



Ingeniería Electrónica
SMART IDENT

LPZ SERIES Port Powered RS232 swipe reader

TECHNICAL MANUAL

LPZ-XXXS-A1C2L140 (MST1270-0000)

Rev B – La información contenida en este documento puede sufrir modificaciones sin previo aviso

- 1. **Product** Manual Swipe Type Magnetic Card Reader with RS-232C Terminal
- 2. **Model Name** MST1270-0000
- 3. **General** MST1270-0000 Model is developed for using ISO Format card
- 4. **Features**
 - Power from RS-232C communication lines(Port Power Terminal)
 - All ISO standard track reading possible
 - Compact size & low cost design
 - RS-232C serial interface
 - Easy to operate protocol
 - Three color lamps & buzzer
 - Ready mode and protocol mode

5. Basic Specification

- 5.1 **Dimension** 40.0mm(W) x 138.0mm(D) x 44.5mm(H)
- 5.2 **Weight** 180g(Approx.)
- 5.3 **Power Supply** Supplied through the RS-232C Communication lines
- 5.4 **Environmental Requirements**
 - Operating -25°C ~ 60°C, 20% ~ 90%RH
 - Storage -30°C ~ 70°C, 10% ~ 95%RH
 - (No functional error to be found in 12hours after to normal environment)
- 5.5 **Operation Locus** Indoor use
- 5.6 **Vibration** Amplitude 2mm within 2G or less, 10 ~ 50Hz X,Y,Z directions for 30 min.
- 5.7 **Shock** 30G, 11msec

6. Specification

Track Position	ISO-1(IATA)	ISO-2(ABA)	ISO-3(MINTS)
Recording Density	210BPI	75BPI	210BPI
Recording Capacity	79characters(7bits)	40character(5bits)	107character(5bits)
Track Thickness	0.76mm ± 0.08mm		

- 6.1 **Reading Method** F2F
- 6.2 **Head Function** Read only 1.5mm
- 6.3 **Stripe Coercivity** 300 ~ 3,500 Oe
- 6.4 **Operation Speed** 10 ~ 120cm/sec
- 6.5 **Life of Head** 500,000 card passes (1pass : one swipe)
- 6.6 **Error Rate** Less than 0.1% (ZEPE Test card)

6.7 Indicator

LED Description

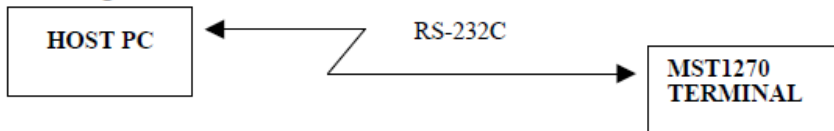
LED Color	Function	Description
Green	Good	Card reading is normal
Red	Error	Card reading is abnormal
Yellow	Read	Card reading process

Buzzer Operation

Normal	1 time
Abnormal	3 times

7. Interface Requirements

7.1 System Block Diagram



7.2 RS-232C Connection

RS-232C Signal Name	HOST PC	MST-12x0	Signal Function
	9 PIN	In/out	
RXD	2	Out	Receive Data
TXD	3	In	Transmit Data
DTR	4	In	Data terminal ready(Port Power)
Signal GND	5	-	Signal Ground
RTS	7	In	Request to Send(Port Power)

7.3 Setting DIP Switch

1) Dip Switch Assign

DIP S/W	Function	Description
S/W – 1	Baud-rate 1	Baud-rate select (1200,2400,4800,9600)
S/W – 2	Baud-rate 2	
S/W – 3	Data Length	Data bit select (7,8 bits)
S/W – 4	Parity control	Parity bit select
S/W – 5	Track ID Code	Used Track ID Code control
S/W – 6	Track 1	Used Track select (ISO-1/2/3)
S/W – 7	Track 2	
S/W – 8	Track 3	

2) Baud-rate select (Default 9600BPS)

No.	S/W – 1	S/W - 2	Baud-rate
1	ON	ON	1200BPS
2	OFF	ON	2400BPS
3	ON	OFF	4800BPS
4	OFF	OFF	9600BPS

3) Data Length select (Default 8bits)

No.	S/W – 3	Data Length
1	ON	7 bits(ODD, EVEN Parity)
2	OFF	8 bits(NONE Parity)

4) Parity bit select

No.	S/W – 4	Parity bit
1	ON	ODD
2	OFF	EVEN

5) ID Code control (Default Used)

No.	S/W – 5	Track ID Code
1	ON	Used
2	OFF	Not Used

6) Used track select

No.	S/W – 6	S/W - 7	S/W - 8	Used Track
1	ON	OFF	OFF	ISO-1
2	OFF	ON	OFF	ISO-2
3	OFF	OFF	ON	ISO-3
4	ON	ON	OFF	ISO-1/2
5	OFF	ON	ON	ISO-2/3
6	ON	ON	ON	ISO-1/2/3

8. Protocol Communication Specification

8.1 Control Specification

Synchronous method	Asynchronous
Transmission method	Half Duplex
Baud rate	1200/2400/4800/9600BPS(Default)
Parity	Even/Odd/None
Start bit	1 bit
Stop bit	2 bit
Character code	ASCII
* DTR, RTS	Enable(Port Power Supplied from DTR, RTS Line)

8.2 Mode control

MST-12x0 operates in two basic modes, READY MODE and PROTOCOL MODE.

When Power Signal is ON, default mode is READY MODE.

