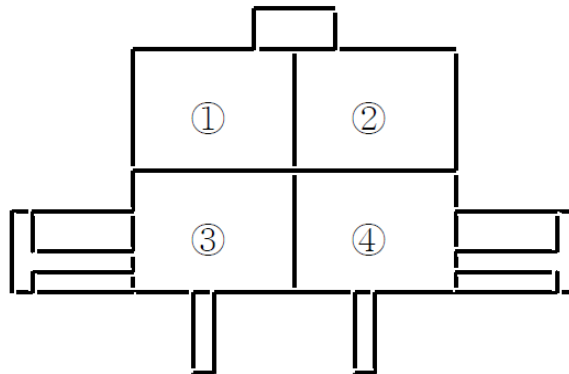


CASE 1) Part Number : RED-9S-LNA(HIROSE)

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

◆ *Power Connection*

Front View (male)



Part Number : 5566-04A1 (MOLEX)

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

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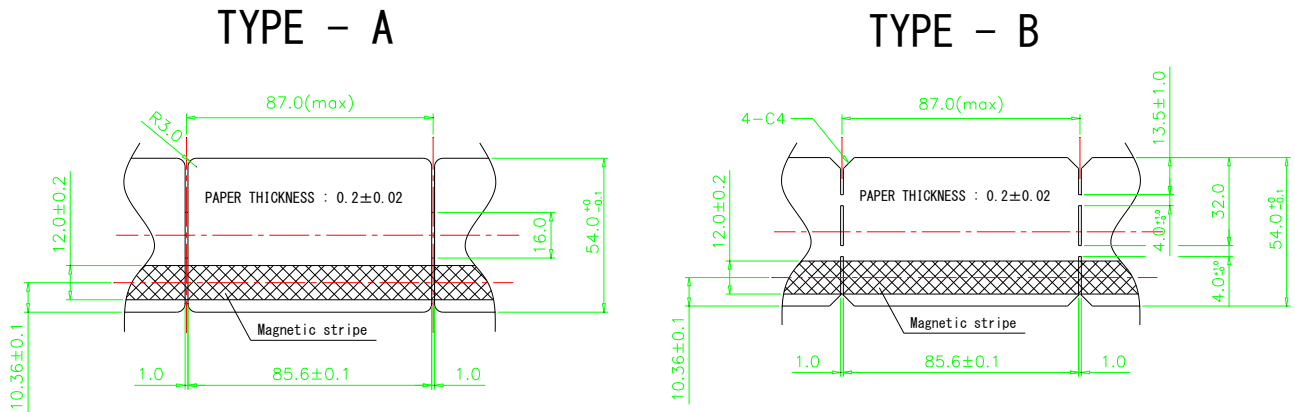
SPECIFICATIONS

◆ *basic functions*

Item	Sub Item	Spec
Print	Print Method	Direct Thermal
	Print Speed	50 mS/1Line
	Thermal Printer	Resolution : 200 dpi(8 dpm)
		Abrasion resistance: 50Km
Cutter	Structure	Guillotine type, Width: 60mm
	Life	500,000 cuts
Encoding /Decoding module	Magnetic	MS Encoding method : F2F
		Coercivity: Low-Co and High-Co
	Life of Head (Long Life head):	Approximately 3,000,000 passes
Ticket	Dimension	86mm(L) x 54mm(W) x 0.18 ~ 0.22 mm(T)
	Type	Fanfold paper ticket with Thermal Writable Coating
Feeding Method	Motor	Step Motor Driven
	Ticket Feeding Speed	340mm/Sec
Solenoid	Life	MIN 2,000,000 Cycle
Issue (1 line print, track 2 write and verification)	Issuing Time(With Cutting and Standby)	About 2.5 seconds,
	Issuing Time(without Cutting and Standby)	About 1.8 seconds,
Structure		Clamshell Type
Interface		RS-232C
Unit dimension (Including bezel)	Single Pack	125.4(W) x 355.9(L) x 124.1(H)
	Dual Pack	125.4(W) x 402.5(L) x 141.3(H)
Input power		DC 24V, 4A
Weight	Single Pack	3.1 Kg
	Dual Pack	4.0 Kg

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◆ *Folder Paper specifications*



◆ *Environment Requirements*

Operating Locus : In door use only

Ambient Temperature

Storage : $-20\text{ }^{\circ}\text{C}$ to $60\text{ }^{\circ}\text{C}$

Operating : $5\text{ }^{\circ}\text{C}$ to $50\text{ }^{\circ}\text{C}$

Ambient Relative Humidity

Storage : 10% to 90% RH

Operating : 20 % 85% RH

Vibration

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

Shock Endurance : 30G, 11ms

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◆ *Controller Environment*

Communication

- : RS232C Interface
- : Baud Rate – 19200 BPS
 - 38400BPS(Default)
 - 57600BPS
 - 115200BPS
- : 8Data bit, 1 Start bit, None Parity bit, 1 Stop Bit

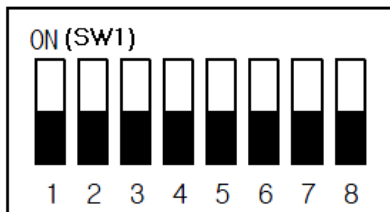
CPU : STM32F103 VCT6 Z

RAM : 48K byte

Flash ROM: 256K byte

RTC

◆ *Dip Switch setting*



Baud Rate Setting

Pin No. 7	Pin No. 8	Baud Rate	Note
OFF	OFF	19200 BPS	
OFF	ON	38400 BPS	Default
ON	OFF	57600 BPS	
ON	ON	115200 BPS	

*. Note: Pin No 1 must be set to ON always.

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MAGNETIC TICKET PROCESS

TIM series is able to decode data on all three tracks of ISO 1,2 and 3 in one pass, which makes read process time shorter. And it is a basic and standard option to read and write to both Low – Co and High-Co Ticket.

◆ *Life and Reliability*

Life of Head (Long Life head): Approximately 3,000,000 passes
(One pass is for forward or backward movement)

Error Rate : 5/1000 cycle

◆ *Recording*

	Track 1	Track 2	Track 3
BPI	210	70	210
Capacity	Max 79	Max 39	Max 107
Reading Methods	F2F		
Length	Variable		
Ticket thickness	paper ticket: 0.17 ~ 0.22mm		

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COMMUNICATION INTERFACE

◆ *Communication Method*

Asynchronous, Half duplex.

Baud Rate : 19200 – 115200Bps , 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
1 byte	1 byte	2 byte	1 byte	3 byte	N byte	1 byte	1 byte

2 Positive Response Frame Format

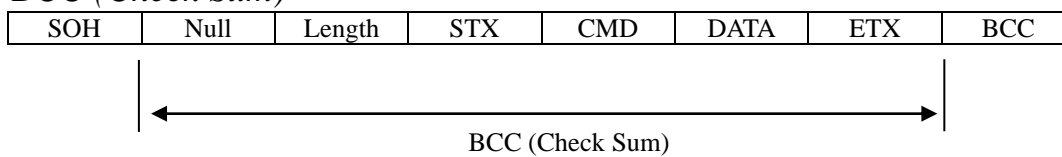
SOH	Null	Length	STX	CMD	GOOD	0x01	DATA	ETX	BCC
1 byte	1 byte	2 byte	1 byte	3 byte	2 byte	1 byte	1 byte	1 byte	1 byte

(N byte: variable length)

3 Negative Response Frame Format

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

4 BCC (Check Sum)



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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 ^ 0x00 ^ ETX.

5. Explanatory note of technical words

Name	Detail
Null	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 Header
STX	0x02	Start of Text
ETX	0x03	End of Text
ENQ	0x05	Enquiry
ACK	0x06	Positive Acknowledge
NAK	0x15	Negative Acknowledge
CAN	0x18	Cancel (CAN involves "Info" consisted of 1 byte of card status information. Refer to below table.)

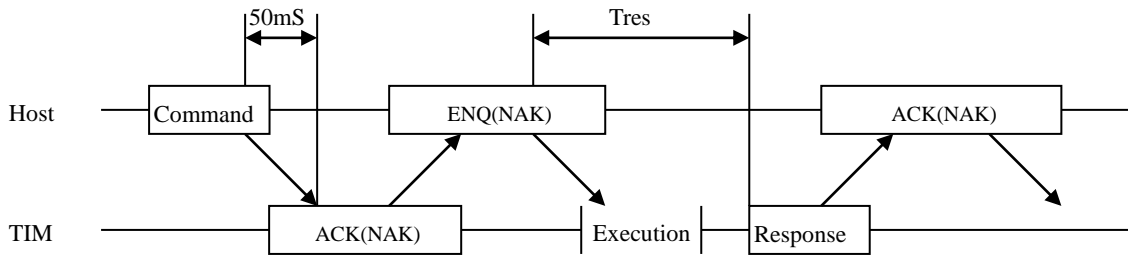
☞ Structure of 1 byte of "Info".

Number	Info	Detail
1	0x01	Card presence in the entrance.
2	0x02	RFU
3	0x04	RFU
4	0x08	RFU
5	0x10	RFU
6	0x20	RFU
7	0x40	RFU
8	0x80	Busy

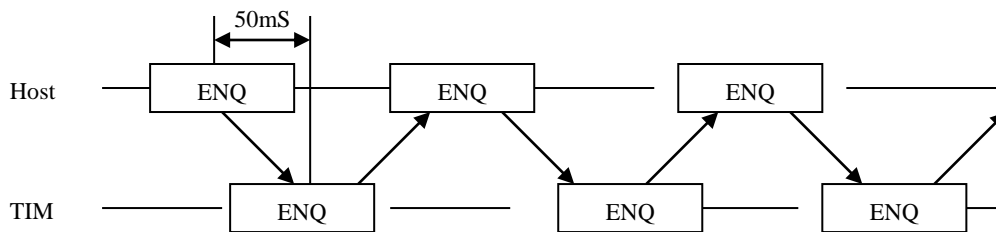
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7 COMMUNICATION SEQUENCE / TIMING

7.1 Command



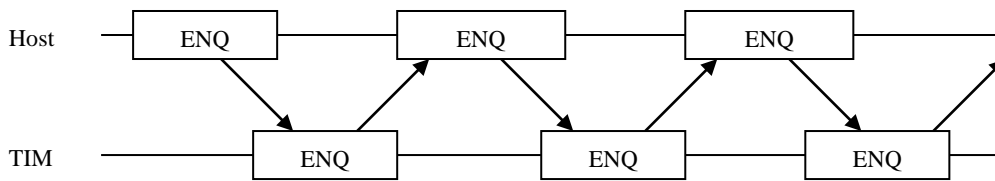
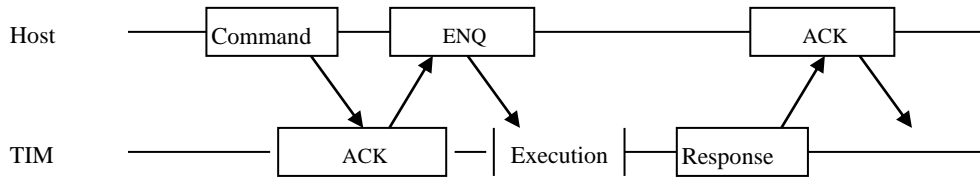
7.2 Inquiry



