

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	1 OF 44	2013. 10. 15.

KYT-11xx Motorized Mifare Card Reader/Writer

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Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	2 OF 44	2013. 10. 15.

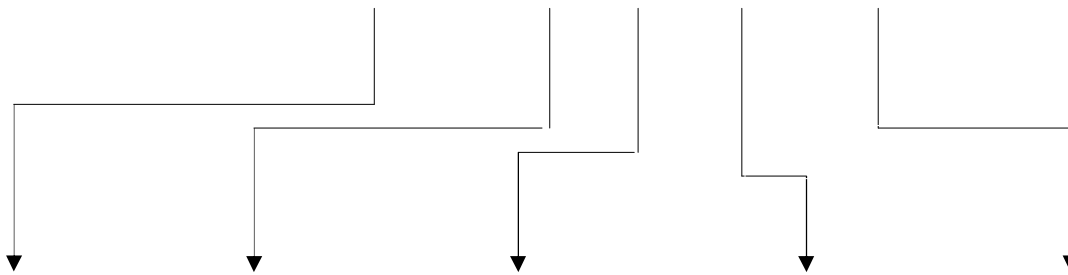
REVISION HISTORY

No	DATE	DESCRIPTION	REV	PAGE	F/W Name
1	2004.06.		A	29	
2	2004.10	BEZEL => SHORT BEZEL	B		
3	2006.10	Modified the model name information in the SPEC.	C	30	
4	2007.07.04	'C36' RF Card Read in Sector Range	D	29	Ver1.33
5	2007.07.30	RS422 Interface addition.	E	33	Ver2.00
6	2008.05.14	Add Mifare 4k	F	37	Ver2.04
7	2008.06.09	Model name change.	G	39	
8	2009.11.03	Model name change.	H	43	
9	2010.12.14	Add shutter type	I	43	
10	2012.01.18	Software Reset	J		
11.	2012.05.30	Add getting the F/W version command.	K		
12	2013.10.15	Add the multiple RF Detection	L	40	

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	3 OF 44	2013. 10. 15.

MODEL NAME INFORMATION

K Y - 1



Interface	Function	Type	Bezel	Option
T : RS-232C S : RS-422	1: Motorized feeder module	1 : With RF reader (RS-232C & RS-4422)	0 : Without bezel. 1 : Short bezel. 2 : Shutter	0 : Capture - Rear Drop 1 : Capture- Solenoid and Rear Drop

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	4 OF 44	2013. 10. 15.

C O N T E N T S

Overview

System Block Diagram

Specification

RF Card Process

Communication Interface

Technical Drawing

Command Detail

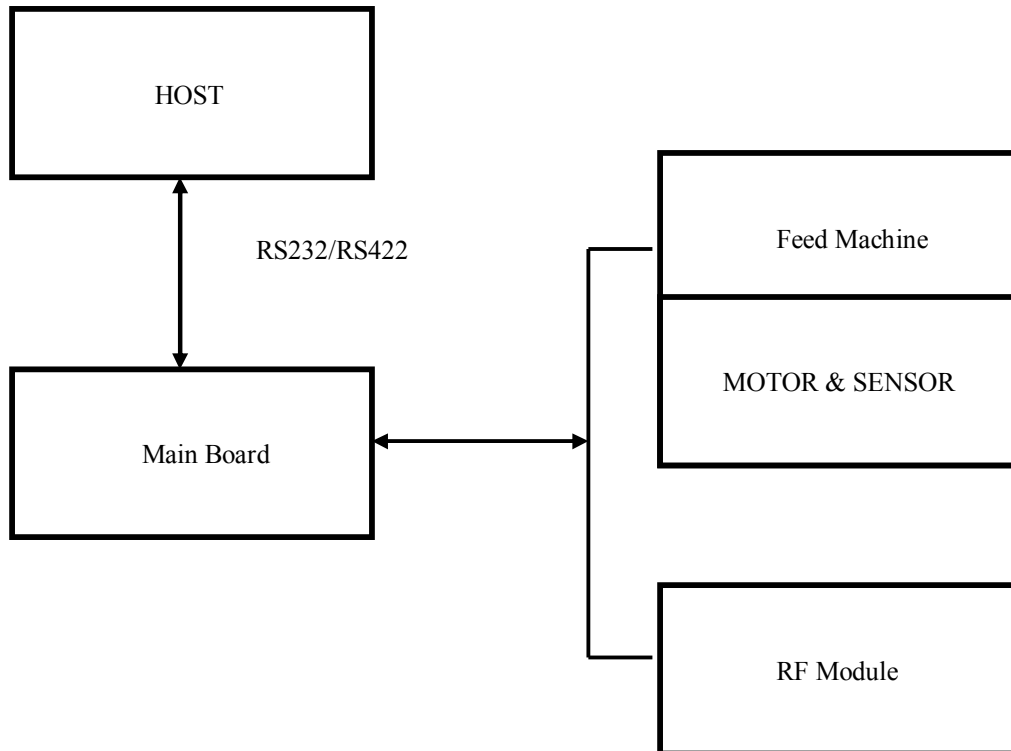
Error Detail

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
			L	5 OF 44

OVERVIEW

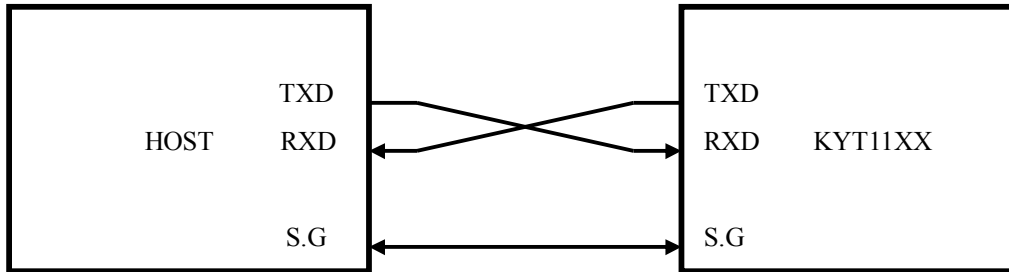
Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	6 OF 44	2013. 10. 15.

SYSTEM BLOCK DIAGRAM



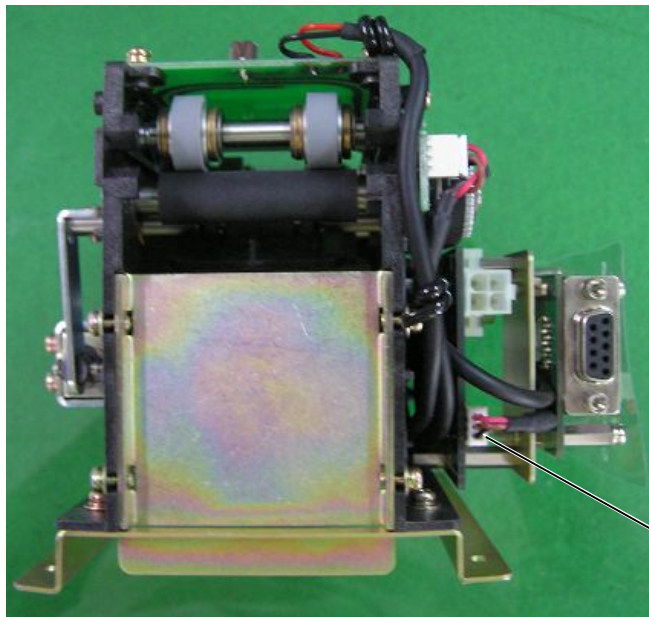
Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	7 OF 44	2013. 10. 15.

◆ *RS – 232 Connection*



CASE 1) Part Number : 53015-0310(MOLEX) – J1

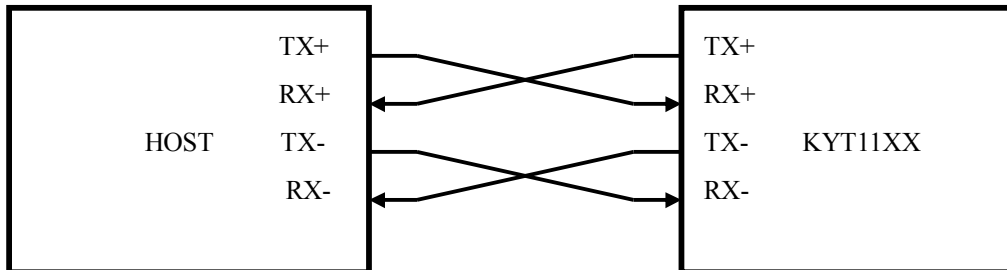
Pin No	INDEX	Remark
1	RXD	Receive
2	TXD	Transmit
3	S.G	Signal Ground



RS232C

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	8 OF 44	2013. 10. 15.

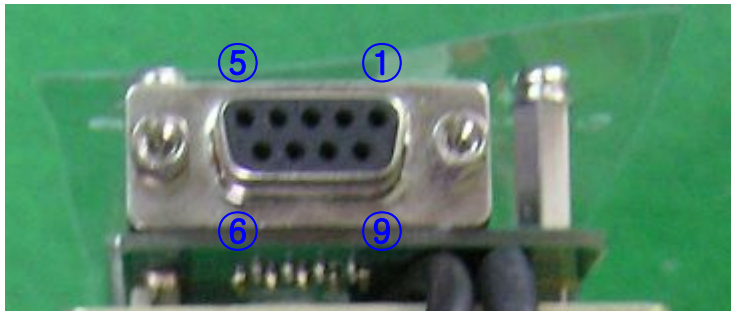
◆ *RS422 Connection*



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

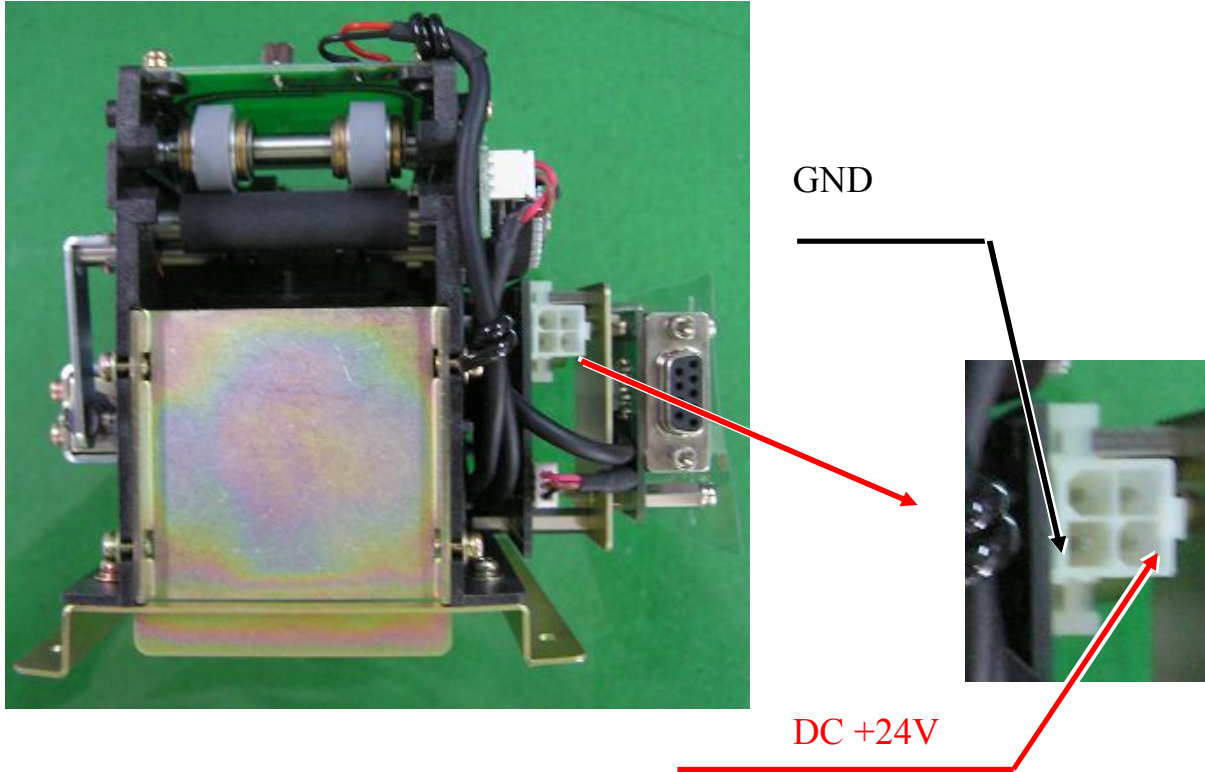
Pin No	INDEX	Remark
1	TX+	
4	RX+	
6	TX-	
8	RX-	

1



Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	9 OF 44	2013. 10. 15.