8.3 Ready Mode

When Power Signal is ON, default mode is READY MODE.

When a card is swiped, MST-12x0 send data.

LED and Buzzer operate itself.

1) Response format

- Data good

Single Track Reader

ID Code	Data	CR
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Dual Track Reader

ID Code	Data(Lower Track)	CR	ID Code	Data(Higher Track)	CR
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Triple Track Reader

ID Code	Data(Track1)	CR	ID Code	Data(Track2)	CR	ID Code	Data(Track3)	CR
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- Data Error

No data is sent to the Host when a track data error is found.

Only MST-1270-0000 operates that Buzzer beeps 3times and Red LED flush 1 time.

But, in more than dual track, even if the track data error is found in a track of them,

MST-1270-0000 send other Track data to Host except a track data error in normal.

ID Code define

ISO-1	ID =	“0%”	(25h)
ISO-2	ID =	“?”	(3Fh)
ISO-3	ID =	“^”	(5Eh)

8.4 Protocol Mode(by Host Controlled)

Command/response method

MST-1270-0000 executes particular operation according to text(command) received from .
Then reports result of execution to HOST.

1) Command/Response Protocol

Transmission control characters

STX (02h)	Indicate start of text
ETX (03h)	Indicate end of text
EOT (04h)	End of text
ACK (06h)	Send positive response
NAK (15h)	Send negative response

2) Communication protocol descriptions

Error Command Code

Error	Descriptions
'a'	Card Track Error
'b'	Card Blank Error

Response format

- Data good (ID Code is used, When Dip – S/W 5 is ON)

STX	ID Code	Data	ETX	BCC
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- Data good (ID Code is used, When Dip – S/W 5 is OFF)

STX	Data	ETX	BCC
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- Blank card

STX	ID Code	Blank card	ETX	BCC
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- Error card

STX	ID Code	Error Code	ETX	BCC
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ID Code define

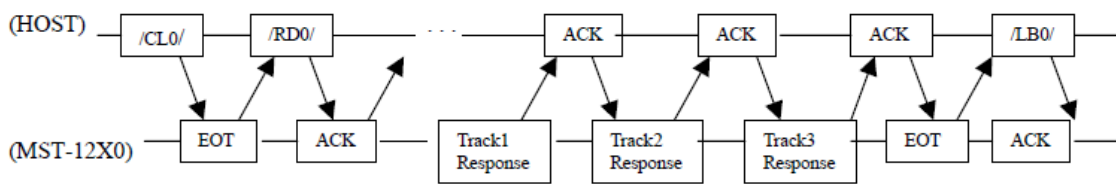
ISO-1	ID = "	"	(3Ah)
ISO-2	ID = "	"	(3Bh)
ISO-3	ID = "	"	(3Eh)

Command description

Command	Function	Description
/CLO/	Clear	Command clear, LED, Buzzer Off
/RD0/	Read	Card read
/LD0/	Good LED	Green LED ON
/LD1/	Error LED	Red LED ON(3 times)
/BZ0/	Good Buzzer	Beep 1 time
/BZ1/	Error Buzzer	Beep 3 time
/LB0/	/LD0/ + /BZ0/	Good LED + Good Buzzer
/LB1/	/LD1/ + /BZ1/	Error LED + Error Buzzer

8.5 Communication Sequence

Normal Communication

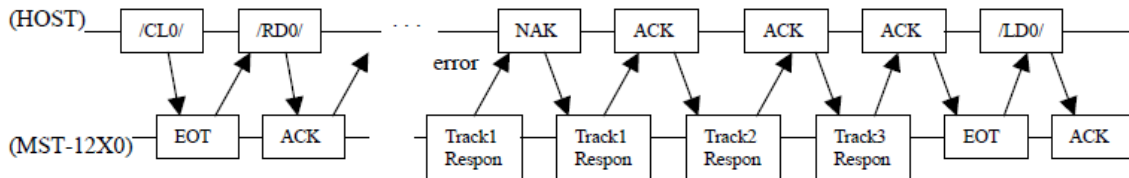


Abnormal Communication

• Communication line error

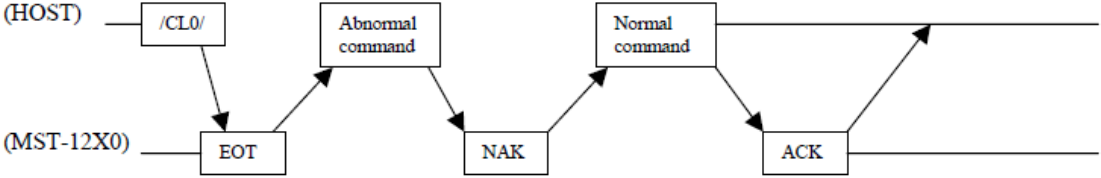
Even through MST-1270-0000 sent Response correctly, If communication error occurs due to the Communication line trouble. Host sends <NAK>. In this case, MST-1270-0000 resends response Until the <ACK> is to be sent from the host.

(If the <ACK> is not to be sent and <NAK> is to be sent from the host, MST-1270-0000 repeats response sending)



- Command Error

When abnormal command of the received data is wrong, MST-1270-0000 transmit <NAK> to host.



8.6 Mode Switching

Protocol Mode → Ready Mode

- Command Format

STX	N(4Eh)	ETX	BCC
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- Response Format

STX	EOT	ETX	BCC
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Ready Mode → Protocol Mode

- Command Format

/CL0/

- Response Format

EOT

9. Dimension Drawing