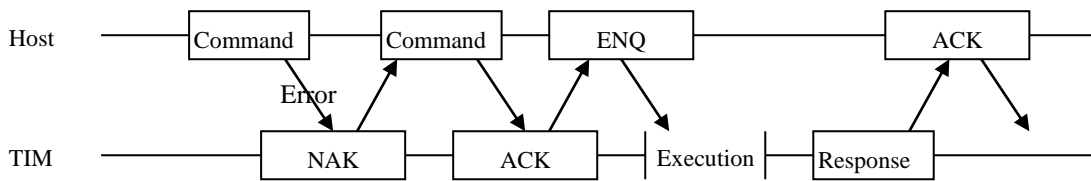
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7.3 Sequence

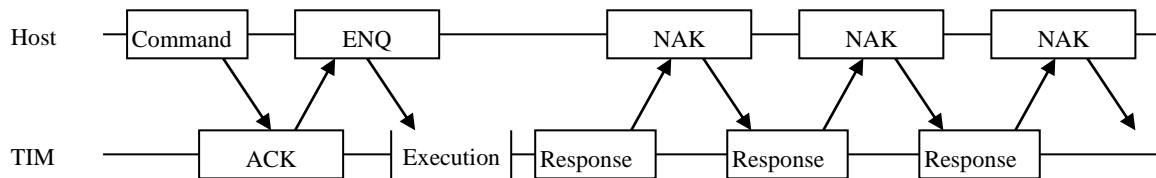
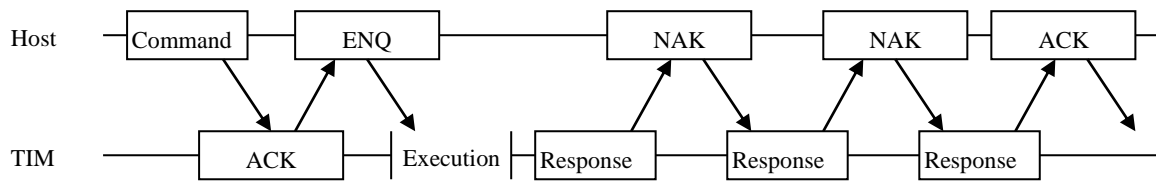
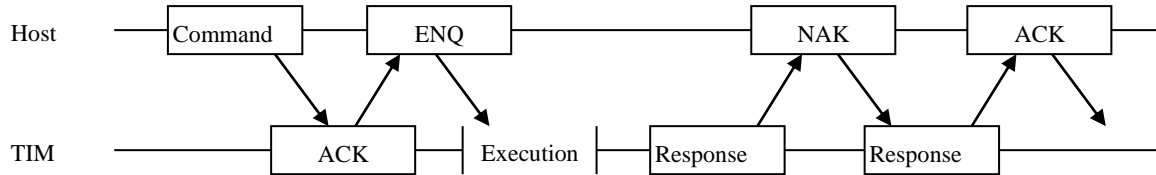
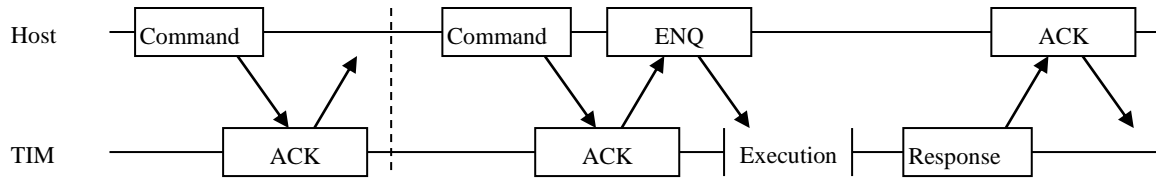
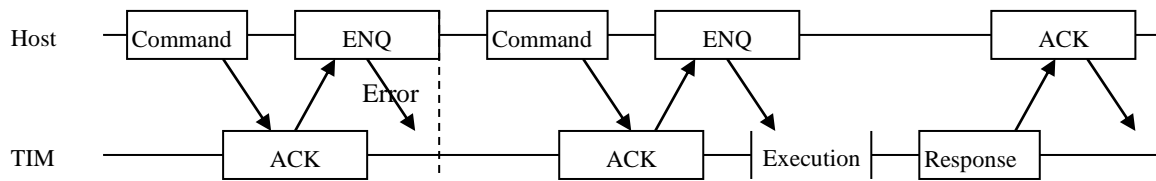
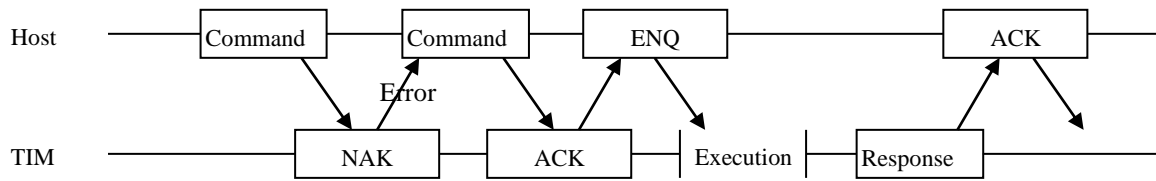
7.3.1 General



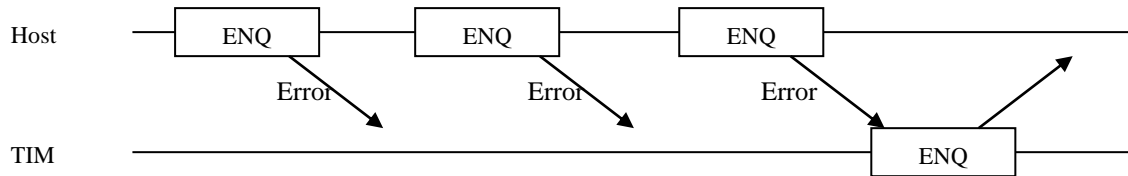
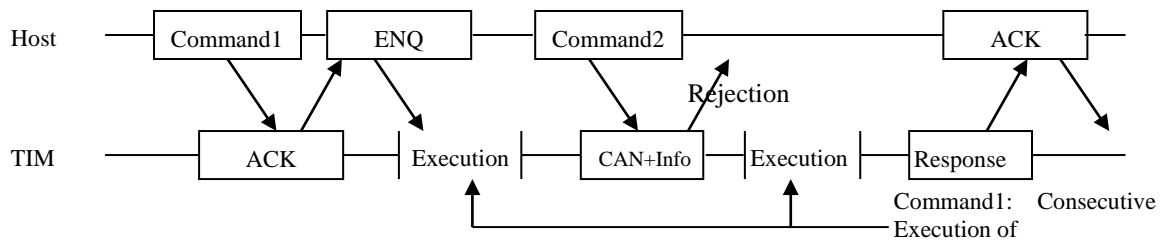
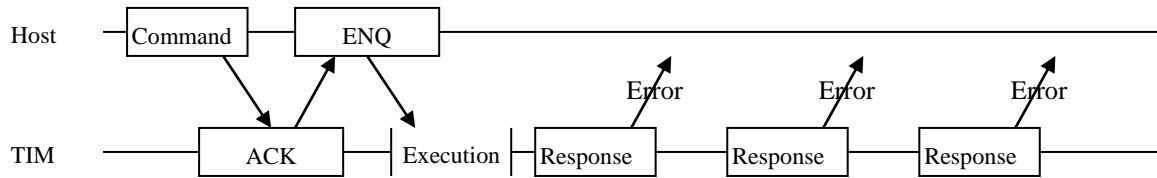
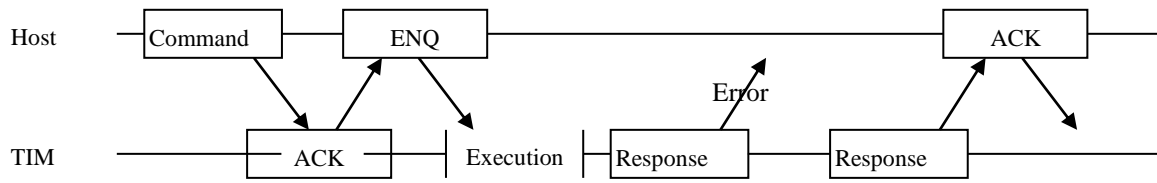
7.3.2 Event



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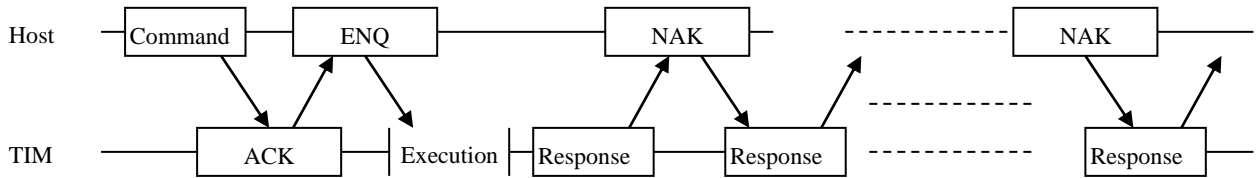


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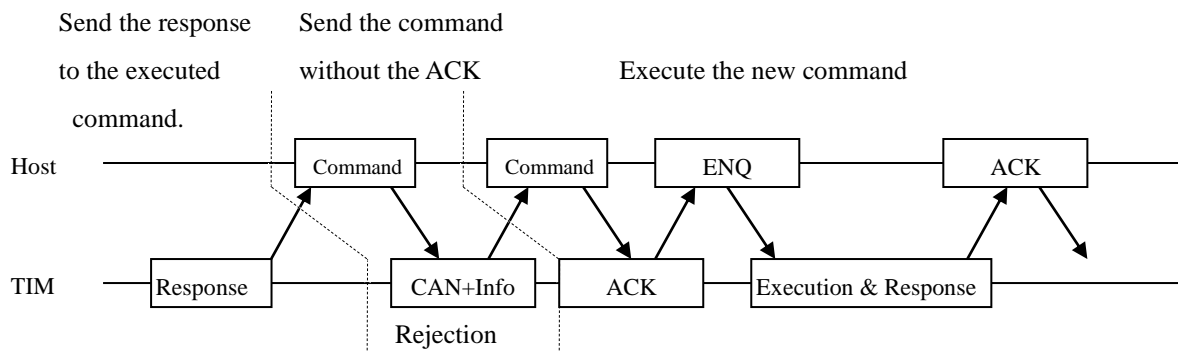


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- When received the NAK packet consecutively.