◆ *Power Connection*



CASE 1) Part Number : 5566-04A1 (MOLEX)

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

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	10 OF 44	2013. 10. 15.

SPECIFICATIONS

◆ *basic functions*

	Spec	Remark
Dimension	mm(W) x mm(L) x mm(H)	
Weight		
Input power	DC 24V	
Card Feeding Speed	mm/Sec ±10%	

◆ *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 % 95% RH(No Condensation)

Vibration

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

Shock Endurance

: 30G, 11ms

Encoding Speed : 1Sec/Card

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
			L	11 OF 44

◆ *Controller Environment*

Communication

: RS422 OR RS232C Interface

: Baud Rate – 9600 BPS

– 19200 BPS

– 38400BPS(Default)

– 57600BPS

: 8Data bit, 1 Start bit, None Parity bit, 1 Stop Bit

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	12 OF 44	2013. 10. 15.

RF CARD PROCESS

The RF module supports most of RF cards conforming with the ISO14443-3 Type A(MIFARE Card) with 1K bytes memory.

◆ *Processing time* : Once Block

Command	Parameter	Time (mSec)		Note
		Type	Max	
Card Read	1 Block	100		Without card moving
Card Write	1 Block	150		Without card moving, With Verify
Card Decrement	1 Block	120		Without card moving
Card Increment	1 Block	120		Without Card moving

◆ *Operating Frequency*

Operating Frequency : 13.56 MHz

Data Transfer Baud : Baud rate 106Kbaud

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	13 OF 44	2013. 10. 15.

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	X BYTE	1BYTE	1BYTE

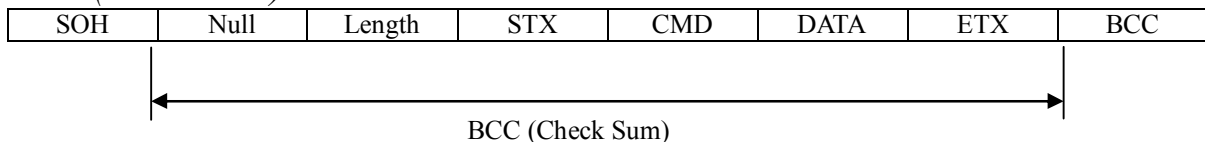
2 Positive Response Frame Format

SOH	Null	Length	STX	CMD	GOOD	0x01	DATA	ETX	BCC
1BYTE	1BYTE	2BYTE	1BYTE	3BYTE	2BYTE	1BYTE	XBYTE	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)



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.

X BYTE : variable length.

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	14 OF 44	2013. 10. 15.

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
-----------	----------

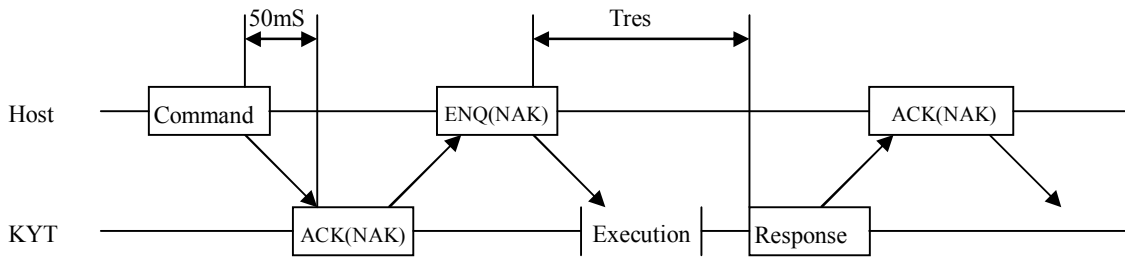
6. Control Characters

Name	Hex Value	Detail
SOH	0x01	Start of 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

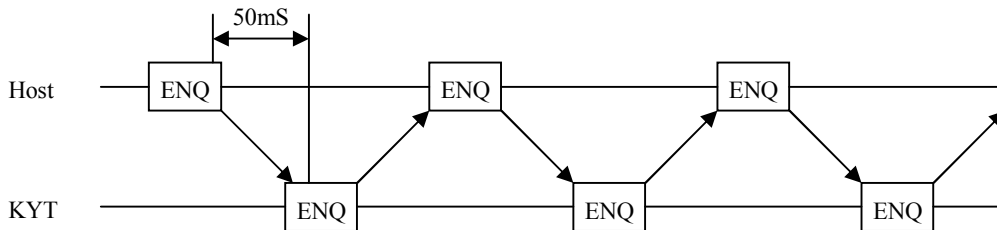
Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	15 OF 44	2013. 10. 15.

7 COMMUNICATION SEQUENCE / TIMING

7.1 Command

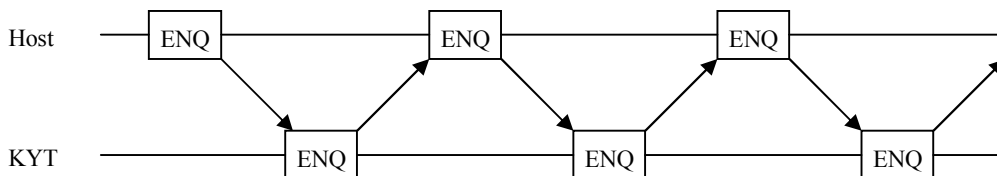
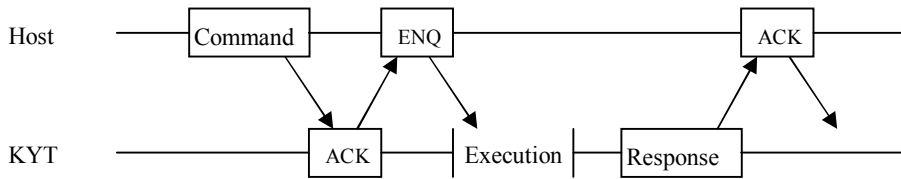


7.2 Inquiry



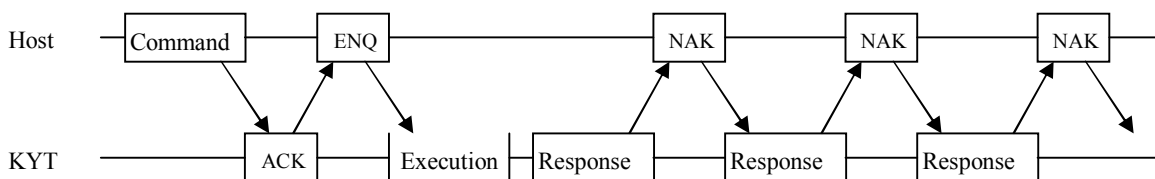
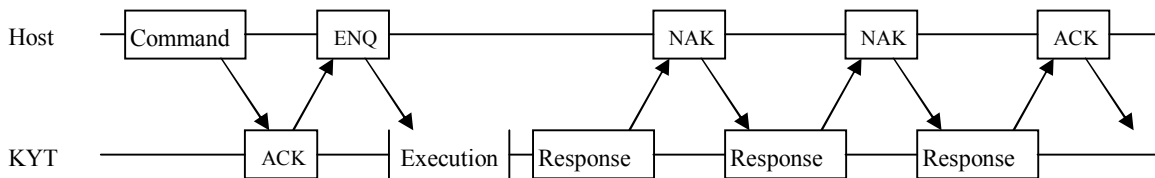
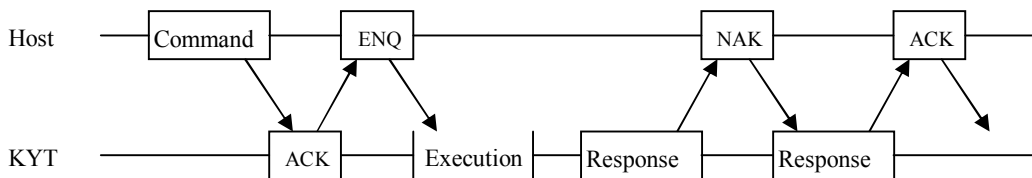
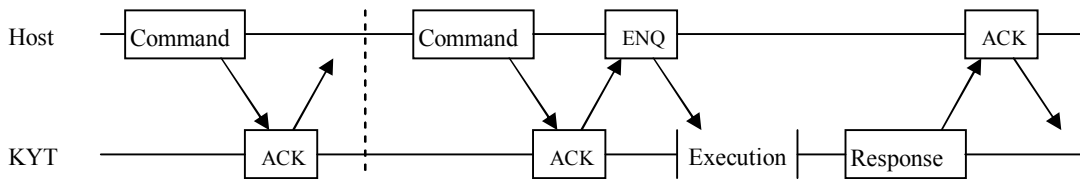
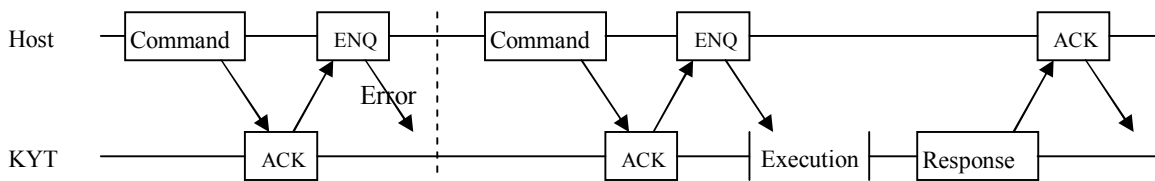
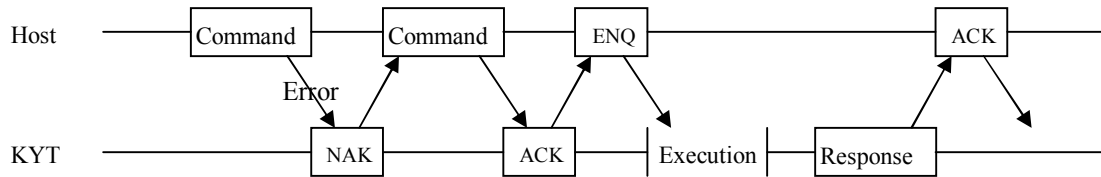
7.3 Sequence

