

MES-DG60B013

SPECIFICATIONS  
FOR  
MANUAL INSERTION  
MAGNETIC CARD READER

MODEL

Z U - 1 8 5 1 M A L 5  
Z U - 1 8 5 2 M A L 5

NOV. 1994

MATSUSHITA INDUSTRIAL EQUIPMENT CO., LTD.  
ELECTRONIC EQUIPMENT DIV.  
1-1, 3-Chome, Inazu-Cho, Toyonaka  
Osaka 561, JAPAN

## CONTENTS

1. INTRODUCTION	-----	P-1
2. COMPOSITION	-----	P-1
3. SPECIFICATION	-----	P-1
4. TERMINAL NO. OF CONNECTOR	-----	P-3
5. INTERFACE REQUIREMENTS	-----	P-3
6. NOTES FOR BETTER OPERATION	-----	P-5
7. APPEARANCE	-----	P-6
8. CONNECTOR DIMENSION	-----	P-7
9. MAGNETIC CARD SPECIFICATION	-----	P-8
10. PERIOD OF GUARANTEE	-----	P-9
11. LIFE OF PARTS	-----	P-9
12. MAINTENANCE METHOD	-----	P-9
13. HANDLING PRECAUTIONS	-----	P-9

## 1. INTRODUCTION

This specification applies to the Panasonic magnetic card reader, featuring small size, light weight and high performance.

## 2. COMPOSITION

The magnetic card reader is composed of the mechanical portion, single circuit for read.

### 1) Mechanical portion

The mechanical portion is mainly composed of the following parts.

1. Body (Color:transparence)
2. Card entrance slot (Color:Black)
3. Magnetic head

### 2) Circuit portion

1. Read amplifier circuit for 1 track

## 3. SPECIFICATION

### 3.1 CARD STANDARD

Refer to Magnetic Card Specification (9).

### 3.2 FUNCTION

- |                                      |                          |
|--------------------------------------|--------------------------|
| (1) Read/Write                       | : Read only              |
| (2) Read timing                      | : Ejection               |
| (3) Compatibility                    | : Cards and installation |
| (4) Installation of<br>the transport | : Horizontal direction   |

### 3.3 BASIC PERFORMANCE

#### (1) Performance

	Type	
	ZU-1851MAL5	ZU-1852MAL5
Card standad	*1 IATA (ISO1)	*2 ABA (ISO2)
Track used	Track 1st	Track 2nd
Recording mehod	FM	FM
Recording density	210 BPI	75 BPI
Recording capacity	79 characters (7-bit code)	40 characters (5-bit code)

Note: \*1 IATA . . . . Internation Air Transportation Association Standard

\*2 ABA . . . . American Bankers Association Standard

- (2) Card operation speed : 8~120 cm/sec.
- (3) Magnetic head Channel : 1  
Channel width : 1.5mm
- (4) Dielectric strength : DC 250 V, 1 min.  
(Measured between P.C.B. ground terminal and frame)
- (5) Insulation resistance : More than 10 MΩ at DC 250 V  
(Measured between P.C.B. ground terminal and frame)

### 3.4 ENVIRONMENT REQUIREMENTS

- (1) Temperature range : -20~60°C  
(Operation)
- (2) Temperature range : -30~70°C  
(Conservation)
- (3) Humidity range : 10~90%RH  
(Operation) (No condensation allowed)
- (4) Humidity range : 10~90%RH  
(Conservation) (No condensation allowed)
- (5) Vibration : Vibration sweep 10~50 Hz/mm  
X,Y,Z directions
- (6) Shock durability : 30G

### 3.5 PHYSICAL CHARACTERISTICS

- (1) Dimension : 90 (W) × 119.5 (D) × 46 (H)  
Unit: mm
- (2) Weight : Approx. 100 g
- (3) Power supply : 5 V DC ± 10%  
Less than 22mA
- (4) Ripple : Within 50 mVp-p
- (5) Operating place : Indoor

### 3.6 LIFE AND ERROR RATE

(at indoor conditions by continuous running))

- (1) Life long of head : Approx. 500,000 times pass
- (2) Error : Less than 0.5%  
\* Condition .....In a clean office room.  
In damp or dusty atmosphere, the life may be  
1/3 to 1/5 of the above figure.