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

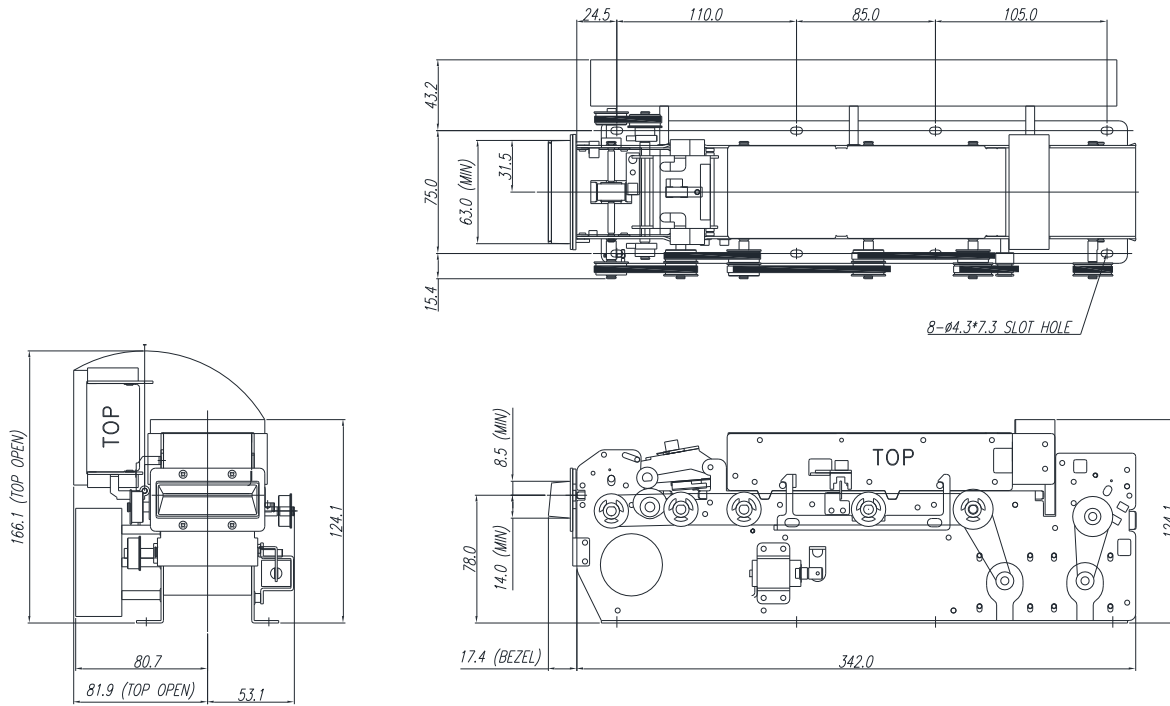


The terminal should ignore the command received before it sends the ACK packet, send the CANCEL packet. The second command will be treated as the ACK packet and executed with no ACK.

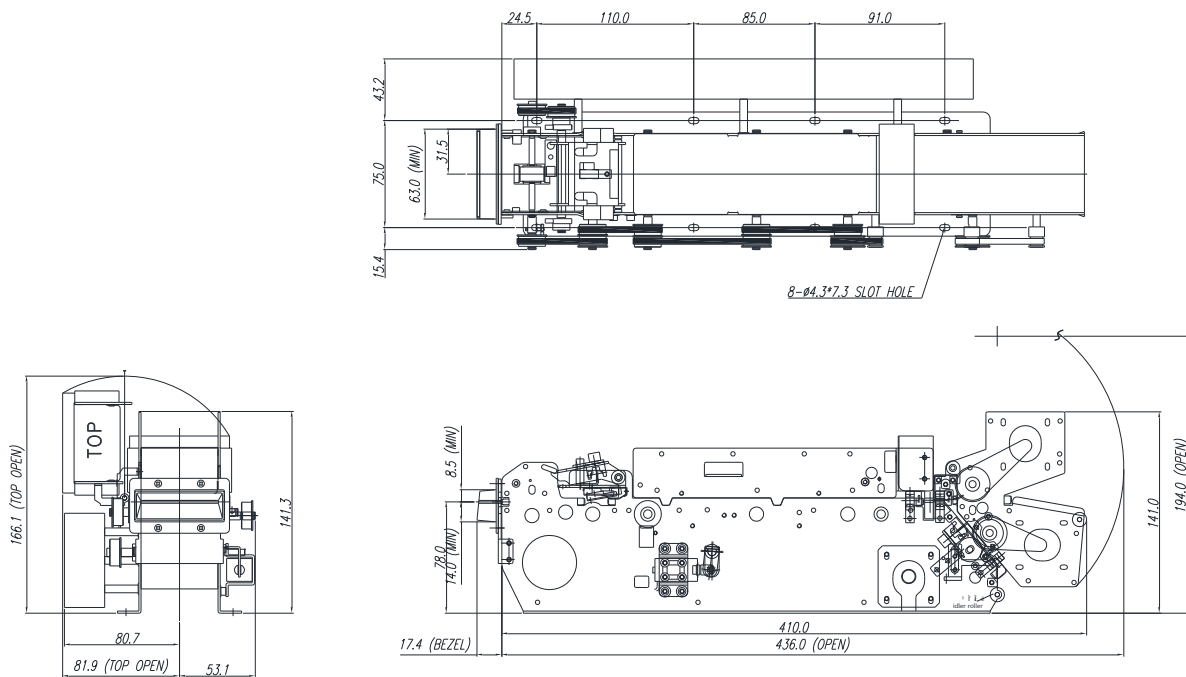
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TECHNICAL DRAWING

Bezel Type(One Pack)

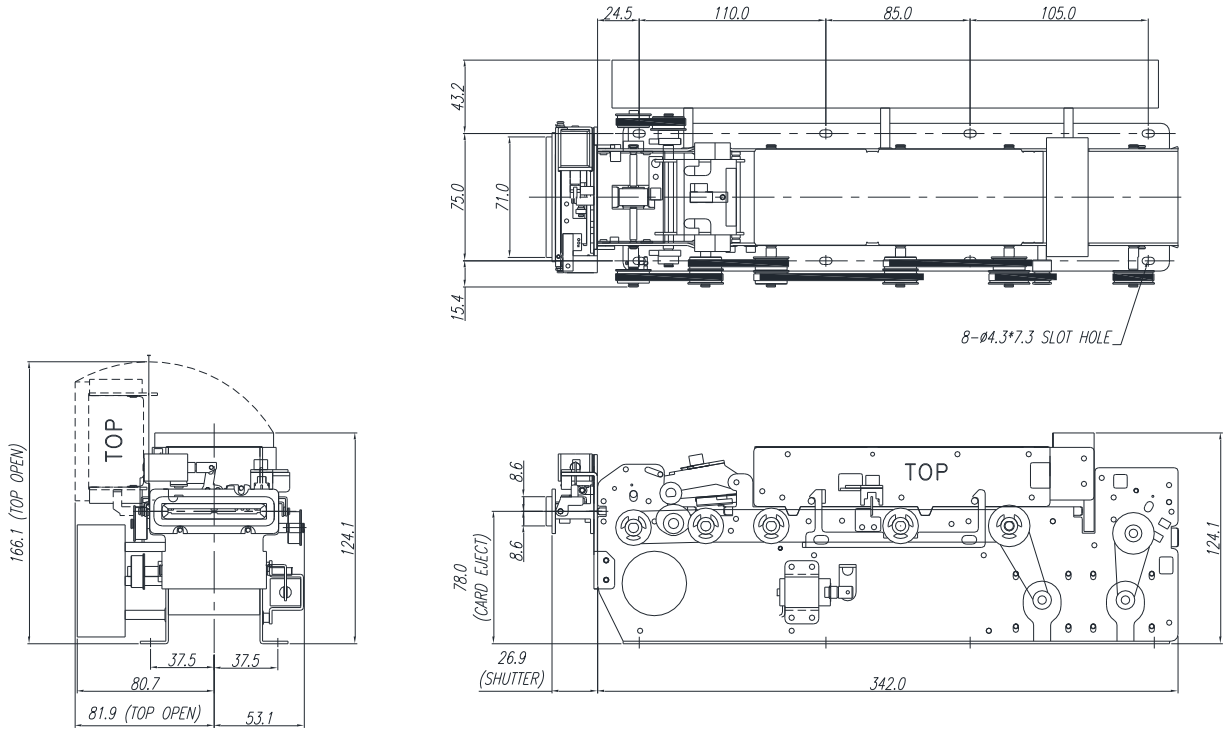


Bezel Type(Dual Pack)

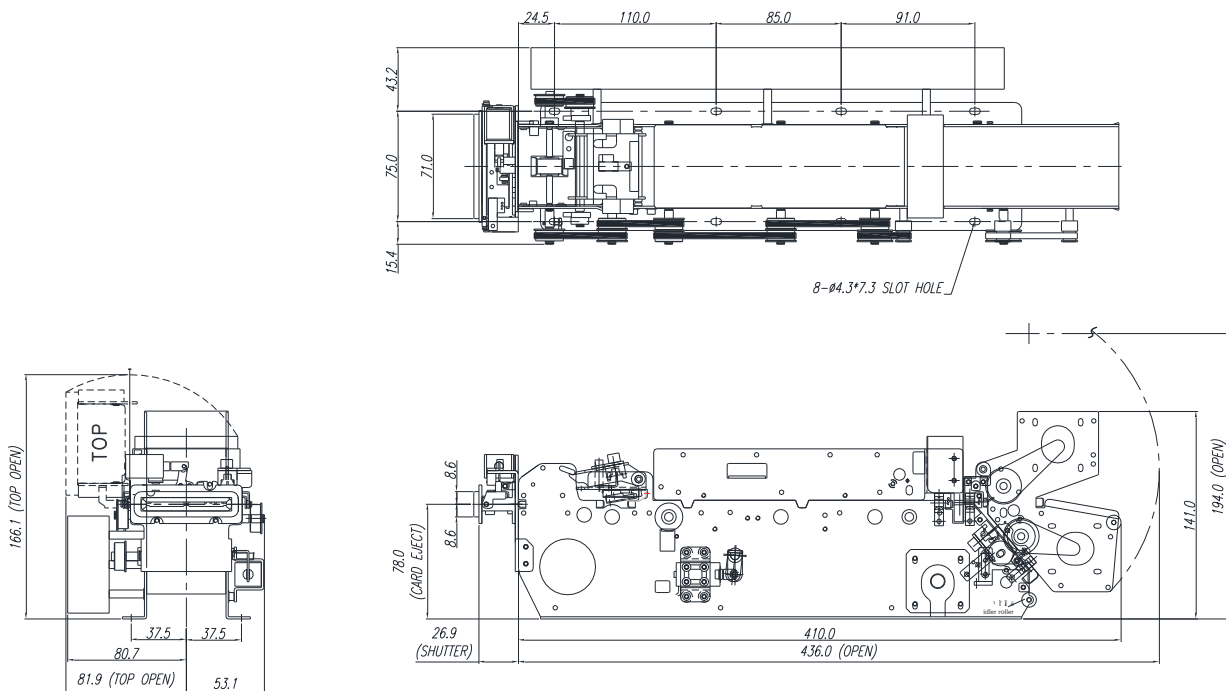


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Shutter Type(One Pack)