7.3.1 General

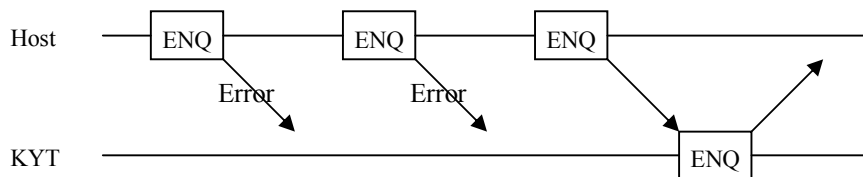
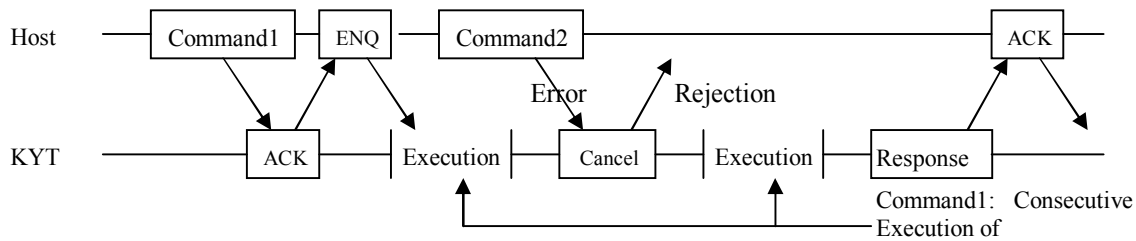
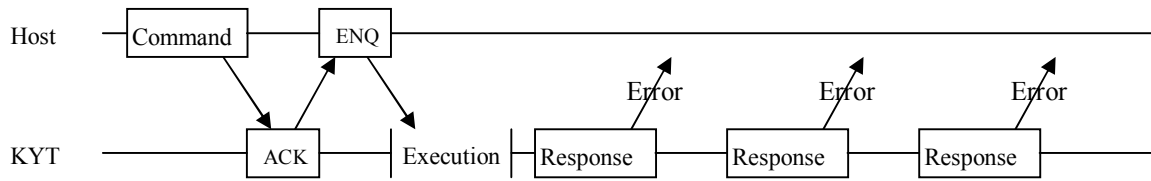
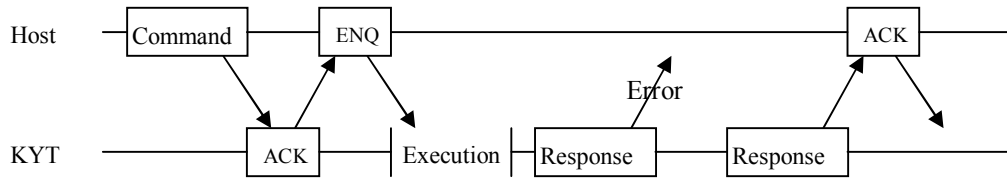


Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	16 OF 44	2013. 10. 15.

7.3.2 Error1

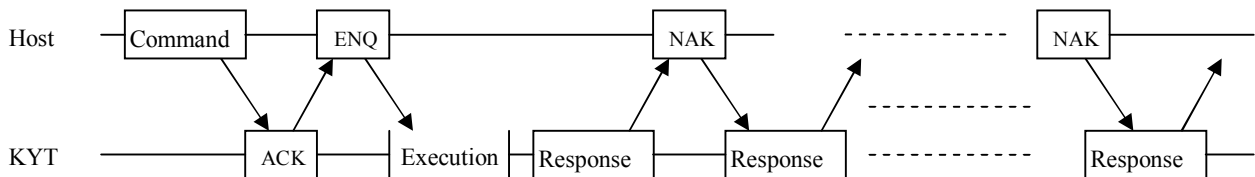


Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	17 OF 44	2013. 10. 15.



7.3.3 Error2

- When received the NAK packet consecutively.

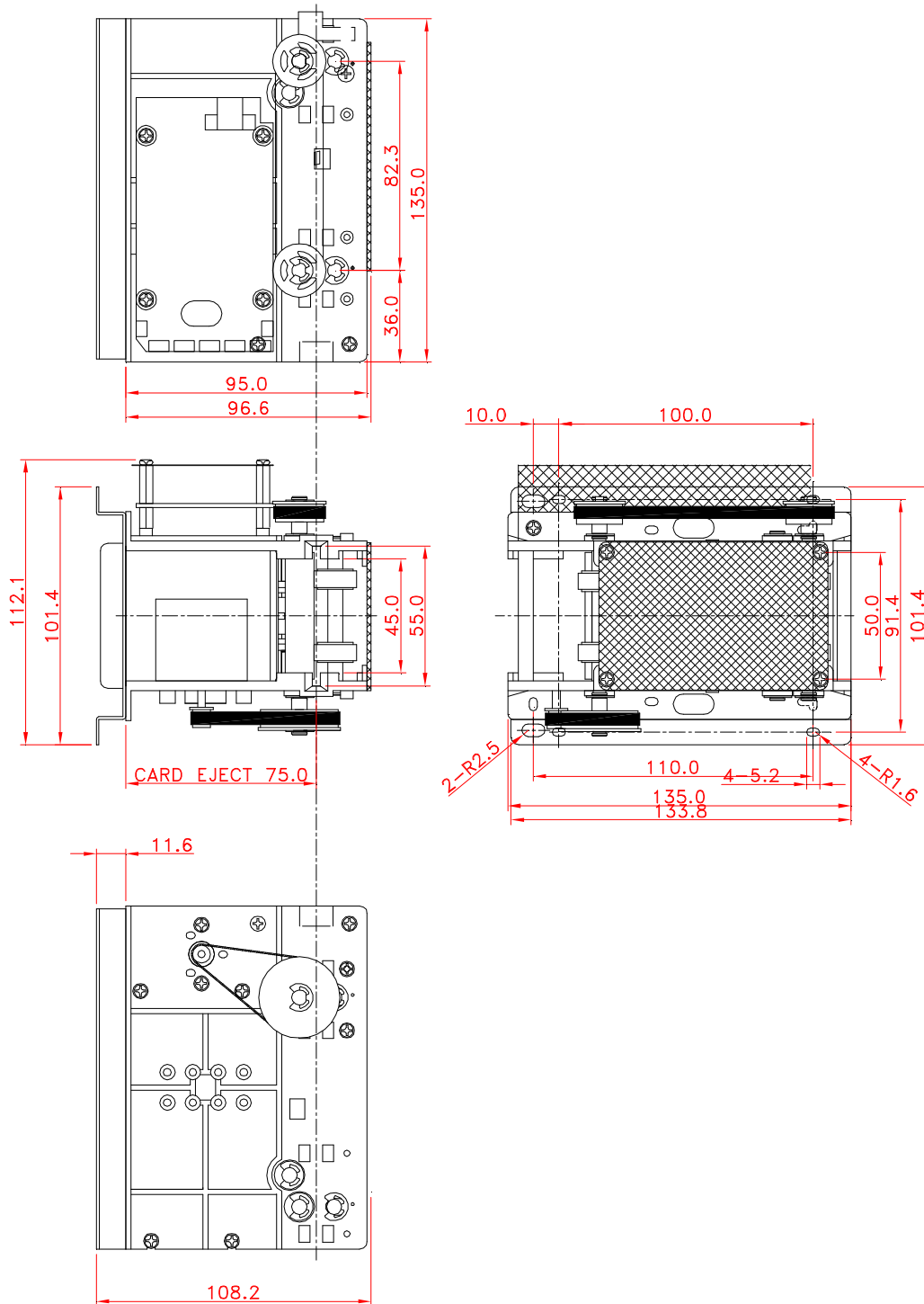


- When the Host sends the command without the ACK packet.

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	18 OF 44	2013. 10. 15.

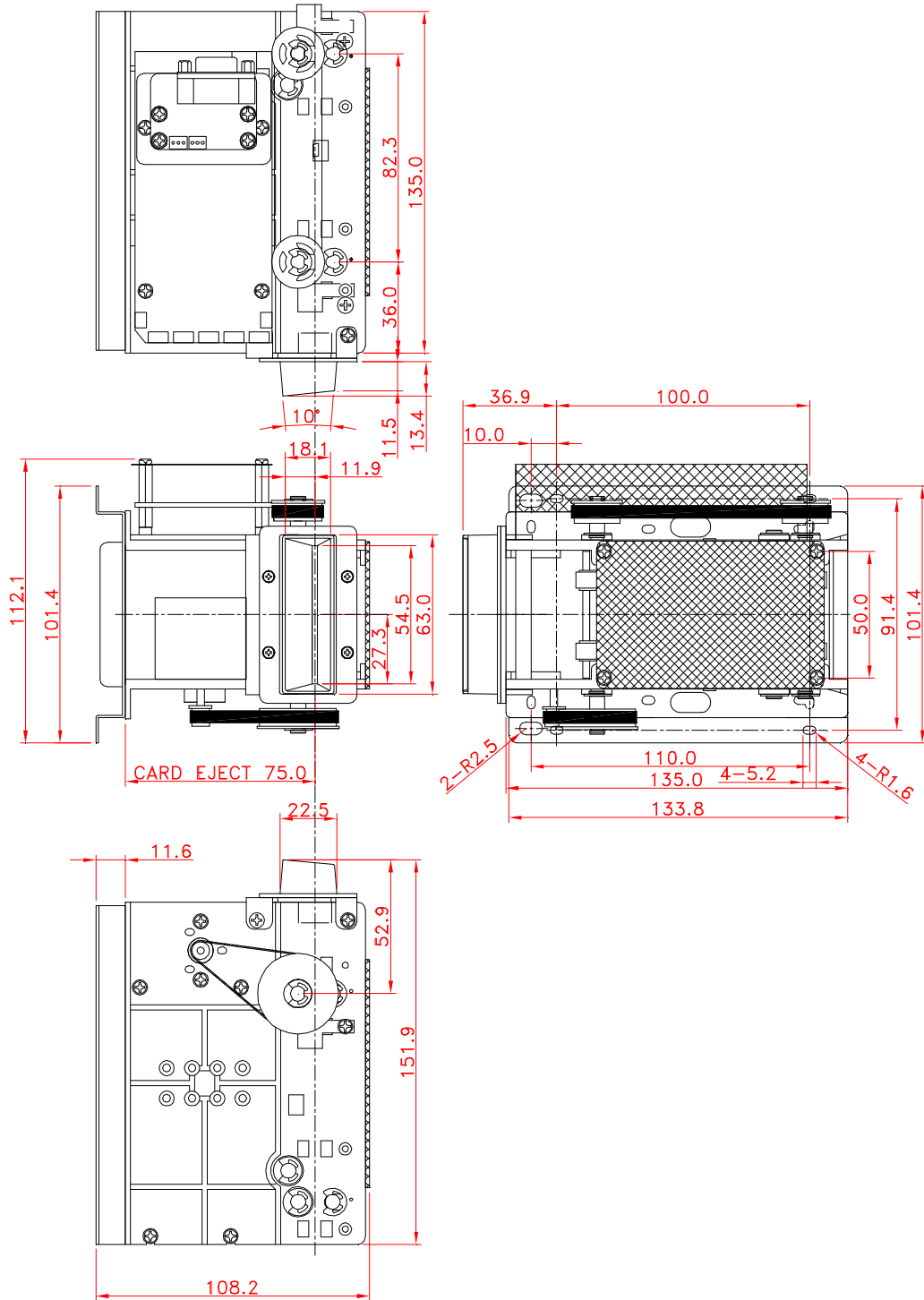
TECHNICAL DRAWING

* KYT-1100.



