MC201 Magstrip Card Terminal

User Manual

v. 2.0

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Content

1. Product Overview

MC201A is an ideal magnetic stripe card read/write device designed for Banking System. It can encode and read data of stripe in the bank passbook and card. Obtaining read/write parity functions together.

MC201A can be operated easily with reliable performance. It is a perfect magnetic stripe read/write device for computer system in financial department.

MC201A has version of dual tracks and three tracks.

2. Technical Specifications

Operating Temperature: 0℃~45℃
Operating Humidity: 20%~90％ RH
Power Supply: ＋9VDC 750mA (external) or +5VDC 320mA (keyboard port)
Dimension: 210×60×60mm
Weight: 1.4KG
Communication Parameter: 9600/4800/2400/1200BPS (Optional)
Data Bits: 8 bits with no parity bit or 7 bits with even parity
Stop Bit: 1 bit
Magstripe Standard: Complied with ISO IBM standard
Swiping Card Speed: 10cm/s～100cm/s
Magnetic Head life: 300,000 Times

3. Coding

Track 1 Coding

Below is the standard ISO character set that be encoded on Track 1.

“ ! " # $ % & ′ ( ) * + , − . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [\ ] ^ _”

All ASCII Code values range from 20H to 5FH can encoded on track 1.

Below is the option for the control characters:

IATA Character	!	"	&	′	*	+	,	:	;	<	=	>	@	_
ASCII Code	21	22	26	27	2A	2B	2C	3A	3B	3C	3D	3E	40	5F

Reserved characters:

IATA Character	#	[	\	]
ASCII Code	23	5B	5C	5D

% (25H): Starting Delimiter

? (3FH): Ending Delimiter

^ (5EH): Separator

Track 2, 3 Coding

ABA CHARACTER	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E
ABA1 CHARACTER	0	1	2	3	4	5	6	7	8	9	:	#	@	’	=
HEXDEAMCAL VALUE	30	31	32	33	34	35	36	37	38	39	3A	23	40	27	3D
ABA2 CHARACTER	0	1	2	3	4	5	6	7	8	9	:	;	〈	=	〉
HEXDEAMCAL VALUE	30	31	32	33	34	35	36	37	38	39	3A	3B	3C	3D	3E

4. DIP Switch Setting

There is a 4-bit DIP switch and a reset button on the bottom of the device. Pressing the reset button, the device will be restored to factory setting.

SW－1	Baud Rate	SW－2	Data Parity	SW－3	Encoding Format (for track 2/3)	SW-4	Encoding density setting(for 2 track)
ON	1200	ON	8 Bit No	ON	ABA1	ON	75 BPI
OFF	9600	OFF	7 Bit Even	OFF	ABA2	OFF	210 BPI

5. Control Command

The characters of the device can be revised through commands in the software.

- Command for setting the density of recording data
  "ESC H (1B 48)" set 2nd track to be: 210BPI
  "ESC L (1B 4C)" set 2nd track to be: 75BPI

- Command for setting the "start strings" position

Command	Start string position
ESC 6 （1B 36）	*12mm
ESC 7 （1B 37）	20mm
ESC 8 （1B 38）	22mm
ESC 9 （1B 39）	25mm

*12mm is the factory default setting, 25mm is for banking passbook.

- Command for setting the data standard

Standard No.	Start String	End String	Command	Remarks
Standard 1	BA	F	ESC X 1	IBMF
Standard 2	BA	F	ESC X 2	IBMF
Standard 3	BA	C	ESC X 3	IBMC
Standard 4	B	F	ESC X 4	ISO
Standard 5	D	F	ESC X 5	DIN
Standard 6	B	C	ESC X Z	SPECIAL

Track	Command	No for the Standard
2nd track	ESC 1 （1B 31）	Standard 1
	ESC 2 （1B 32）	Standard 2
	ESC 3 （1B 33）	Standard 3
	ESC 4 （1B 34）	Standard 4
	ESC 5 （1B 35）	Standard 5
	ESC Z （1B 5A）	Standard 6
3rd track	ESC T1（1B 54 31）	Standard 1
	ESC T2（1B 54 32）	Standard 2
	ESC T3（1B 54 33）	Standard 3
	ESC T4（1B 54 34）	Standard 4
	ESC T5（1B 54 35）	Standard 5

	ESC TZ（1B 54 5A）	Standard 6
	ESC B1（1B 42 31）	Standard 1
Double Track	ESC B2（1B 42 32）	Standard 2
	ESC B3（1B 42 33）	Standard 3
	ESC B4（1B 42 34）	Standard4
	ESC B5（1B 42 35）	Standard5
	ESC BZ（1B 42 5A）	Standard 6

- Command for selecting the serial expansion port

For double track version, open port A after power on or hardware reset. For three track version, open port B after power on or hardware reset.