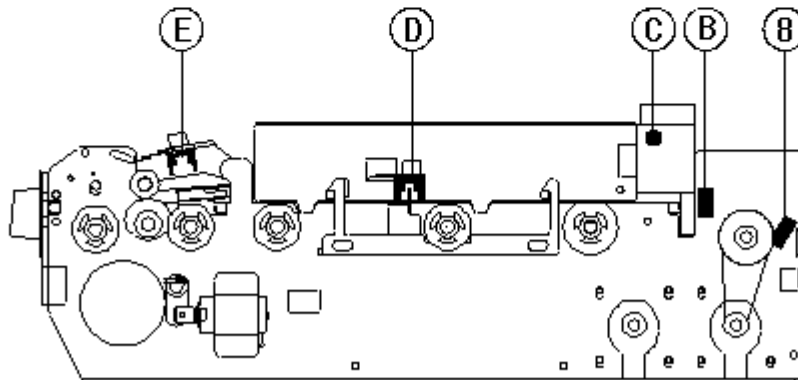
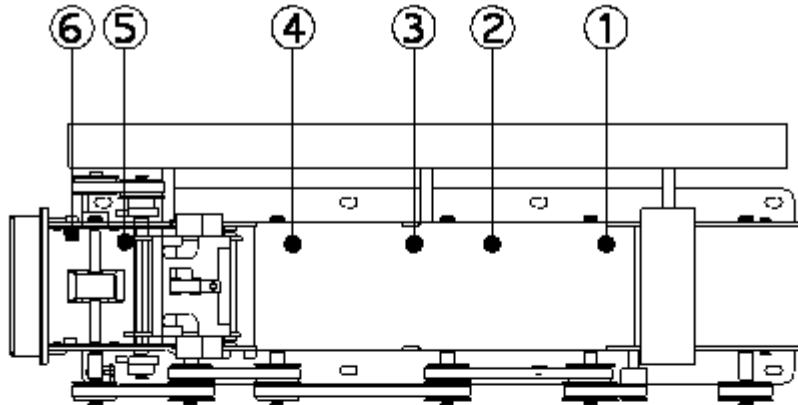


Shutter Type(Dual Pack)



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<Sensor positions- One Pack>

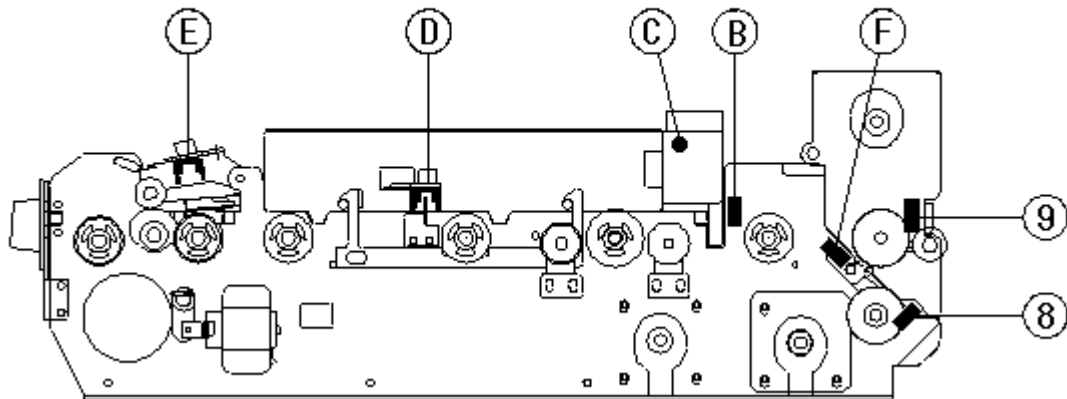
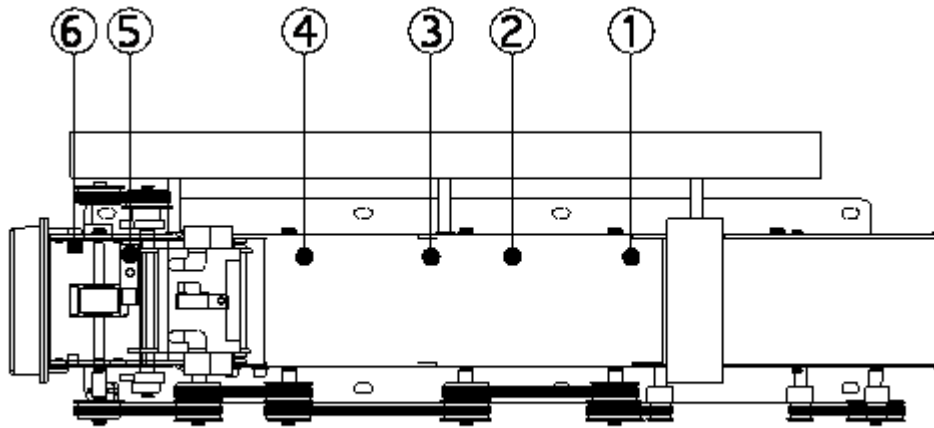


Note

- | | |
|--------------------|---------------------------------|
| 1: Feeder 1 sensor | 9: Non-use |
| 2: Feeder 2 sensor | A: Non-use |
| 3: Feeder 3 sensor | B: Cutter sensor |
| 4: Feeder 4 sensor | C: Cutter Inside sensor |
| 5: Feeder 5 sensor | D: Body Open sensor |
| 6: Feeder 6 sensor | E: Print head sensor |
| 7: Non-use | F: Warning #1 Sensor (Optional) |
| 8: Inlet #1 sensor | |

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<Sensor positions- Dual Pack>

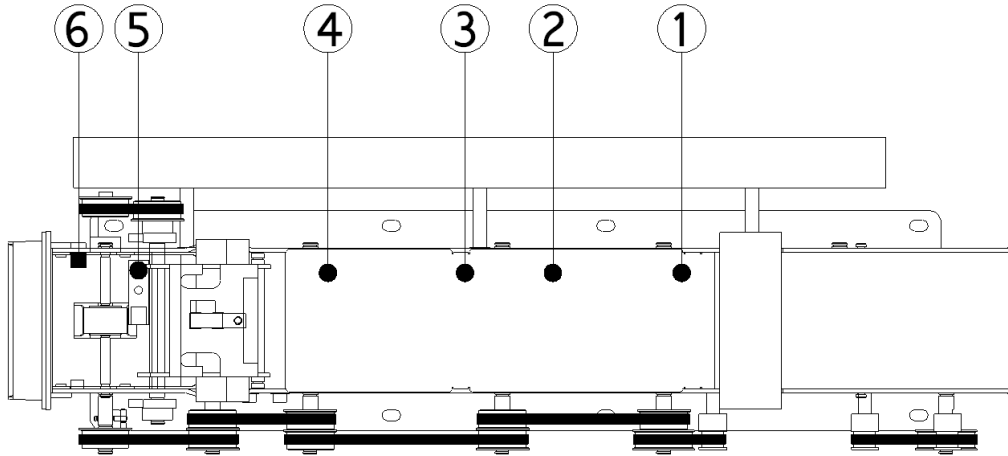


Note

- | | |
|--------------------|---------------------------------|
| 1: Feeder 1 sensor | A: Non-use |
| 2: Feeder 2 sensor | B: Cutter sensor |
| 3: Feeder 3 sensor | C: Cutter Inside sensor |
| 4: Feeder 4 sensor | D: Body Open sensor |
| 5: Feeder 5 sensor | E: Print head sensor |
| 6: Feeder 6 sensor | F: Inlet Open sensor |
| 7: Non-use | G: Non-use |
| 8: Inlet #1 sensor | H: Warning #1 Sensor (Optional) |
| 9: Inlet #2 sensor | I: Warning #2 Sensor(Optional) |

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< Feeder Part Sensor Position >



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COMMAND DETAIL

◆ *Command List*

	Item	Cm0	Cm1	Cm2	Detail	Note
COMMON	STATUS	'C'	'1'	'1'	Get Model	
		'C'	'1'	'2'	Get Firmware Version	
		'C'	'1'	'3'	Get Inlet Status	
		'C'	'1'	'8'	Get Card Position	
		'C'	'4'	'2'	Software RESET for Main Board	
		'C'	'5'	'5'	Get All Sensor status	
	SETTING	'C'	'2'	'1'	Set RTC IC	
		'C'	'2'	'4'	Set Retry Count	
		'C'	'2'	'5'	Set Buzz On/Off Cont.	
	MOVE	'C'	'3'	'2'	Card Move To ...	
		'C'	'3'	'7'	Card Eject in hold mode	
'C'		'3'	'4'	Card Capture		
MAGNETIC TICKET	MAGNETIC READ / WRITE	'M'	'3'	'1'	Magnetic Card Read	
		'M'	'3'	'3'	Magnetic Card Write	With verify
		'M'	'3'	'D'	Magnetic Card Read data on 3track for binary format Optional	
		'M'	'3'	'E'	Magnetic Card Write on 3 track for binary format Optional	
		'M'	'3'	'5'	Magnetic Card All Track Read	
	Cleaning	'M'	'5'	'1'	MSRW Header Cleaning	
PRINTER	Card Print	'P'	'2'	'3'	Card Print.	
	Cleaning	'P'	'3'	'2'	Thermal Header Cleaning	
	SETTING	'P'	'3'	'5'	Set 1 Line Text Data to the Sram	
		'P'	'3'	'7'	Set the Bar-Code Data to the Sram.	
TICKET	ISSUE	'T'	'3'	'1'	Issue the ticket with encoding on track 2 and printing.	
		'T'	'3'	'2'	Issue the ticket with encoding on track 3 and printing.	

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◆ *Common*

These commands include the terminal setting and the card movement related commands.

The 'STATUS' commands provide the function to check the current terminal status and the errors occurred during the command execution.

The 'SETTING' commands consist of commands for setting the terminal and these commands is easy to use because the same command can use for both setting and checking the terminal.

The 'MOVE' commands consist of commands used commonly like the card eject and capture command.

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1 STATUS / SETTING

1.1 "C11" : It is to check out Model number of TIM.

☞ 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
30 Byte (ASCII)

1.2 "C12" : It is to check out Firmware Version of TIM

☞ 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

VERSION
30 Byte (ASCII)

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1.3 “C13” : It is check out status of Inlet of ticket

☞ 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

Inlet 1	Inlet 2
1Byte (Hex)	1Byte (Hex)

☞ Data Variable

< Inlet 1 >

Code	Status
0x01	Inlet #1 Good
0x02	RFU
0x03	Inlet #1 Empty

< Inlet 2 >

Code	Status
0x01	Inlet #2 Good
0x02	RFU
0x03	Inlet #2 Empty

☞ Note

Stacker Status	Detail
‘Stacker Good’	Normal Tickets loading
‘Stacker Empty’	No Tickets in inlet

1.4 “C18” : It is to check out current card position of TIM

☞ Command Format

SOH	Null	Length	STX	“C18”	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	“C18”	GOOD	0x01	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“C18”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

☞ Response Data Structure

Card Position	
First Byte (Hex)	Second Byte (Hex)

<Card Position> Refer to page 21.

Number	First Byte	Sensor
1		RFU
2		RFU
3		RFU
4		RFU
5		RFU
6		RFU
7		RFU
8		RFU

Number	Second Byte	Sensor
1	0x01	SEN_1
2	0x02	SEN_2
3	0x04	SEN_3
4	0x08	SEN_4
5	0x10	SEN_5
6	0x20	SEN_6
7		RFU
8		RFU

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1.5 “C55” : It is to check out all the sensors of TIM

☞ Command Format

SOH	Null	Length	STX	“C55”	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	“C55”	GOOD	0x01	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“C55”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

☞ Response Data Structure

Status of all the sensors		
First Byte (Hex)	Second Byte (Hex)	Third Byte (Hex)

<Card Position> Refer to page 20.

First Byte	Sensor
0x01	SEN_H
0x02	SEN_I
0x04	RFU
0x08	RFU
0x10	RFU
0x20	RFU
0x40	RFU
0x80	RFU

Second Byte	Sensor
0x01	SEN_9
0x02	SEN_A
0x04	SEN_B
0x08	SEN_C
0x10	SEN_D
0x20	SEN_E
0x40	SEN_F
0x80	RFU

Third Byte	Sensor
0x01	SEN_1
0x02	SEN_2
0x04	SEN_3
0x08	SEN_4
0x10	SEN_5
0x20	SEN_6
0x40	SEN_7
0x80	SEN_8

☞ Note

SEN_H: There are only little tickets left in Inlet #1.