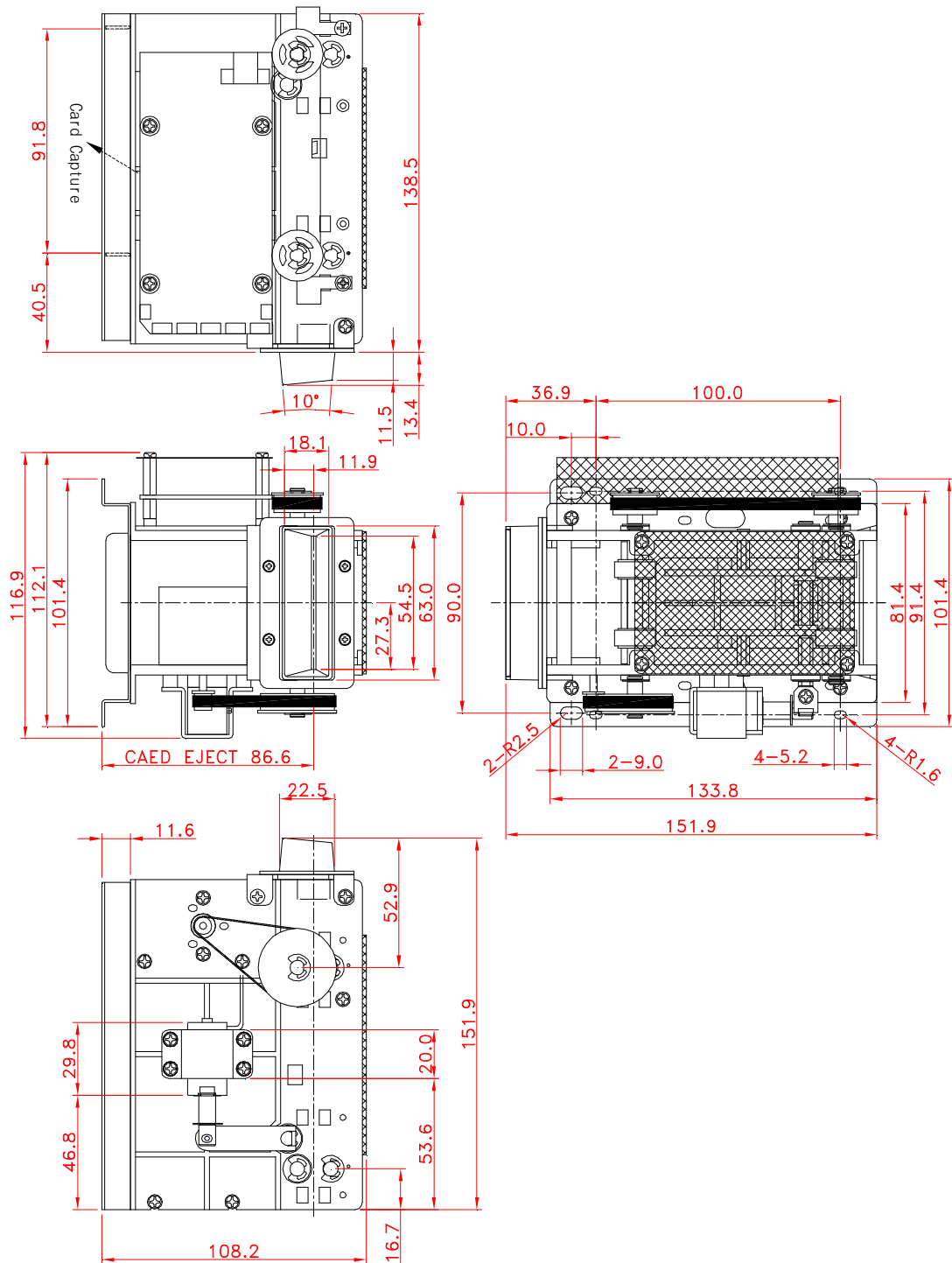
Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	19 OF 44	2013. 10. 15.

* KYT-1110.



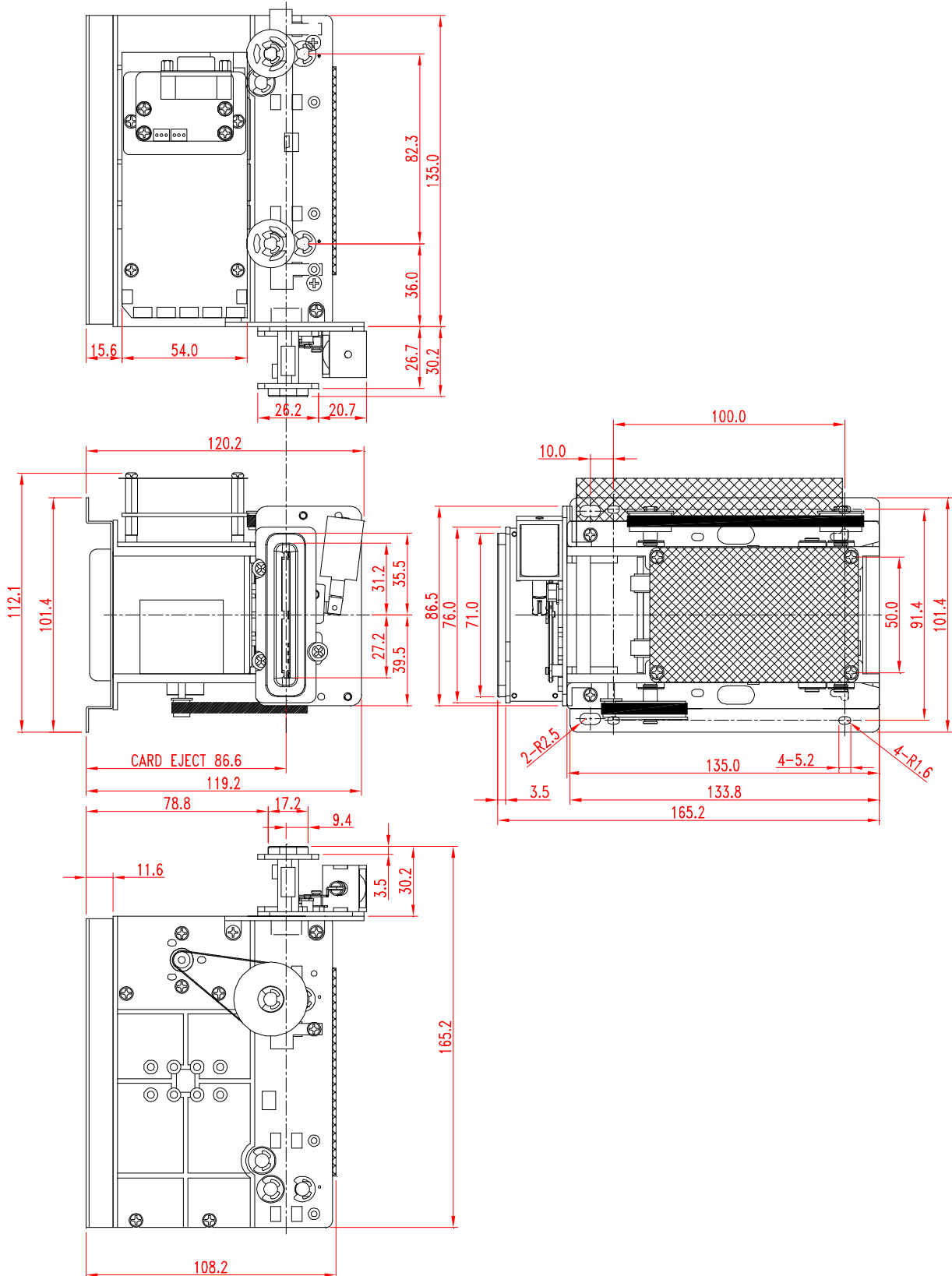
Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	20 OF 44	2013. 10. 15.

* KYT-1111.



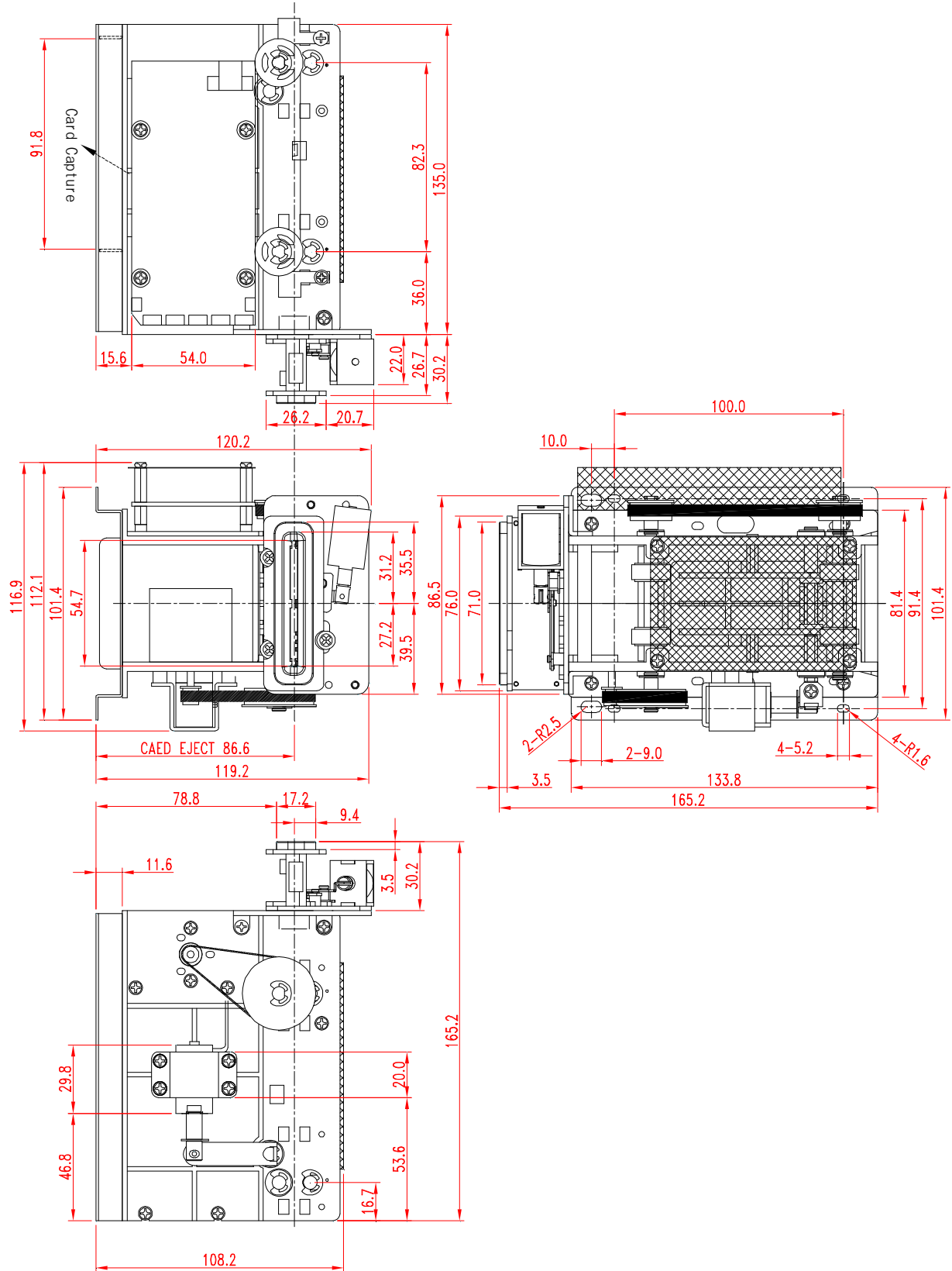
Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	21 OF 44	2013. 10. 15.