## 4. TERMINAL NO. OF CONNECTOR

### 4.1 OUTPUT SIGNAL

Connector Pin No.	Signal name	Connector Pin No.	Signal name
1	+5 V	5	$\overline{\text{CLD}}$
2	+5 V	6	GND
3	$\overline{\text{RDT}}$	7	GND
4	$\overline{\text{RCL}}$		

Connector: BS7P-SHF-1AA JST

## 5. INTERFACE REQUIREMENTS

### 5.1 OUTPUT VOLTAGE

	Min (V)	Max (V)	Conditions
H level "0"	4.0	V <sub>CC</sub>	I <sub>OH</sub> = -1.0 mA
L level "1"	-	0.4	I <sub>OL</sub> = 4.0 mA

## 5.2 OUTPUT SIGNALS

The following paragraphs describe the requirements and interface signals between the user terminal and the Magnetic Card Reader shown in Figure 1.

The general timing sequence for entering data from the Magnetic Card Reader to the user terminal is shown in Figure 2.

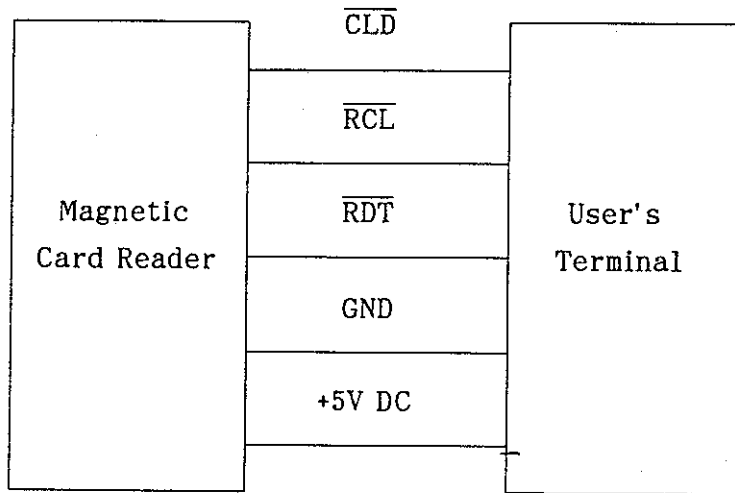


Figure 1 Diagram

(1)  $\overline{CLD}$  (CARD LOAD)

The  $\overline{CLD}$  line will be High when a Magnetic Card is inserted in the end of Magnetic Card Reader. The  $\overline{CLD}$  line will be Low at all other times.

(2)  $\overline{RCL}$  (READ CLOCK)

This is used to sample the data line by its falling edges. The time relationship of the clock with respect to the other signals is shown in Figure B.

(3)  $\overline{RDT}$  (READ DATA)

At the moment  $\overline{RCL}$  change from High to Low :  
 $\overline{RDT}$  is "1" when the  $\overline{RDT}$  line is Low, and  
 $\overline{RDT}$  is "0" when the  $\overline{RDT}$  line is High.