SEN_I: There are only little tickets left in Inlet #2.

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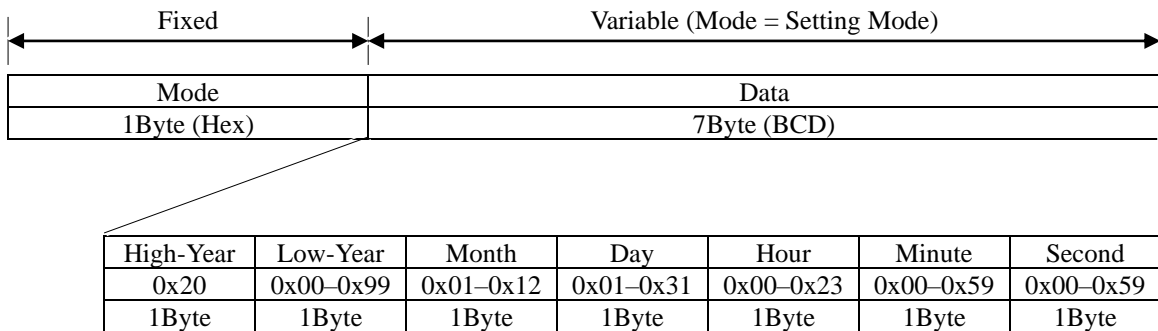
2 SETTING

2.1 “C21” : It is to set or check ‘RTC IC’.

☞ Command Format

SOH	Null	Length	STX	“C21”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Command Data Structure



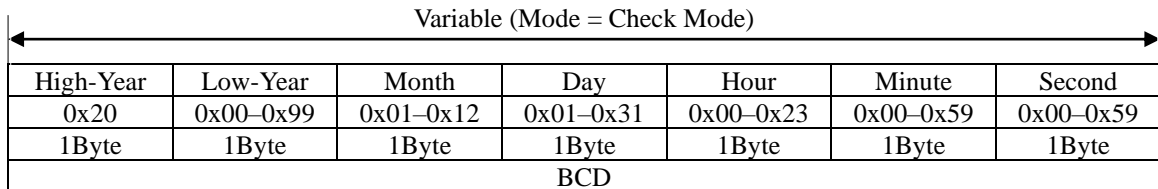
☞ Positive Response Format

SOH	Null	Length	STX	“C21”	GOOD	0x01	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“C21”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

☞ Response Data Structure



☞ Data Variable

<Mode>

Code	Mode	Detail
0x01	‘Setting Mode’	Set ‘RTC IC’
0x02	‘Check Mode’	Check ‘RTC IC’

☞ Note

‘Day’ is changeable due to the value of ‘Month’.

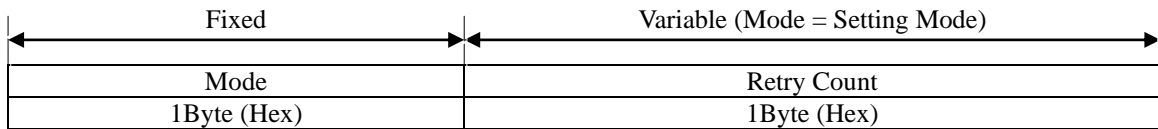
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2.2 “C24” : It is to set or to check ‘Retry Count’.

☞ Command Format

SOH	Null	Length	STX	“C24”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Command Data Structure



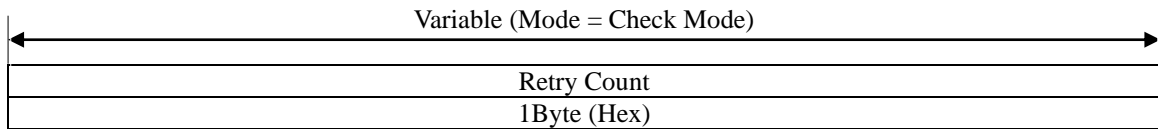
☞ Positive Response Format

SOH	Null	Length	STX	“C24”	GOOD	0x01	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“C24”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

☞ Response Data Structure



☞ Data Variable

<Mode>

Code	Mode	Detail
0x01	‘Setting Mode’	Set ‘Retry Count’
0x02	‘Check Mode’	Check ‘Retry Count’

<Retry Count>

Code	Setting	Detail	Note
0x00	NON	Do not retry	
0x01	Once	Execute the instruction again.	
0x02	Twice	Retry it twice	
0x03	Three times	Retry it three times	Default

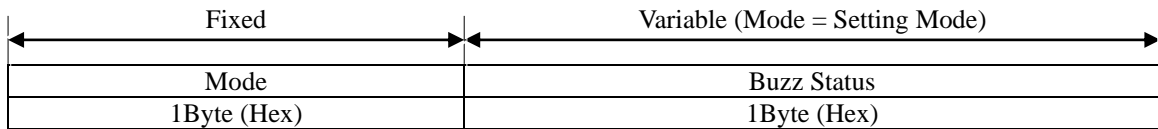
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2.3 “C25” : It is to set or check ‘Buzz Control’.

☞ Command Format

SOH	Null	Length	STX	“C25”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Command Data Structure



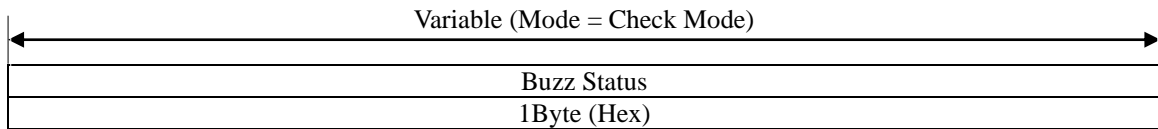
☞ Positive Response Format

SOH	Null	Length	STX	“C25”	GOOD	0x01	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“C25”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

☞ Response Data Structure



☞ Data Variable

<Mode>

Code	Mode	Detail
0x01	‘Setting Mode’	Set ‘Buzz Control’
0x02	‘Check Mode’	Check ‘Buzz Control’

<Buzz Status>

Code	Setting	Detail	Note
0x01	Buzz Off	Buzz Off	
0x02	Buzz On	Buzz On	Default

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2.4 “C42” : Software RESET for Main Board.

☞ Command Format.

SOH	Null	Length	STX	“C42”	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format.

SOH	Null	Length	STX	“C42”	GOOD	0x01	ETX	Bcc
-----	------	--------	-----	-------	------	------	-----	-----

☞ Negative Response Format.

SOH	Null	Length	STX	“C42”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

☞ Note

This “C42” Software RESET command is effective for TIM-1XXX MAIN BOARD only.

Card Dispenser and Card Reader is not reset.

With this software RESET, all the data set at TIM-1XXX return to DEFAULT value.

After “RESET”, minimum 3 seconds is required before running to get secure operation.

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3 MOVE

3.1 “C32” : It is take card to Card Reader / Writer Module or Print module

☞ 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
0x01	MSRW	Card transport to MSRW Module
0x02	RFU	
0x03	RFU	
0x05	Printer	Card transport to Printer Module

3.2 “C34” : It takes 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
-----	------	--------	-----	-------	--------	------	-----	-----

3.3 “C37” : Dispense the card to front and hold it at the exit roller of the unit.

☞ Command Format

SOH	Null	Length	STX	“C37”	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	“C37”	GOOD	0x01	ETX	Bcc
-----	------	--------	-----	-------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“C37”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

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◆ *MAGNETIC Ticket*

This section describes the commands that can use at the magnetic Ticket.

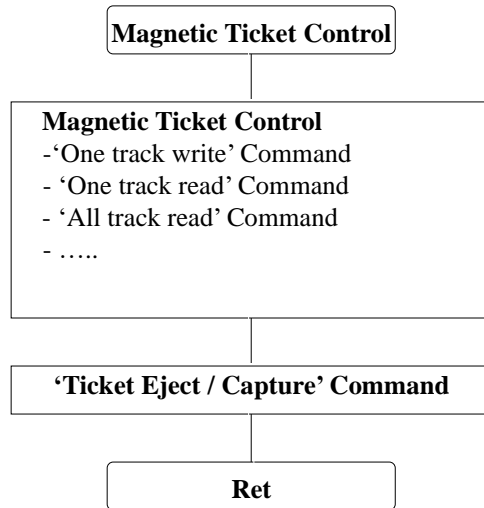
Track	Available Character Set	Maximum characters	REMARKS
Track #1	Character, Numbers	76	Except for the special character
Track #2	Numbers	36	
Track #3	Number	104	

Commands Set:

Item	Cm0	Cm1	Cm2	Detail	Note
MAGNETIC READ/WRITE	'M'	'3'	'1'	Magnetic card one track read	
	'M'	'3'	'3'	Magnetic card one track write	With Verify
	'M'	'3'	'5'	Magnetic card all track read	
CLEANING	'M'	'5'	'1'	MSRW Header Cleaning	

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Basic Magnetic Ticket Operations:



Magnetic Ticket Operations in the terminal

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1 MAGNETIC READ / WRITE

1.1 “M31” : It is to read data on track chosen.

☞ Command Format

SOH	Null	Length	STX	“M31”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Command Data Structure

Track (1Byte)

☞ Positive Response Format

SOH	Null	Length	STX	“M31”	GOOD	0x01	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“M31”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

☞ Response Data Structure

Read Data (ASCII Code)

☞ Data Variable

<Track>

Code	Setting	Detail
0x01	Track 1	Read data on Track 1
0x02	Track 2	Read data on Track 2
0x03	Track 3	Read data on Track 3
0x05	RFU	

1.2 “M33” : It is to write data on track chosen.

☞ Command Format

SOH	Null	Length	STX	“M33”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Command Data Structure

Track 1Byte (Hex)	Write Data (ASCII Code)
----------------------	----------------------------

☞ Positive Response Format

SOH	Null	Length	STX	“M33”	GOOD	0x01	ETX	Bcc
-----	------	--------	-----	-------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“M33”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

☞ Data Variable

<Track>

Code	Setting	Detail
0x01	Track 1	Write data to Track 1
0x02	Track 2	Write data to Track 2
0x03	Track 3	Write data to Track 3
0x05	RFU	

☞ Note

This command has the ‘Verify’ feature.

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4.5 “M3D” : It is to read data on 3track for binary format.

☞ Command Format

SOH	Null	Length	STX	“M3D”	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	“M3D”	GOOD	0x01	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“M3D”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

☞ Response Data Structure

DATA : 1 – 166 Byte ASCII String

☞ Note

The TAM-1000 can read binary data, but the data is not precisely without start bit.

You must analyze response data correctly.

4.6 “M3E” : It is to write data on 3track for binary format.

☞ Command Format

SOH	Null	Length	STX	“M3E”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Command Data Structure

Write Data
DATA : 1 – 146 Byte (0 ~9, A~F) ASCII String

☞ Positive Response Format

SOH	Null	Length	STX	“M3E”	GOOD	0x01	ETX	Bcc
-----	------	--------	-----	-------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“M3E”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

☞ ex)

ASCII	BINARY
0(0x30)	0000
1(0x31)	0001
-	-
9(0x39)	1001
A(0x40)	1010
-	-
E(0x45)	1110
F(0x46)	1111

If you want to be binary value to 0001 1110 0101 1010.