*KYT-1120



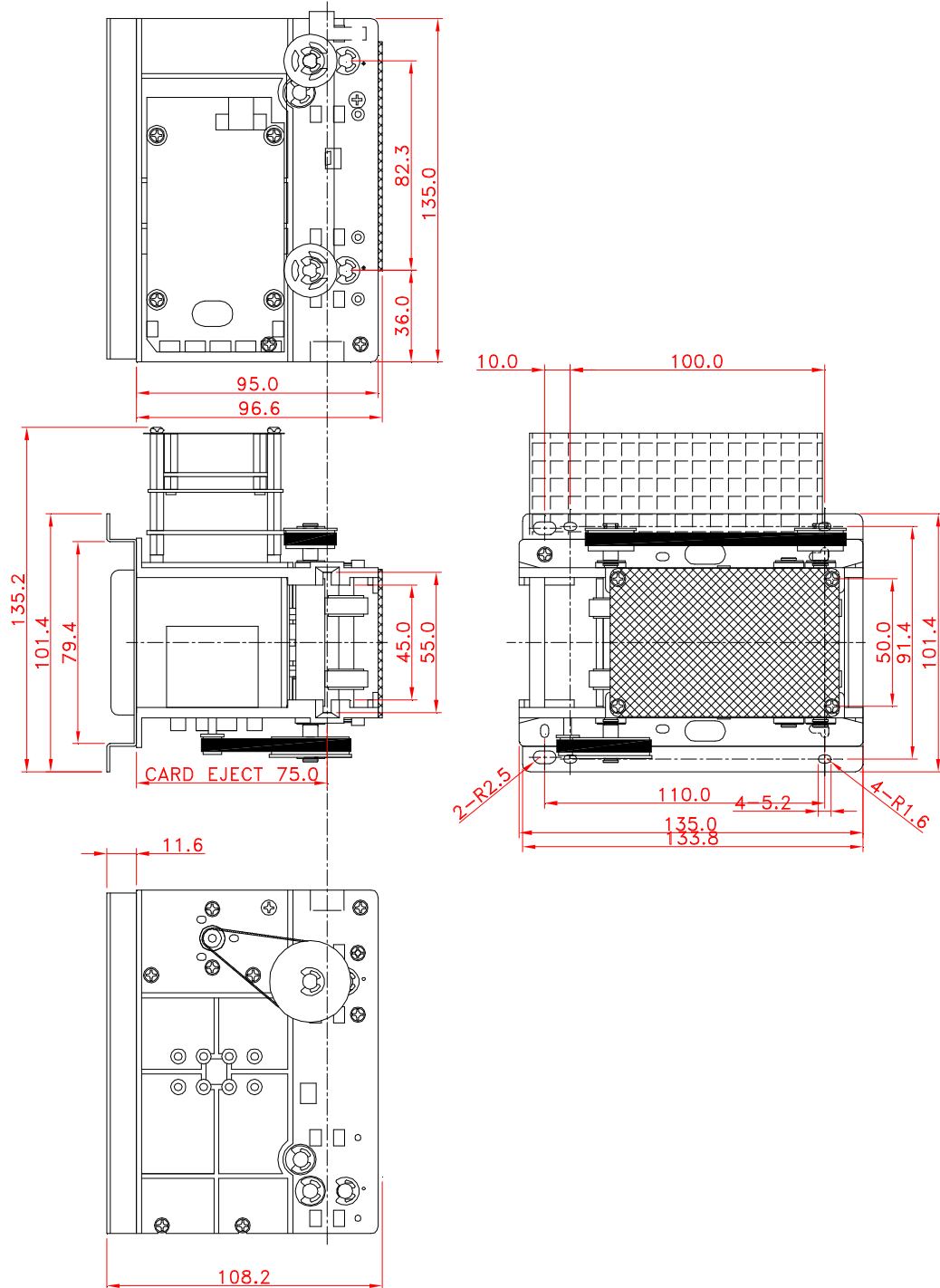
Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	22 OF 44	2013. 10. 15.

*KYT-1121



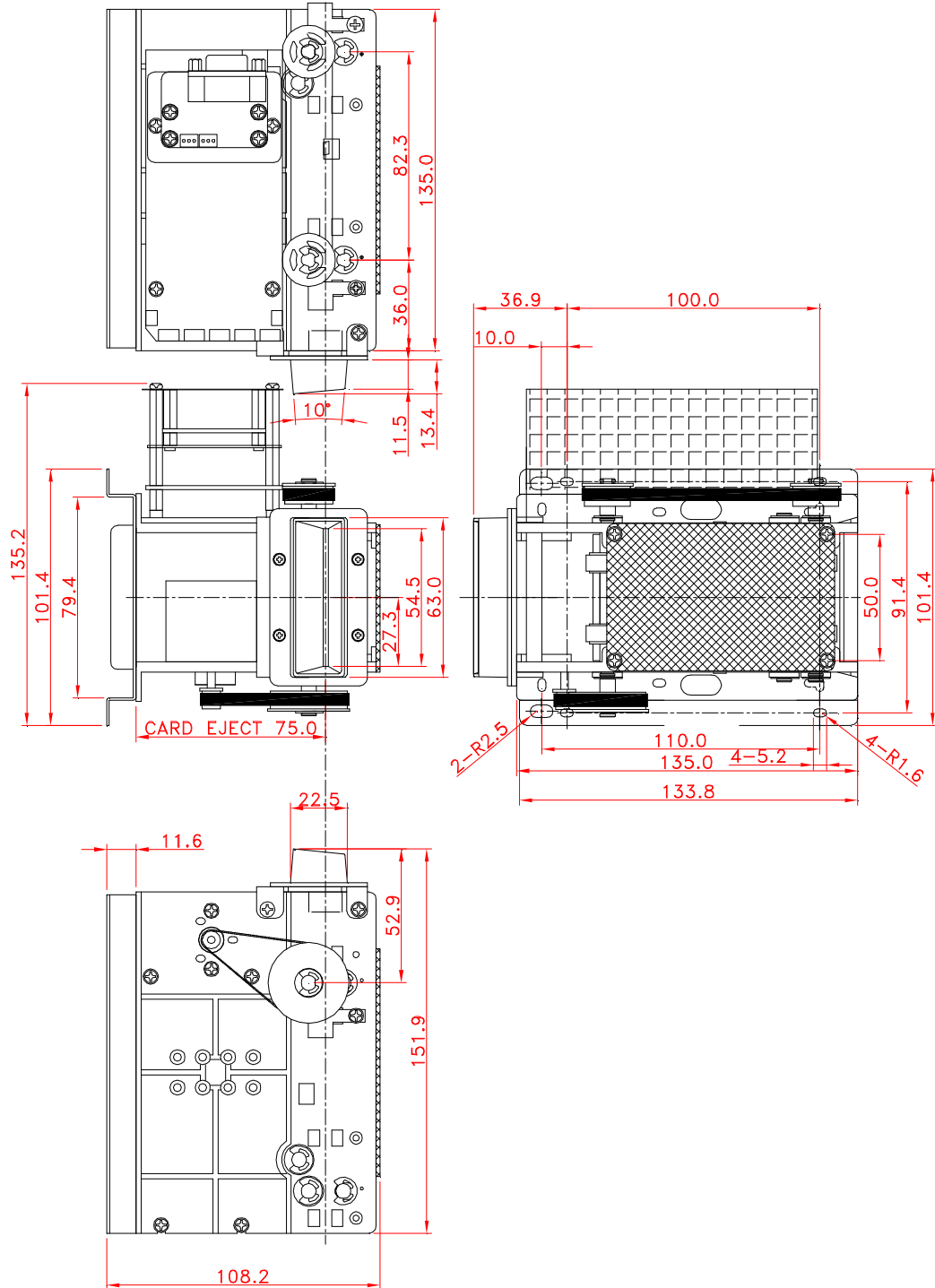
Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	23 OF 44	2013. 10. 15.

* KYS-1100.



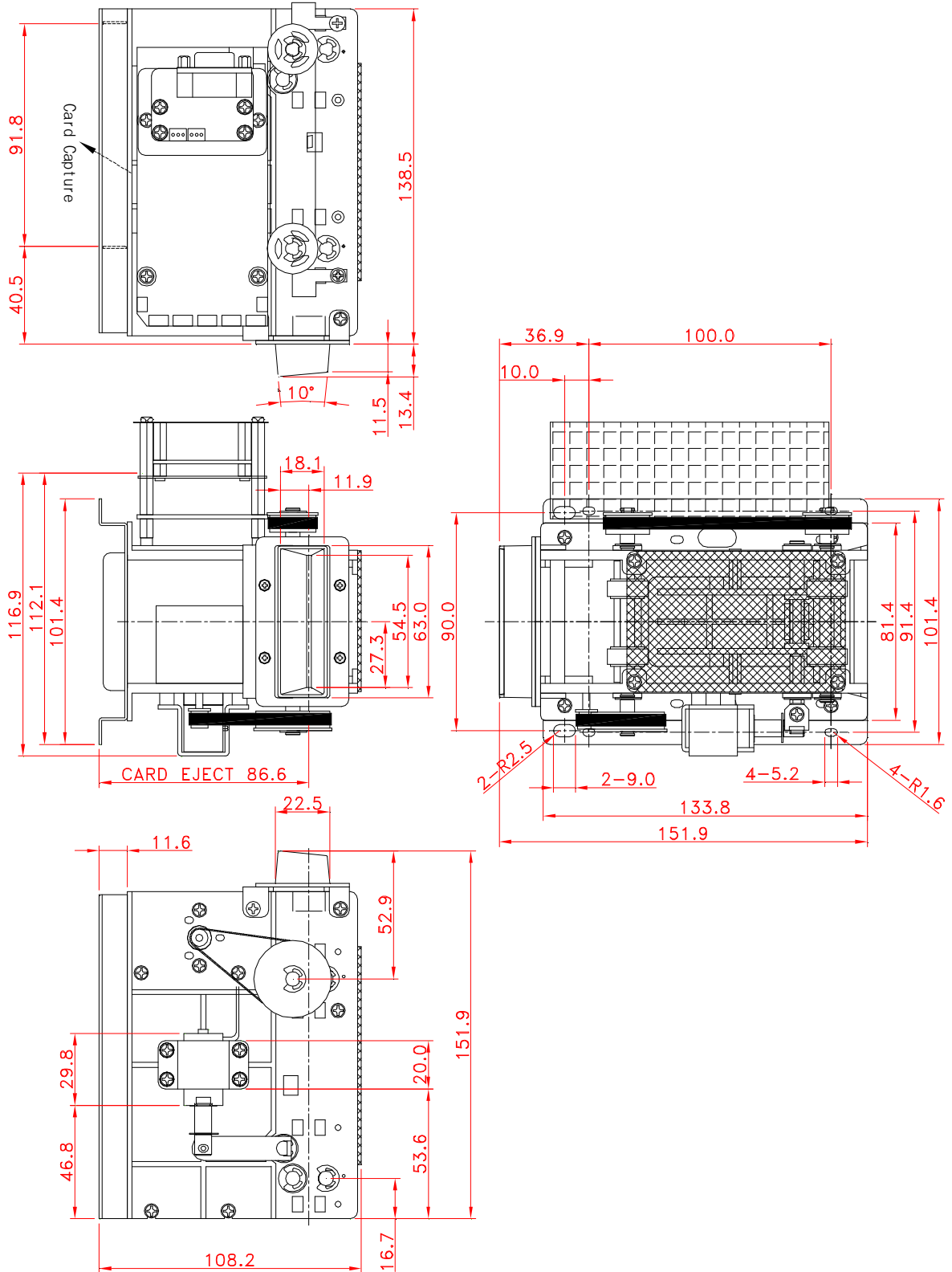
Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	24 OF 44	2013. 10. 15.