Command	Function
ESC % A (1B 25 41)	Open Port A, close all other ports
ESC % B (1B 25 42)	Open Port B, close all other ports
ESC % C (1B 25 43)	Open Port C, close all other ports
ESC % D (1B 25 44)	Open Port D, close all other ports

6. Read/Write Command

- Write Command (Track 1)
  ESC t B “DATA” GS ESC \
  1B 74 42 “DATA” 1D 1B 5C

- Write Command (Track 2)
  ESC t “DATA” GS ESC \
  1B 74 “DATA” 1D 1B 5C

- Write Command (Track 3)
  ESC t A “DATA” GS ESC \
  1B 74 41 “DATA” 1D 1B 5C

- Write Command (Track 1 and Track 2)
  ESC t “Track 2 DATA” B “Track 1 DATA” GS ESC \
  1B 74 “Track 2 DATA” 42 “Track 1 DATA” 1D 1B 5C

- Write Command (Track 2 and Track 3)
  ESC t “Track 2 DATA” A “Track 3 DATA” GS ESC \
  1B 74 “Track 2 DATA” 41 “Track 3 DATA” 1D 1B 5C

- Write Command (Three Tracks)
  ESC t “Track 2 DATA” A “Track 3 DATA” B “Track 1 DATA” GS ESC \
  1B 74 “Track 2 DATA” 41 “Track 3 DATA” 42 “Track 1 DATA” 1D 1B 5C

- Read Command (Track 1)
  ESC B M （1B 42 4D）
  Swiping card correctly, return:
  ESC s B “DATA TO BE READ” ？ FS
  1B 73 42“DATA TO BE READ” 3F 1C

- Read Command (Track 2)
  ESC] （1B 5D）
  Swiping card correctly, return:
  ESC s “DATA TO BE READ” ？ FS
  1B 73 “DATA TO BE READ” 3F 1C

- Read Command (Track 3)
  ESC T] （1B 54 5D）
  Swiping card correctly, return:
  ESC s A “DATA TO BE READ” ？ FS
  1B 73 41 “DATA TO BE READ” 3F 1C

- Read Command (Track 1 and Track 2)
  ESC B T （1B 42 54）
  Swiping card correctly, return:
  ESC s “TRACK 2 DATA” B “TRACK 1 DATA” ？ FS
  1B 73 “TRACK 2 DATA” 42 “TRACK 1 DATA” 3F 1C

- Read Command (Track 2 and Track 3)
  ESC B] （1B 42 5D）
  Swiping card correctly, return:
  ESC s “TRACK 2 DATA” A “TRACK 3 DATA” ？ FS
  1B 73 “TRACK 2 DATA” 41 “TRACK 3 DATA” 3F 1C

- Read Command (Three tracks)
  ESC B t （1B 42 74）
  Swiping card correctly, return:
  ESC s “TRACK 2 DATA” A “TRACK 3 DATA” B “Track 1 DATA” ？ FS
  1B 73 “TRACK 2 DATA” 41 “TRACK 3 DATA” 42 “Track 1 DATA” 3F 1C

  Note: For failed operation, the DATA field will be 7F (DEL)

- Reset command
  ESC 0 (1B 30)

- Read/Write Status Return Command:
  ESC j （1B 6A）

  Status Code returned for Read/Write data on Track 1:
  ESC C r p/q/r (1B 43 72 70/71/72）

  Status Code returned for Read/Write data on Track 2:
  ESC r p/q/r (1B 72 70/71/72)

  Status Code returned for Read/Write data on Track 3:
  ESC T r p/q/r (1B 54 72 70/71/72)

  Status Code returned for Read/Write data on Track 1 and Track 2:
  ESC D r p/q/r (1B 44 72 70/71/72)

  Status Code returned for Read/Write data on Track 2 and Track 3:
  ESC B r p/q/r (1B 42 72 70/71/72)

  Status Code returned for Read/Write data on three tracks:
  ESC F r p/q/r (1B 46 72 70/71/72)

  Note: p, q, r is the last byte for the return code, with p representing “SUCCESS”, q representing” FAILURE” and r representing “NO READ/WRITE”

7. Operation Instructions

Rules for swiping card in the device

1. Make sure the bottom of the bank pass-book contacted with the bottom track of the device closely.
2. The pass-book cannot be bended during swiping.
3. The pass-book must be swiped smoothly, without interruption.
4. Swiping card speed: Within valid range of normal speed.
5. Swiping card direction must be right.

"Write" Operation

When the device receives the "Write" Command and the returned data block, the yellow indicator will be on or sparkling. The operator can then start swiping the card in the device track. On successful operation, the yellow indicator will be off and the buzzer will sound once. Otherwise, the red indicator will be on and the buzzer will sound three times, representing failed operation.

"Read" Operation

When the device receives the "Read" Command, the green light will be on or sparkling, The operator can then start swiping the card in the device track. The green light will be off and the buzzer will sound once on successful operation. Otherwise, the red indicator will be on and the buzzer will sound three times, representing failed operation.

Indicator Meaning

Green is on or sparkling: "Ready to read"
Yellow is on or sparkling: "Ready to write"
Red one is on: "Error" or "Self-test failure"