The write data are set to ‘1’ ’E’ ’5’ ’A’.

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1.3 “M35” : It is to read data from all three tracks.

☞ Command Format

SOH	Null	Length	STX	“M35”	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	“M35”	GOOD	0x01	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“M35”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

☞ Response Data Structure

0x01	Track1 Data	0x02	Track2 Data	0x03	Track3 Data
1Byte (Hex)	(ASCII)	1Byte (Hex)	(ASCII)	1Byte (Hex)	(ASCII)

2 CLEANING

2.1 “M51” : It is to clean Magnetic Head mounted inside MSR.W.

☞ Command Format

SOH	Null	Length	STX	“M51”	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	“M51”	GOOD	0x01	ETX	Bcc
-----	------	--------	-----	-------	------	------	-----	-----

☞ Negative Response Format

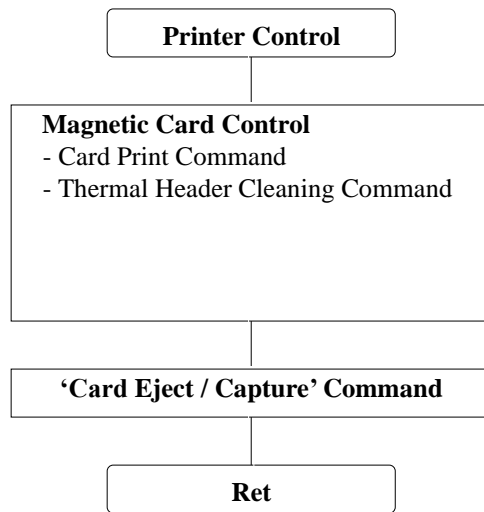
SOH	Null	Length	STX	“M51”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

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◆ *THERMAL PRINT*

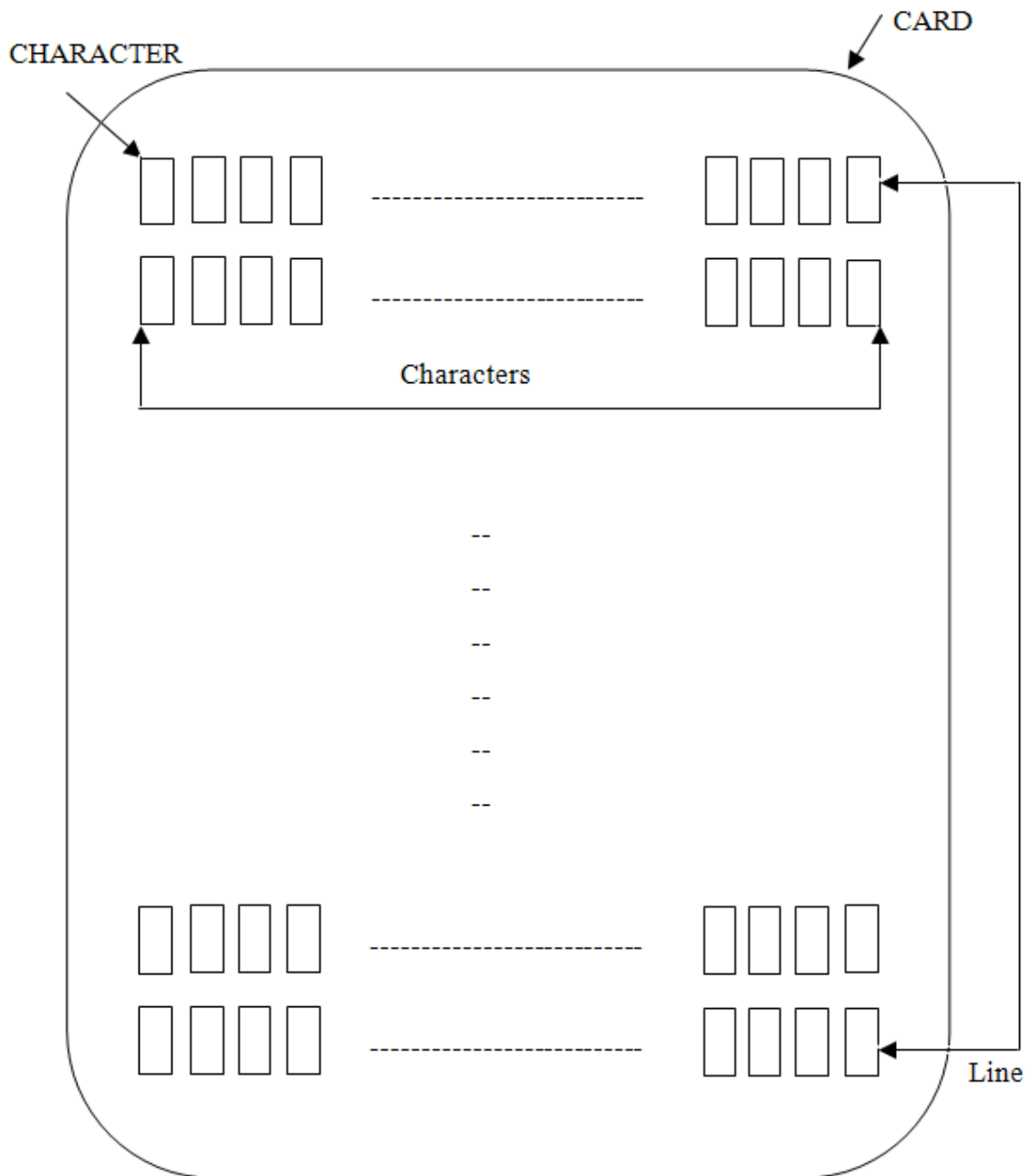
This section describes the commands that can use at the printer operations

Basic Printer Operations:

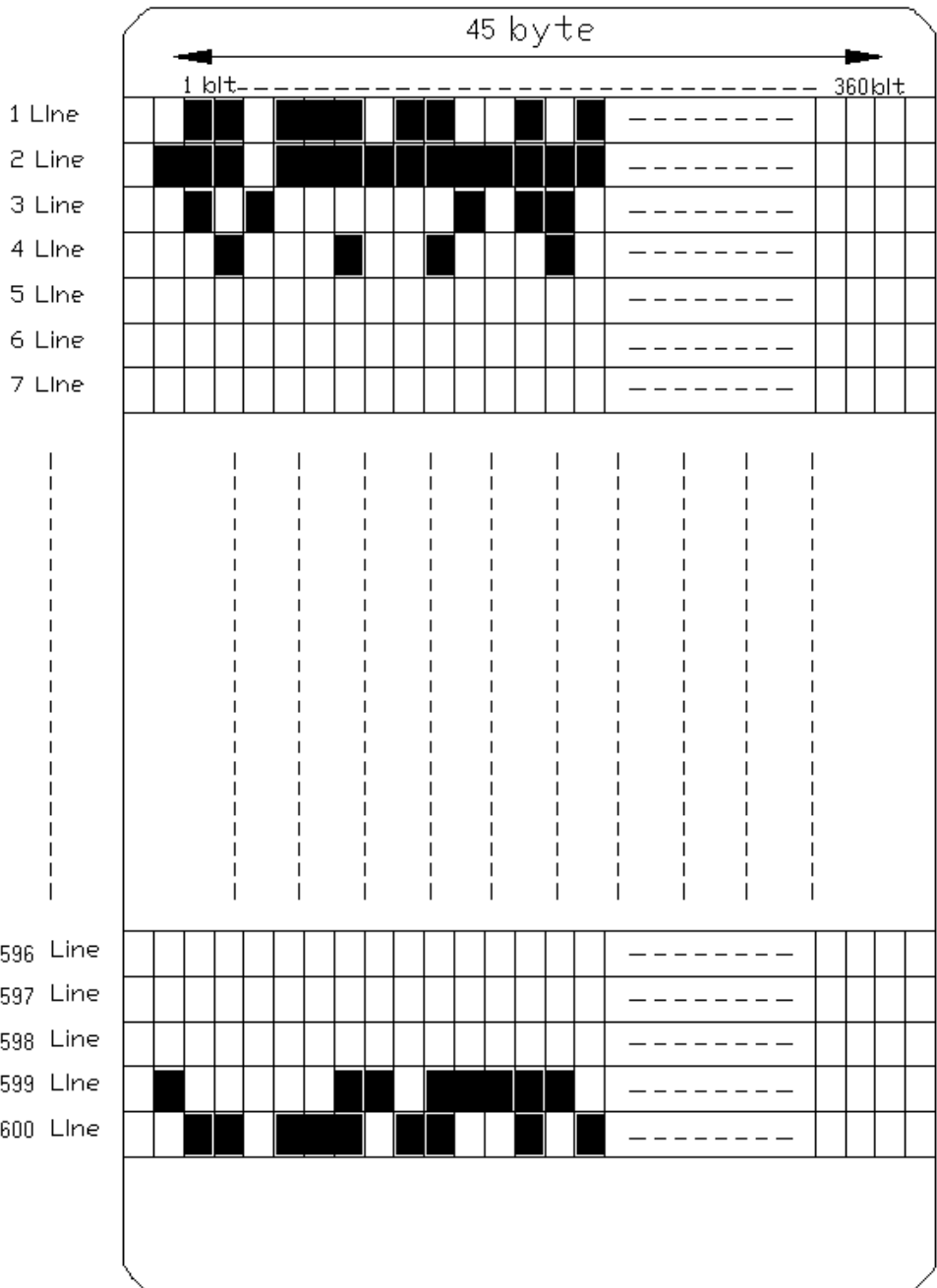


Printer Operations in the terminal

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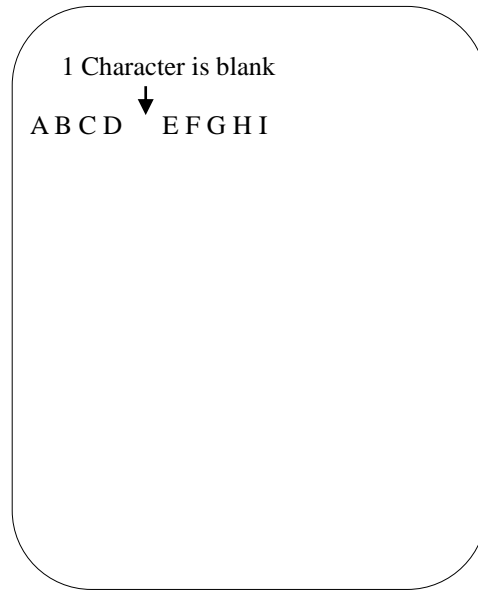
␣(ASCII CODE 0x20) : 1 character fills blank.

␣(ASCII CODE 0x0D): Next Line moving.