* KYS-1110.



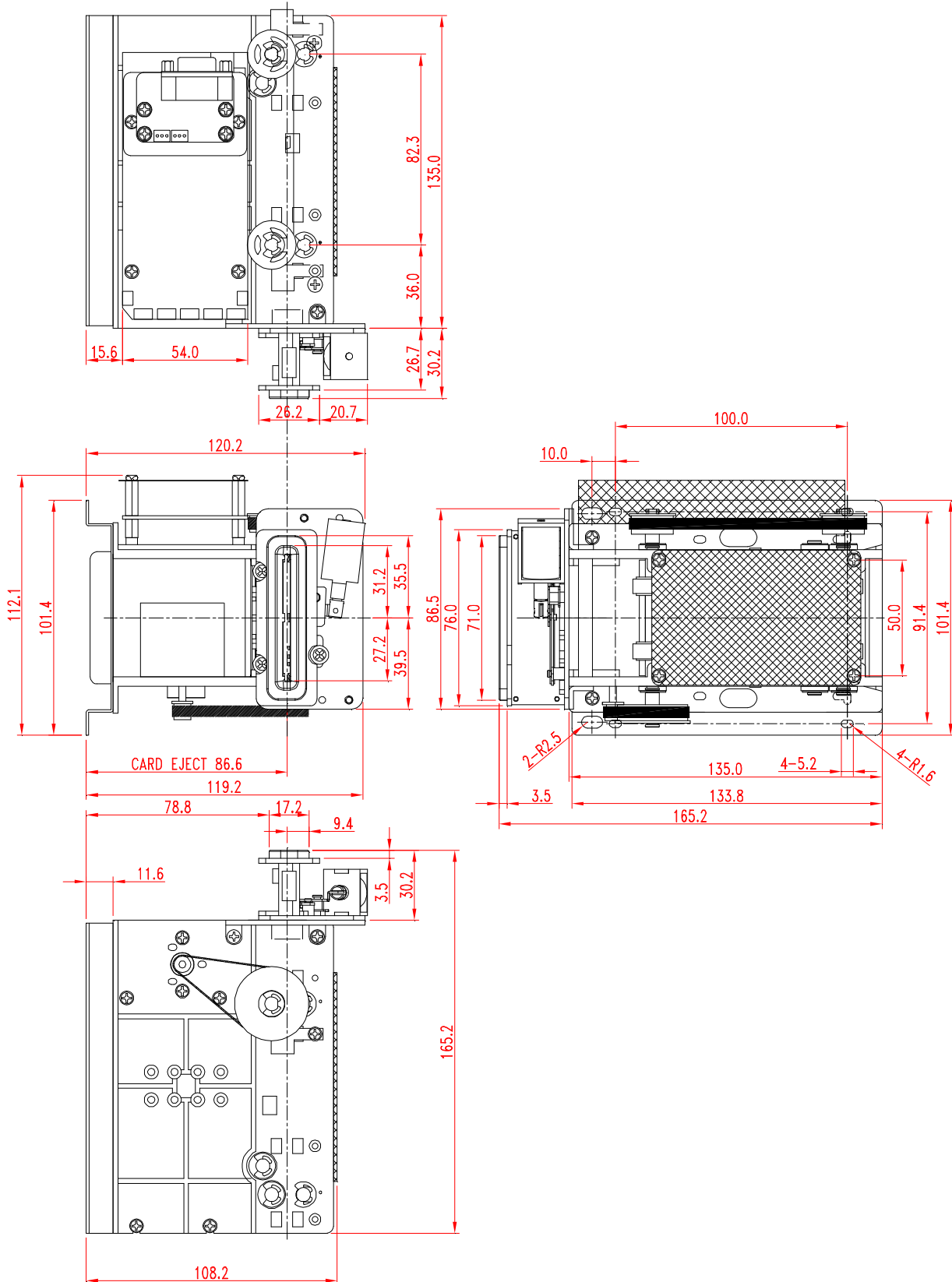
Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	25 OF 44	2013. 10. 15.

* KYS-1111.



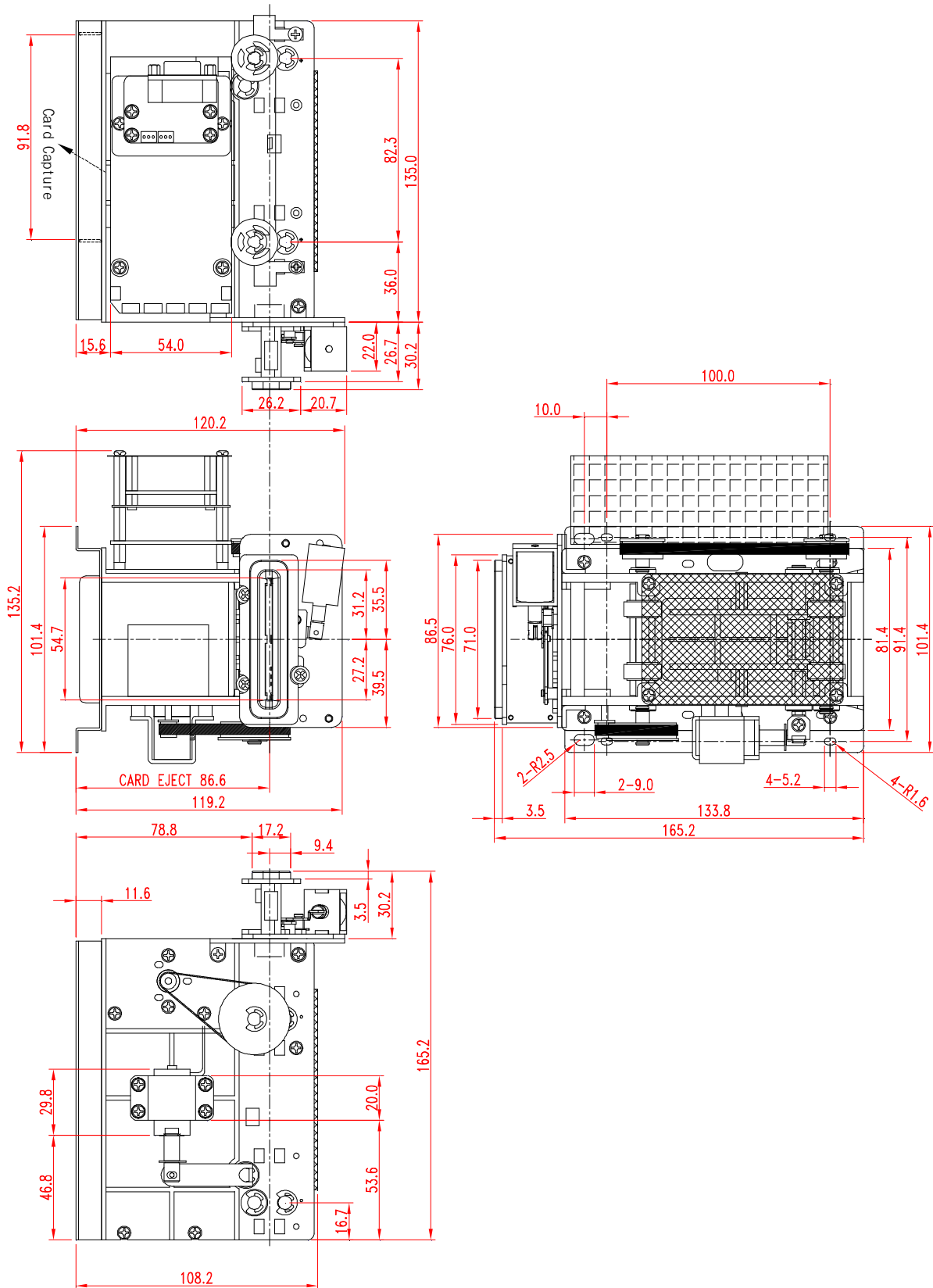
Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	26 OF 44	2013. 10. 15.

*KYS-1120



Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	27 OF 44	2013. 10. 15.

*KYS-1121



Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	28 OF 44	2013. 10. 15.

◆ *Command List*

	Item	Cm	Cm	Cm	Detail	Note
COMMON	STATUS	'C'	'1'	'2'	Get Firmware Version	
		'C'	'1'	'6'	Get Card Position	
		'C'	'1'	'7'	Get Status List	
	SETTING	'C'	'2'	'6'	Set Baud Rate	
	MOVE	'C'	'3'	'3'	Card Eject(hold)	
		'C'	'3'	'4'	Card Capture	
		'C'	'3'	'5'	Card Sand By	
		'C'	'3'	'6'	Card Eject(drop)	
		'C'	'3'	'7'	Card Capture(Solenoid)	
		'C'	'4'	'2'	Software Reset	
RF CARD	RF CARD READ/ WRITE	'R'	'3'	'1'	RF Card Read in Block Range	
		'R'	'3'	'2'	RF Card Write in Block Range	
		'R'	'3'	'6'	RF Card Read in Sector Range	
	BALANCE	'R'	'4'	'1'	Balance Increment	
		'R'	'4'	'2'	Balance Decrement	
	SECRET KEY CHANGE	'R'	'5'	'1'	Change 'Secret Key' to other Key	
		'R'	'5'	'2'	Change 'Secret Key' to all the same Key value	
		'R'	'5'	'3'	Select 'Secret Key Index'	
		'R'	'5'	'4'	Change 'RF Card Secret Key' to other Key	
	RF DETECT	'R'	'6'	'1'	Check RF card in antenna area	
'R'		'7'	'0'	Check Multiple RF card in antenna area		
LED	LED ON/OFF	'L'	'0'	'0'	Led on/off control	(option)

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	29 OF 44	2013. 10. 15.

1.2 “C12” : It is to check out Firmware Version of KYT-11XX

☞ 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
8Byte (ASCII)

1.1 “C16” : Card Position Check.

☞ Command Format

SOH	Null	Length	STX	“C16”	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	“C16”	GOOD	‘1’	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	------	-----	-----

☞ Negative Response Format

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

☞ Response Data Structure

High Version	Low Version
1Byte (BCD)	1Byte (BCD)

☞ Note

DATA	
0x00	No Card
0x01	Front Sensor
0x02	Rear Sensor
0x04	Shutter switch

1.2. “C17” : It is to check out current Status of KYT-11XX

☞ Command Format

SOH	Null	Length	STX	“C17”	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format

SOH	Null	HL	Length	“C17”	GOOD	‘1’	DATA	ETX	Bcc
-----	------	----	--------	-------	------	-----	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“C17”	E-Code	‘0’	ETX	Bcc
-----	------	--------	-----	-------	--------	-----	-----	-----

☞ Response Data Structure

Error Code (1)	Error Code (2)
----------------	----------------

High Byte	Low Byte
2Byte	

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	30 OF 44	2013. 10. 15.

2 SETTING

2.1 “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	‘1’	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“C26”	E-Code	‘0’	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 “C33” : It is to feeding machine out card to the front.(Hold)

☞ Command Format

SOH	Null	Length	STX	“C33”	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	“C33”	GOOD	‘1’	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----	-----

☞ Negative Response Format

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

3.2 “C34” : It is to feeding machine out card to the Rear (Capture)

☞ Command Format

SOH	Null	Length	STX	“C34”	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	“C34”	GOOD	‘1’	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----	-----

☞ Negative Response Format

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

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	31 OF 44	2013. 10. 15.

3.3 “C35” : It is to feeding machine stand by card to the RF Ant.

☞ Command Format

SOH	Null	Length	STX	“C35”	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	“C35”	GOOD	‘1’	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“C35”	E-Code	‘0’	ETX	Bcc
-----	------	--------	-----	-------	--------	-----	-----	-----

3.4. “C36” : It is to feeding machine out card to the front.(Drop)

☞ Command Format

SOH	Null	Length	STX	“C36”	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	“C36”	GOOD	‘1’	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----	-----

☞ Negative Response Format

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

* The KYT-11XX model with shutter can't use “C36” command.

3.5. “C37” : It is to feeding machine out card to the Rear (Solenoid)

☞ Command Format

SOH	Null	Length	STX	“C36”	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	“C36”	GOOD	‘1’	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----	-----

☞ Negative Response Format

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

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 KYT-11XX MAIN BOARD only.

Card Dispenser and Card Reader do not Reset

With this software RESET, all the data in the KYT-11XX return to DEFAULT value.

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

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	32 OF 44	2013. 10. 15.

◆ *RF CARD*

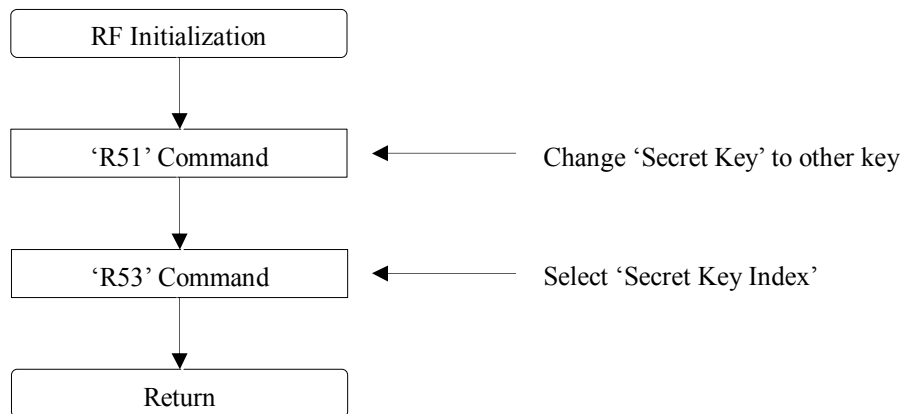
This section describes the commands that can use at the 'RF CARD'.

The RF Module of his model supports only the MIFARE card.

Item	Cm0	Cm1	Cm2	Detail	Note
RF CARD READ /WRITE	'R'	'3'	'1'	Read RF card data in block range	
	'R'	'3'	'2'	Write RF card in block range	
	'R'	'3'	'6'	Read RF card data in sector range	
BALANCE	'R'	'4'	'1'	Increment balance in RF card	
	'R'	'4'	'2'	Decrement balance in RF card	
CHANGE SECRET KEY	'R'	'5'	'1'	Change 'Secret Key' to other key	
	'R'	'5'	'2'	Change 'Secret Key' to all the same Key Value	
	'R'	'5'	'3'	Select 'Secret Key Index'	
	'R'	'5'	'4'	Change RF Card 'Secret Key' to other key	
RF DETECT	'R'	'6'	'1'	Check RF card in antenna area	

To use the RF card, you need to initialize at first.

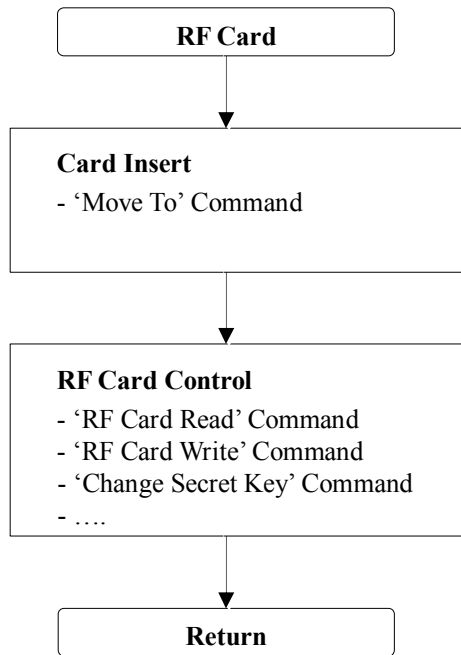
- Setting and updating of the secret key and secret key index.



RF Module Initialization

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	33 OF 44	2013. 10. 15.

Basic Operating Procedure of the RF card:



RF Card Basic Operating Procedures

Memory Architecture(map) of the RF card: 1 Kbyte

Sector	Block	Size	Detail	Note
Sector 0	Block 0	16Byte	RF Card Information	Can't use
	Block 1	16Byte		
	Block 2	16Byte		
	Block 3	16Byte	'Sector Key'	
Sector 1	Block 0	16Byte	User Available Memory	
	Block 1	16Byte		
	Block 2	16Byte		
	Block 3	16Byte	'Sector Key'	
Sector 2	Block 0	16Byte	User Available Memory	
	Block 1	16Byte		
	Block 2	16Byte		
	Block 3	16Byte	'Sector Key'	
---	---	---	---	---
Sector 15	Block 0	16Byte	User Available Memory	
	Block 1	16Byte		
	Block 2	16Byte		
	Block 3	16Byte	'Sector Key'	

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	34 OF 44	2013. 10. 15.

Memory Architecture(map) of the RF card: 4Kbyte.

Sector	Block	Size	Detail	Note
Sector 0	Block 0	16Byte	RF Card Information	Can't use
	Block 1	16Byte		
	Block 2	16Byte	'Sector Key'	
	Block 3	16Byte		
Sector 1	Block 0	16Byte	User Available Memory	
	Block 1	16Byte		
	Block 2	16Byte	'Sector Key'	
	Block 3	16Byte		
Sector 2	Block 0	16Byte	User Available Memory	
	Block 1	16Byte		
	Block 2	16Byte	'Sector Key'	
	Block 3	16Byte		
---	---	---	---	---
Sector 31	Block 0	16Byte	User Available Memory	
	Block 1	16Byte		
	Block 2	16Byte	'Sector Key'	
	Block 3	16Byte		
Sector 32	Block 0	16Byte	User Available Memory	
	Block 1	16Byte		
	Block 2	16Byte		
	Block 3	16Byte		
	Block 4	16Byte		
	---	---		
	Block 13	16Byte		
	Block 14	16Byte		
Block 15	16Byte	'Sector Key'		
---	---	---	---	---
Sector 39	Block 0	16Byte	User Available Memory	
	Block 1	16Byte		
	Block 2	16Byte		
	Block 3	16Byte		
	Block 4	16Byte		
	---	---		
	Block 13	16Byte		
	Block 14	16Byte		
Block 15	16Byte	'Sector Key'		
---	---	---	---	---

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	35 OF 44	2013. 10. 15.

1. RF CARD READ / WRITE

1.1 "R31" : Read RF card data in block range

☞ Command Format

SOH	Null	Length	STX	"R31"	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Command Data Structure

Sector	Block
0x00-0x0f or 0x00-0x27	0x00- 0x03 or 0x00-0x15
1Byte (Hex)	1Byte (Hex)

☞ Positive Response Format

SOH	Null	Length	STX	"R31"	GOOD	'1'	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	------	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	"R31"	E-Code	'0'	ETX	Bcc
-----	------	--------	-----	-------	--------	-----	-----	-----

☞ Response Data Structure

Sector	Block	Read Data
1Byte (Hex)	1Byte (Hex)	16 Byte (Hex)

D0	D1	D2	---	D14	D15
1Byte	1Byte	1Byte	---	1Byte	1Byte

☞ Note

1K can use the sector 0 to 15 contain 3blocks for storing data.

4K can use the sector 0 to 31 contain 3blocks and sector 32 to 39 contain 15 blocks for storing data.

1.2 "R32" : Write RF card data in block range

☞ Command Format

SOH	Null	Length	STX	"R32"	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Command Data Structure

Sector	Block	Write Data
0x00-0x0f or 0x00-0x27	0x00- 0x02 or 0x00-0x14	0x00 – 0xff
1Byte (Hex)	1Byte (Hex)	16Byte (Hex)

D0	D1	D2	---	D14	D15
1Byte	1Byte	1Byte	---	1Byte	1Byte

☞ Positive Response Format

SOH	Null	Length	STX	"R32"	GOOD	'1'	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	"R32"	E-Code	'0'	ETX	Bcc
-----	------	--------	-----	-------	--------	-----	-----	-----

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	36 OF 44	2013. 10. 15.

Note

1K can use the sector 0 to 15 contain 3blocks for storing data.

4K can use the sector 0 to 31 contain 3blocks and sector 32 to 39 contain 15 blocks for storing data.

1.3 “R36” : Read RF card data in sector range

Command Format

SOH	Null	Length	STX	“R36”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

Command Data Structure

Sector
0x00 – 0x0f
1Byte (Hex)

Positive Response Format

SOH	Null	Length	STX	“R36”	GOOD	‘1’	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	------	-----	-----

Negative Response Format

SOH	Null	Length	STX	“R36”	E-Code	‘0’	ETX	Bcc
-----	------	--------	-----	-------	--------	-----	-----	-----

Response Data Structure

Block	Read Data
1Byte (Hex):0x00	16 Byte (Hex)
Block	Read Data
1Byte (Hex):0x01	16 Byte (Hex)
Block	Read Data
1Byte (Hex):0x02	16 Byte (Hex)

D0	D1	D2	---	D14	D15
1Byte	1Byte	1Byte	---	1Byte	1Byte

Note

1K can use the sector 0 to 15 contain 3blocks for storing data.

4K can use the sector 0 to 31 contain 3blocks and sector 32 to 39 contain 15 blocks for storing data.

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	37 OF 44	2013. 10. 15.

2 BALANCE

2.1 “R41” : Increment the balance of card to the specified amount.

Command Format

SOH	Null	Length	STX	“R41”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

Command Data Structure

Sector	Block	Index Value
0x00-0x0f or 0x00-0x27	0x00- 0x02 or 0x00-0x14	0x00000000 – 0xffffffff
1Byte (Hex)	1Byte (Hex)	4Byte (Hex)

V0	V1	V2	V3
0x00-0xff	0x00-0xff	0x00-0xff	0x00-0xff
1Byte(Hex, LSB)	1Byte(Hex)	1Byte(Hex)	1Byte(Hex, MSB)

Positive Response Format

SOH	Null	Length	STX	“R41”	GOOD	‘1’	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----	-----

Negative Response Format

SOH	Null	Length	STX	“R41”	E-Code	‘0’	ETX	Bcc
-----	------	--------	-----	-------	--------	-----	-----	-----

Note

The balance should be written in the Electronic Purse format in the card.

1K can use the sector 0 to 15 contain 3blocks for storing data.

4K can use the sector 0 to 31 contain 3blocks and sector 32 to 39 contain 15 blocks for storing data.

2.1 “R42” : Decrement the balance of card to the specified amount..