Ex1)

INPUT DATA: ABCD␣EFGHI

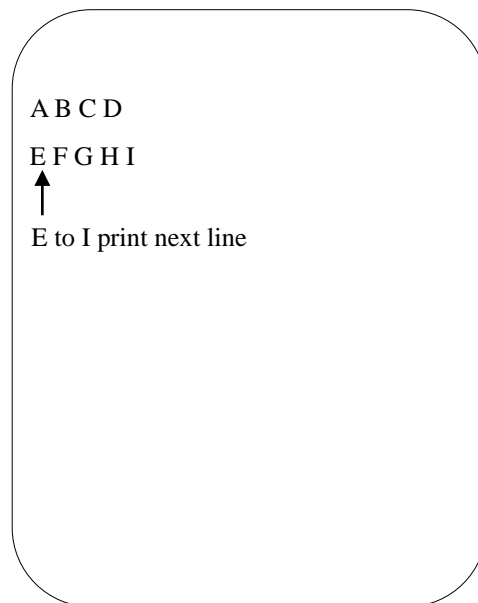
TICKET PRINT:



Ex2)

INPUT DATA: ABCD␣EFGHI

TICKET PRINT:



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1. THERMAL PRINTER

1.1 “P23” : Moves card to Stand-by position, and start printing .

☞ Command Format

SOH	Null	Length	STX	“P23”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Command Data Structure

Optional Flag	Ticket Line Number	Data to be printed on Ticket surface. (Variable length)
1Byte (HEX)	2Byte (ASCII Number: "01"~"99")	ASCII CODE 0x20(!) to 0x7E(~) (200Byte Max)

☞ Positive Response Format

SOH	Null	Length	STX	“P23”	GOOD	0x01	ETX	Bcc
-----	------	--------	-----	-------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“P23”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

☞ Note

♫(ASCII CODE 0x20) : 1 character fills blank.

♫(ASCII CODE 0x0D): Next Line moving.

☞ Data Variable

< Optional Flag >

Bits	Setting	Detail
7	RFU	-
6		
5		
4 3	Rotation	00: 0° rotation 01: 90° rotation 10: 180° rotation 11: 270° rotation
2 1	Font Type	00: Font height is 24 01: Font height is 32 10: Font height is 48 11: RFU
0	Bar Code	Bar Code in the SRAM memory is included, If this bit is set to 1.

1.2 “P32” : It is to clean Thermal Printer Head.

☞ Command Format

SOH	Null	Length	STX	“P32”	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	“P32”	GOOD	0x01	ETX	Bcc
-----	------	--------	-----	-------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“P32”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

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1.3 “P35” : It sets Text Data into the Sram buffer.

-This command is Single line Set command and the position of the TEXT is flexible as user can choose the position of the TEXT.

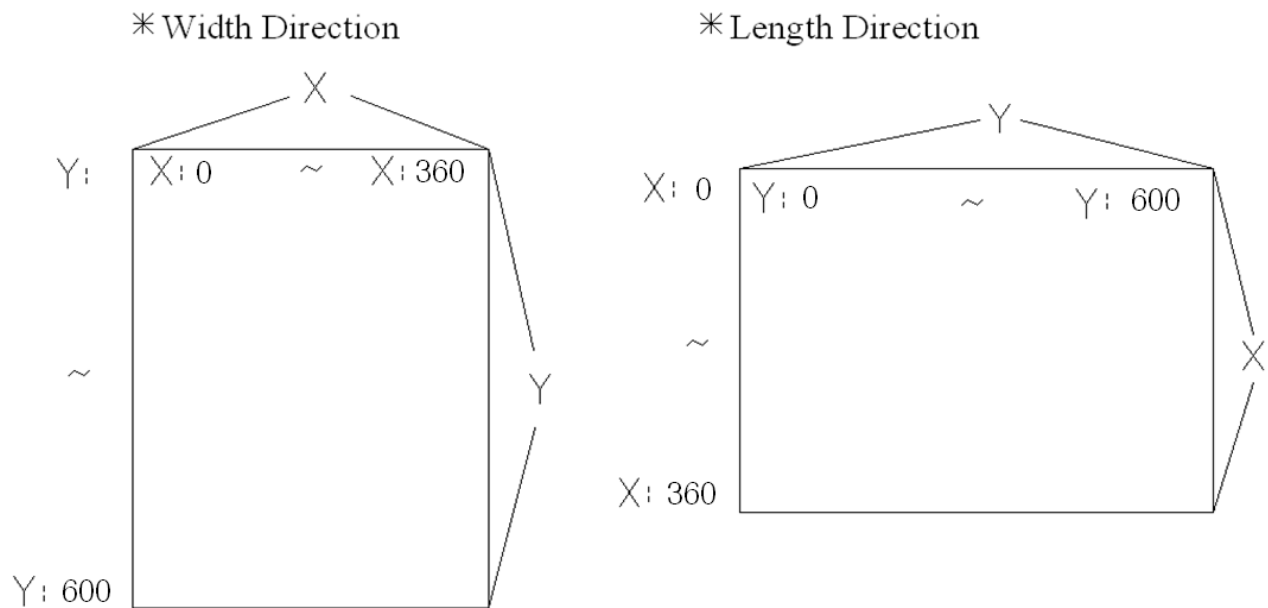
-By using this command Several time, it is a Multi Line Set.

☞ Command Format

SOH	Null	Length	STX	“P35”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Command Data Structure

Fixed byte				Variable Byte
X Point	Y Point	Font Select	Text Direction	Text Data
2byte(Hex)	2byte(Hex)	1byte(Hex)	1byte(Hex)	Max: 50 byte (ASCII)
Decimal : 0~360 Hex: 0x00~0x168	Decimal : 0~600 Hex: 0x00~0x258	0x00 Font height is 24 0x01 Font height is 32 0x02 Font height is 48 0x03 RFU	0x00: 0° rotation 0x01: 90° rotation 0x02: 180° rotation 0x03: 270° rotation	



☞ Positive Response Format

SOH	Null	Length	STX	“P35”	GOOD	0x01	ETX	Bcc
-----	------	--------	-----	-------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“P35”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

***To print this data, use the “P23” Sram print command.**

***Recommend to use this command instead of the just Multi line set command as this command has the flexible position of the TEXT.**

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1.4 “P37” : It sets Bar Code options into the SRAM buffer.

***To print this Bar Code data, use the “P23” or “T31” command.**

☞ Command Format

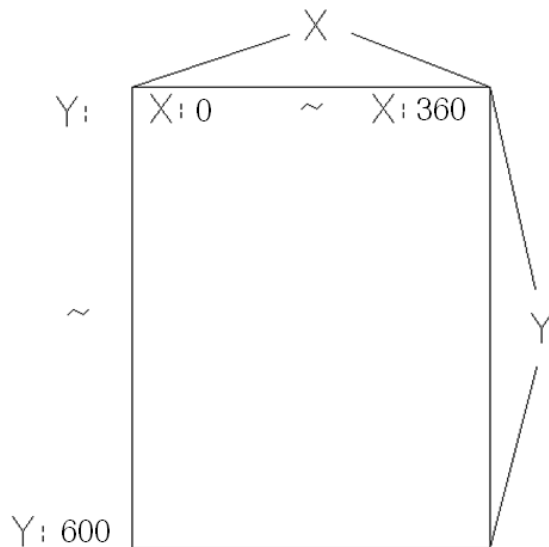
SOH	Null	Length	STX	“P37”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Command Data Structure

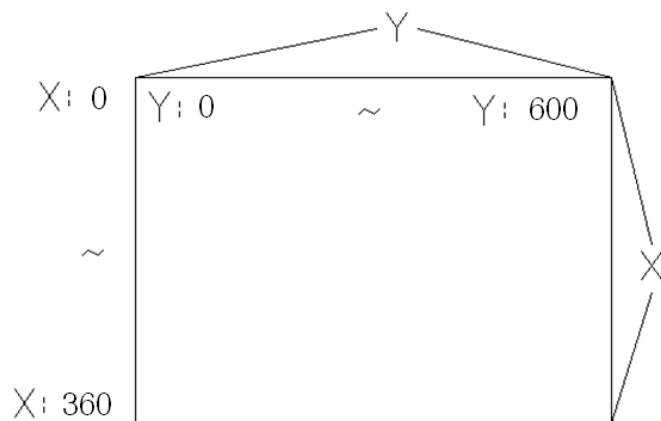
Fixed byte				
X Point	Y Point	Bar code Type Select	Rotation	Bar-Code Scale
2byte(Hex)	2byte(Hex)	1byte(Hex)	1byte(Hex)	1byte(Hex)
Decimal : 0~360	Decimal : 0~600	0x01: Code 128 0x02: - 0x03: - 0x04: -	0x01: 0° rotation 0x02: 90° rotation 0x03: 180° rotation 0x04: 270° rotation	0x01: One bar is 0.242mm 0x02: One bar is 0.363mm
Hex: 0x00~0x168	Hex: 0x00~0x258			

Fixed byte		Variable Byte
Bar Code Height	Bar Code Text On/Off	Bar-Code Data to print
2byte(Hex)	1byte(Hex)	Max: 23 byte(ASCII)
Decimal : 0~500	0x00: Off the BarCode Text.	
Hex: 0x00~0x1F4	0x01: On the BarCode Text.	

* Width Direction



* Length Direction



☞ Positive Response Format

SOH	Null	Length	STX	“P37”	GOOD	0x01	ETX	Bcc
-----	------	--------	-----	-------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“P37”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

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◆ **ISSUE OF TICKET**

1.1 “T31” : Issue the ticket with encoding on track2 and printing. And next ticket moves from Inlet to print module.

☞ Command Format

SOH	Null	Length	STX	“T31”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	“T31”	GOOD	0x01	ETX	Bcc
-----	------	--------	-----	-------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“T31”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

☞ Command Data Structure

Inlet	Data to be written on Track 2.	Optional Flag	Ticket Line Number	Data to be printed on Ticket surface. (Variable length)
1Byte	37 Byte (Numeric characters)	1Byte(HEX)	2Byte (ASCII Number: "01"~"99")	ASCII CODE 0x20(!) to 0x7E(~) (200Byte Max)

☞ Data Variable

< Inlet >

Code	Setting	Detail
0x01	Inlet 1	Select Inlet 1
0x02	Inlet 2	Select Inlet 2
0x03	Auto	Select Inlet automatically

< Optional Flag >

Bits	Setting	Detail
7	RFU	-
6		
5		
4 3	Rotation	00: 0° rotation 01: 90° rotation 10: 180° rotation 11: 270° rotation
2 1	Font Type	00: Font height is 24 01: Font height is 32 10: Font height is 48 11: RFU
0	Bar Code	Bar Code in the SRAM memory is included, If this bit is set to 1.

☞ Note: TIM-1XXX sends the ACK to host as soon as the new ticket issued is ejected.

And before the next ticket move to standby position, TIM-1XXX becomes busy status. So if host send another command before the next ticket finish moving to standby position, host will receive “CAN” including 1 byte of “Info” field. And host can recognize the ticket position with “Info” field. (Refer to page 13.)

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1.2 “T32” : Issue the ticket with encoding on track3 and printing. And next ticket moves from Inlet to print module.

☞ Command Format

SOH	Null	Length	STX	“T32”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	“T32”	GOOD	0x01	ETX	Bcc
-----	------	--------	-----	-------	------	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“T32”	E-Code	0x00	ETX	Bcc
-----	------	--------	-----	-------	--------	------	-----	-----

☞ Command Data Structure

Inlet	Data to be written on Track 3.	Optional Flag	Ticket Line Number	Data to be printed on ticket surface. (Variable length)
1Byte	104 Byte (Number)	1Byte(HEX)	2Byte (ASCII Number: "01"~"99")	ASCII CODE 0x20(!) to 0x7E(~) (200Byte Max)

☞ Data Variable

< Inlet >

Code	Setting	Detail
0x01	Inlet 1	Select Inlet 1
0x02	Inlet 2	Select Inlet 2
0x03	Auto	Select Inlet automatically

< Optional Flag >

Bits	Setting	Detail
7	RFU	-
6		
5		
4 3	Rotation	00: 0° rotation 01: 90° rotation 10: 180° rotation 11: 270° rotation
2 1	Font Type	00: Font height is 24 01: Font height is 32 10: Font height is 48 11: RFU
0	Bar Code	Bar Code in the SRAM memory is included, if this bit is set to 1.

☞ Note: TIM-1XXX sends the ACK to host as soon as the new ticket issued is ejected.

And before the next ticket move to standby position, TIM-1XXX becomes busy status. So if host send another command before the next ticket finish moving to standby position, host will receive “CAN” including 1 byte of “Info” field. And host can recognize the ticket position with “Info” field. (Refer to page 13.)

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◆ *SELF TEST*

There are 4 buttons to test and check this unit. (B1 ~ B4)

And you can see the result of test at the LCD as below.

Four Button				LCD							
B1	B2	B3	B4	T	I	M	-	1	0	0	0
				v	1	.	1	0			

“B4” is menu change button. And others are menu select buttons, from menu 1 to menu 3.

In the first Menu view, (You can press B4 button to change the menu view.)

T	i	c	k	_	i	s	s
P	r	t		E	j	t	

1. Tick_iss [B1]: It is to test the ticket issue operation.
2. Prt [B2]: It is to test the ticket print operation.
3. Ejt [B3]: It is to test the ticket eject operation.

In the Second Menu view,

C	u	t	t	_	a	d	j
S	e	n		C	a	p	

1. Cutt_adj [B1]: It is to adjust the ticket Cutting position.

C	u	t	t		a	d	j
		+	2	d			

[B1]: Value Increase.

[B2]: Value Decrease.

[B3]: Value Save and Exit.

[B4]: Exit.

2. Sen [B2]: It is to confirm the All sensor status. (Refer to page 20 for the sensor position.)

S		1	2	3	4	5	6
7	8	9	A	B	C	D	E

[B4]: Exit.

3. Cap [B3]: It is to test the ticket capture operation.

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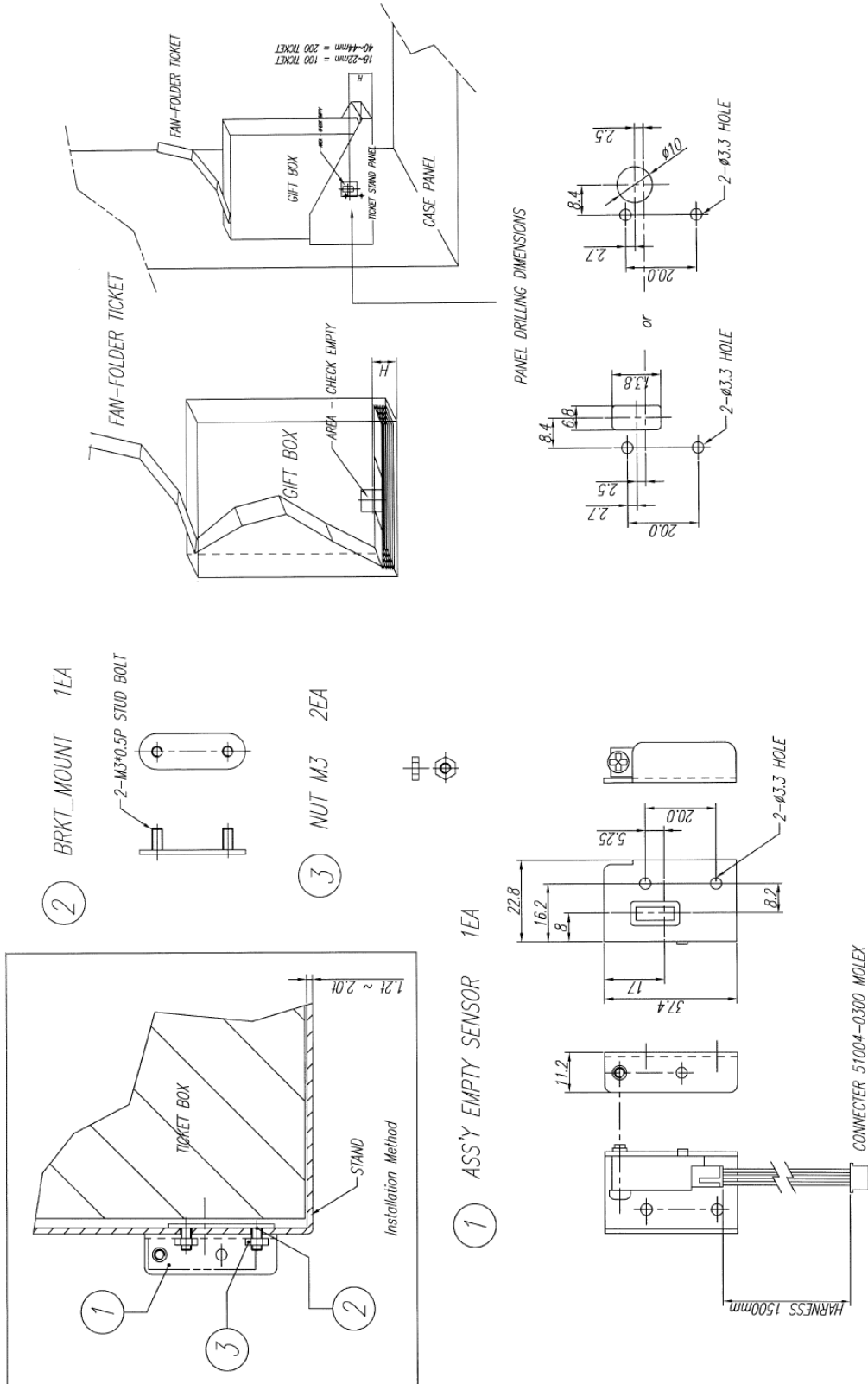
In the third Menu view,

M	S	1	_	r	/	w	.
M	S	1		M	S	1	

1. MS1_r/w [B1]: It is to test the track one Read/Write operation of Magnetic ticket.
2. MS2 [B2]: It is to test the track two Read/Write operation of Magnetic ticket.
3. MS3 [B3]: It is to test the track three Read/Write operation of Magnetic ticket.

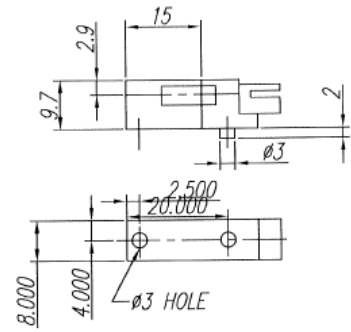
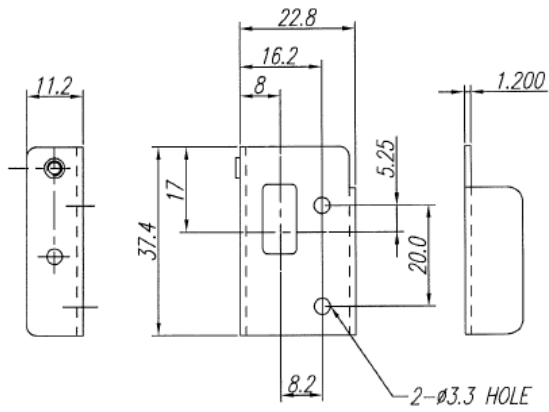
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Ticket Warning Sensor(Optional)

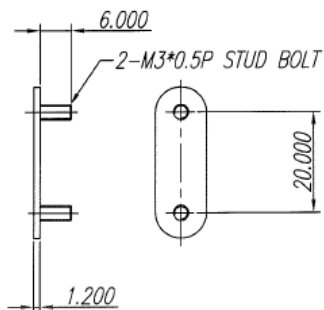


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① ASS'Y EMPTY SENSOR 1EA
sus304 1.2T



② BRKT_MOUNT 1EA
sus304 1.2T



* Part Number: 8941-0058-00

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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.

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<CARD_PRESENT>

Code : 0x2006

Description : When the card exists already in the terminal.

Action : Eject the card.

<BUSY>

Code : 0x2007

Description : When the terminal is running or busy.

Action : Wait until the previous operation is completed.

<RTC_ERROR>

Code : 0x2008

Description : When the RTC chip is broken.

Action : Replace the board.

<TWO_CART_ERROR>

Code : 0x2009

Description : When more than one card is presented in the feeder part.

Action : Remove one card.

<Inlet 1_ERROR>

Code : 0x2102

Description : The Upper Inlet ERROR

Action : Be sure that the ticket is loaded at the Upper Inlet.

<Inlet 2_ERROR>

Code : 0x2103

Description: The Lower Inlet ERROR

Action : Be sure that the ticket is loaded at the Lower Inlet.

<ALL_EMPTY>

Code : 0x2104

Description : No tickets at both the Upper and Lower Inlet.

Action : Load the ticket in the Inlet.

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<INLET 1_EMPTY>

Code : 0x2105

Description : No ticket at the Upper Inlet.

Action : Load the ticket at the Upper Inlet.

<INLET 2_EMPTY>

Code : 0x2106

Description : No ticket at the lower inlet.

Action : Load the card at the lower inlet.

<MSRW_ERROR>

Code : 0x2200

Description : The MS Reader/Writer that cannot use in this model.

Action : Change the MS Reader/Writer.

<MSRW_WRITE_ERROR>

Code : 0x2202

Description : Error when the MS Reader/Writer is writing on the card.

Action : Clean the header and check the card.

<MSRW_READ_ERROR>

Code : 0x2203

Description : Error when the MS Reader/Writer is reading on the card.

Action : Clean the header and check the card.

<MS BLANK ERROR>

Code : 0x2209

Description : No data on the magnetic card

Action : Write data on the magnetic card.

<CAP_ERROR>

Code : 0x2211

Description : Error when the Cap is opened.

Action : Close the Cap.

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<PRINT_ERROR>

Code : 0x2600

Description : Unavailable PRINTER module.

Action : Change the PRINTER MODULE

<SHUTTER_OPEN_ERROR>

Code : 0x2602

Description : THERMAL SHUTTER OPEN ERROR.

Action : Check the Shutter Sensor or Motor.

<SHUTTER_CLOSE_ERROR>

Code : 0x2603

Description : THERMAL SHUTTER CLOSE ERROR.

Action : Check the Shutter Sensor or Motor.

<THERMAL_LINE_OVER_ERROR>

Code : 0x2604

Description : Too big the chosen value.

Action : Check the Font size or setting value.

< THERMAL _PRINTER_INSTALL_ERROR>

Code : 0x2606

Description : Printer module is not normally installed.

Action : Check and reinstall the printer normally.

< THERMAL _PRINTER_CAP_OPEN_ERROR>

Code : 0x2607

Description : Cover of thermal printer is opened.

Action : Close a Cover.

<CUTTER_ERROR>

Code : 0x2801

Description : Cutter's malfunction.

Action : Check and clean the cutter.

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Precautions

1. Check if the tickets exist in inlets. Else it may not issue the ticket.
2. Make sure that the top of Printer and MS module are closed?
3. Check the communication line
 - 1) Communication Port, Baud, Parity, and Data Bit, etc.