Command Format

SOH	Null	Length	STX	“R42”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

Command Data Structure

Sector	Block	Index Value
0x00-0x0f or 0x00-0x27	0x00- 0x02 or 0x00-0x14	0x00000000 – 0xffffffff
1Byte (Hex)	1Byte (Hex)	4Byte (Hex)

V0	V1	V2	V3
0x00-0xff	0x00-0xff	0x00-0xff	0x00-0xff
1Byte(Hex, LSB)	1Byte(Hex)	1Byte(Hex)	1Byte(Hex, MSB)

Positive Response Format

SOH	Null	Length	STX	“R42”	GOOD	‘1’	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----	-----

Negative Response Format

SOH	Null	Length	STX	“R42”	E-Code	‘0’	ETX	Bcc
-----	------	--------	-----	-------	--------	-----	-----	-----

Note

The balance should be written in the Electronic Purse format in the card.

1K can use the sector 0 to 15 contain 3blocks for storing data.

4K can use the sector 0 to 31 contain 3blocks and sector 32 to 39 contain 15 blocks for storing data.

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	38 OF 44	2013. 10. 15.

3 SECRET KEY

3.1 “R51” : Change ‘Secret Key’ to a new key

☞ Command Format

SOH	Null	Length	STX	“R51”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Command Data Structure

Sector	KEY A	KEY B
0x00-0x0f or 0x00-0x27	0x00 – 0xff	0x00 – 0xff
1Byte (Hex)	6Byte (Hex)	6Byte (Hex)

☞ Positive Response Format

SOH	Null	Length	STX	“R51”	GOOD	‘1’	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“R51”	E-Code	‘0’	ETX	Bcc
-----	------	--------	-----	-------	--------	-----	-----	-----

☞ Note

KYT-11XX Series ‘Secret Key’ Default

KEY A : “FFFFFFFFFFFF”

KEY B : “FFFFFFFFFFFF”

3.2 “R52” : Change ‘Secret Key’ to all the same key value

☞ Command Format

SOH	Null	Length	STX	“R52”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Command Data Structure

KEY A	KEY B
0x00 – 0xff	0x00 – 0xff
6Byte (Hex)	6Byte (Hex)

☞ Positive Response Format

SOH	Null	Length	STX	“R52”	GOOD	‘1’	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“R52”	E-Code	‘0’	ETX	Bcc
-----	------	--------	-----	-------	--------	-----	-----	-----

☞ Note

KYT-11XX Series ‘Secret Key’ Default

KEY A : “FFFFFFFFFFFF”

KEY B : “FFFFFFFFFFFF”

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	39 OF 44	2013. 10. 15.

3.3 “R53” : Select ‘Secret Key Index’

☞ Command Format

SOH	Null	Length	STX	“R53”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Command Data Structure

Index
0x01 – 0x02
1Byte (Hex)

☞ Positive Response Format

SOH	Null	Length	STX	“R53”	GOOD	‘1’	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“R53”	E-Code	‘0’	ETX	Bcc
-----	------	--------	-----	-------	--------	-----	-----	-----

☞ Data Variable

<Index>

Code	Setting	Detail
0x01	KEY A	Select ‘Secret Key A’
0x02	KEY B	Select ‘Secret Key B’

☞ Note

KYT-11XX Series ‘Secret Key Index’ Default

‘Secret Key Index ‘ : KEY A

3.4 “R54” : Change RF card ‘Secret Key’ to other key

☞ Command Format

SOH	Null	Length	STX	“R54”	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Command Data Structure

- Command data structure without ‘Access Condition’

Sector	KEY A	KEY B
0x00-0x0f or 0x00-0x27	0x00 – 0xff	0x00 – 0xff
1Byte (Hex)	6Byte (Hex)	6Byte (Hex)

- Command data structure with ‘Access Condition’

Sector	KEY A	Access	KEY B
0x00-0x0f or 0x00-0x27	0x00 – 0xff	0x00 – 0xff	0x00 – 0xff
1Byte (Hex)	6Byte (Hex)	4Byte (Hex)	6Byte (Hex)

☞ Positive Response Format

SOH	Null	Length	STX	“R54”	GOOD	‘1’	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	“R54”	E-Code	‘0’	ETX	Bcc
-----	------	--------	-----	-------	--------	-----	-----	-----

☞ Warning

If you use this command incorrectly, it couldn’t be authenticated from the card.

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	40 OF 44	2013. 10. 15.

4. RF DETECT

4.1 "R61" : RF card detect in antenna area

☞ Command Format

SOH	Null	Length	STX	"R61"	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	"R61"	GOOD	DATA	'1'	ETX	Bcc
-----	------	--------	-----	-------	------	------	-----	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	"R61"	E-Code	'0'	ETX	Bcc
-----	------	--------	-----	-------	--------	-----	-----	-----

☞ Response Data Structure

Serial Number
Hex Code
4Byte

☞ Note

If the RF card is detected, this command send the serial number to host. But, it doesn't authenticate the Secret Key of the RF card.

4.2 "R70" : Multiple RF card detect in antenna area

☞ Command Format

SOH	Null	Length	STX	"R70"	ETX	Bcc
-----	------	--------	-----	-------	-----	-----

☞ Positive Response Format

SOH	Null	Length	STX	"R70"	GOOD	DATA	'1'	ETX	Bcc
-----	------	--------	-----	-------	------	------	-----	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	"R70"	E-Code	'0'	ETX	Bcc
-----	------	--------	-----	-------	--------	-----	-----	-----

☞ Response Data Structure

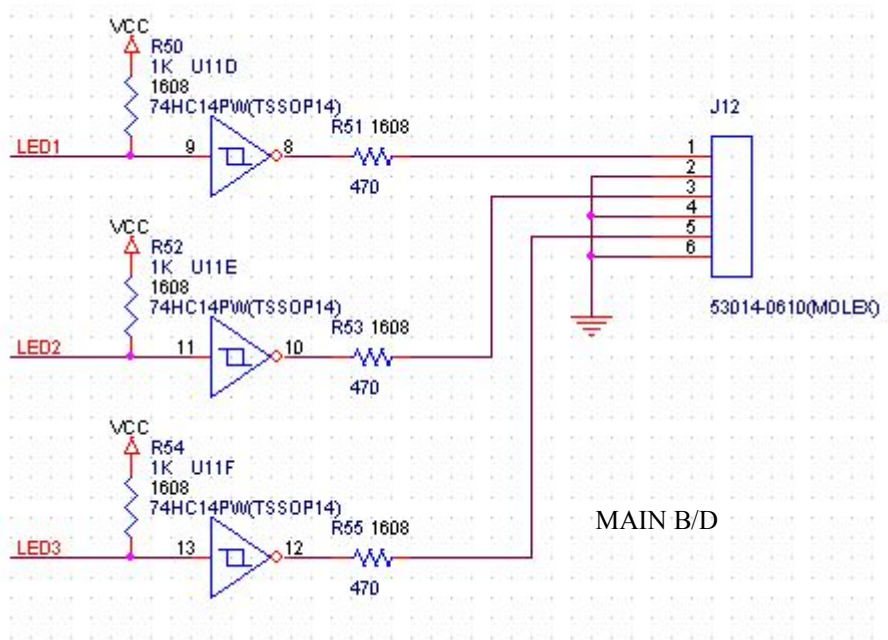
Data Length	Card Type	Serial Number
2Byte	0x31: Mifare 4byte	4byte
	0x32: Mifare 7byte	7byte
	0x33: Ultralight	7byte

☞ Note

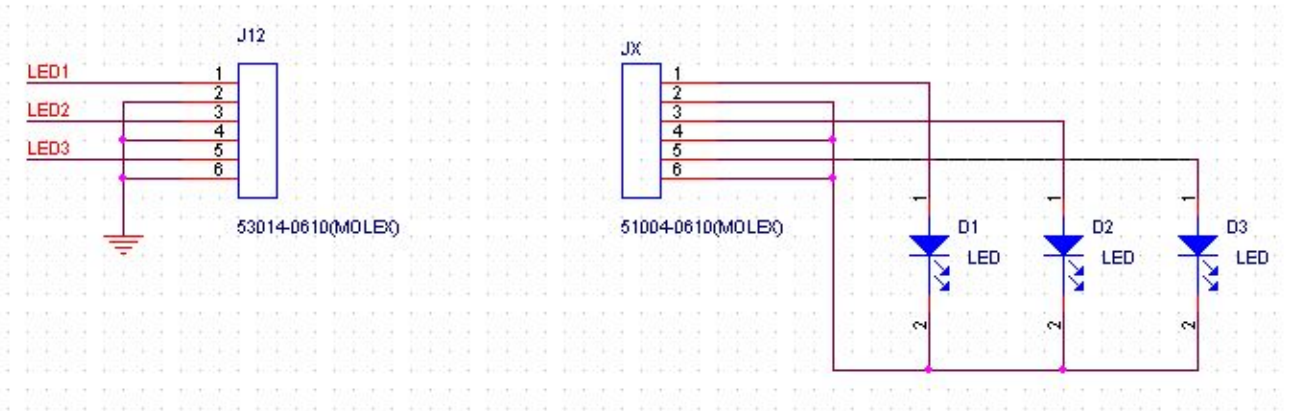
If the RF card is detected, this command send the serial number to host. But, it doesn't authenticate the Secret Key of the RF card.

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	41 OF 44	2013. 10. 15.

5. LED Control.



MAIN B/D



Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	42 OF 44	2013. 10. 15.

5.1. "R80" : Led on/off control.

☞ Command Format

SOH	Null	Length	STX	"L00"	DATA	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----

☞ Command Data Structure

Led On/OFF
3Byte (Hex)

☞ Data Variable

<1 BYTE>

Code	Setting	Note
0x00	LED(D1) OFF	
0x01	LED(D1) ON	

<2 BYTE>

Code	Setting	Note
0x00	LED(D2) OFF	
0x01	LED(D2) ON	

<3 BYTE>

Code	Setting	Note
0x00	LED(D3) OFF	
0x01	LED(D3) ON	

☞ Positive Response Format

SOH	Null	Length	STX	"L00"	GOOD	'1'	ETX	Bcc
-----	------	--------	-----	-------	------	-----	-----	-----

☞ Negative Response Format

SOH	Null	Length	STX	"L00"	E-Code	'0'	ETX	Bcc
-----	------	--------	-----	-------	--------	-----	-----	-----

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	43 OF 44	2013. 10. 15.

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.

Doc No	KYT-11XX SPECIFICATION	REV	PAGE	DATE
		L	44 OF 44	2013. 10. 15.

<RF_ERROR>

Code : 0x2300

Description : Unavailable RF module.

Action : Change the RF MODULE

<RF_COMM_ERROR>

Code : 0x2301

Description : Communication error at the RF Module.

Action : Check the connection socket

<RF_AUTHEN_ERROR>

Code : 0x2302

Description : Authentication Error at the RF Module.

Action : Change the 'SECRET KEY'

<RF_WRITE_ERROR>

Code : 0x2303

Description : Error while the terminal writes at the RF Card.

Action : Be sure that the card exists in the detection range.

<RF_READ_ERROR>

Code : 0x2304

Description : Error while the terminal reads at the RF Card.

Action: Be sure that the card exists in the detection range.

<RF_DETECT_ERROR>

Error Code : 0x2305

Description : No RF Card.

Action : Insert the RF Card into the terminal.

<RF_AMOUNT_ERROR>

Error Code : 0x2306

Description : RF Card Value Error