### 5.3 TIMING CHART

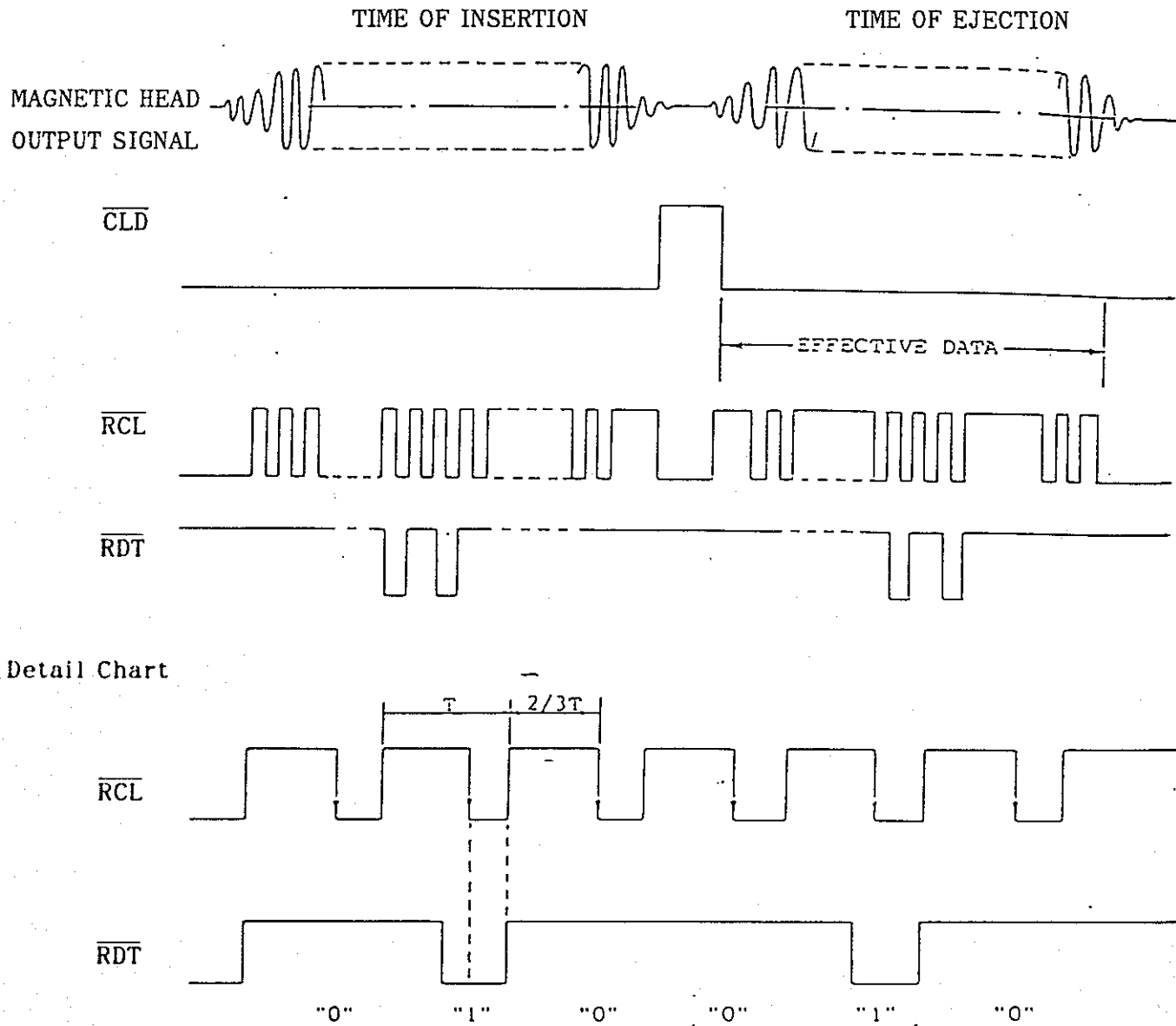


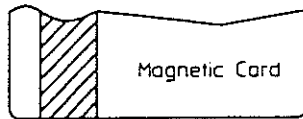
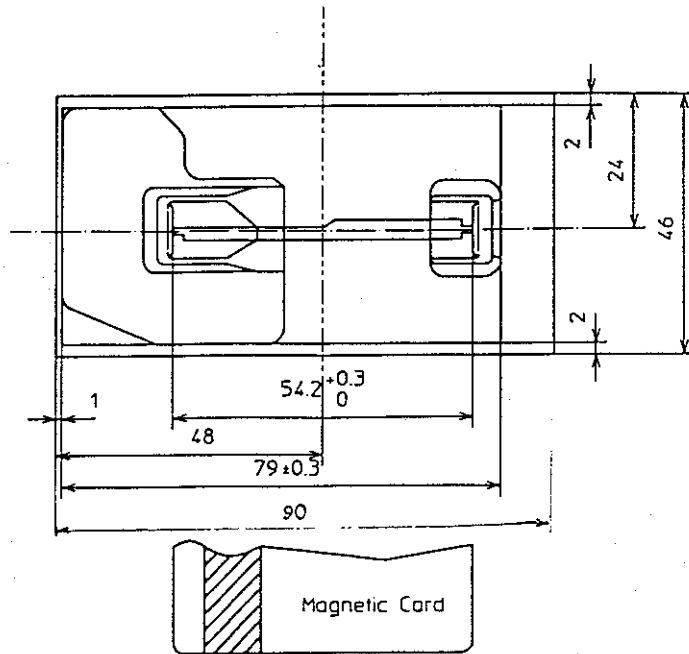
Figure 2 Timing Sequence

Note :  $T$  (sec) =  $\frac{2.54 \text{ cm/inch}}{\text{Recording density (BPI)}} \times \frac{1}{\text{Card speed (cm/sec)}}$

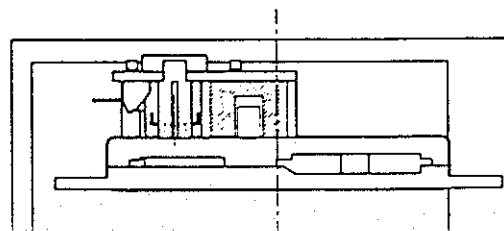
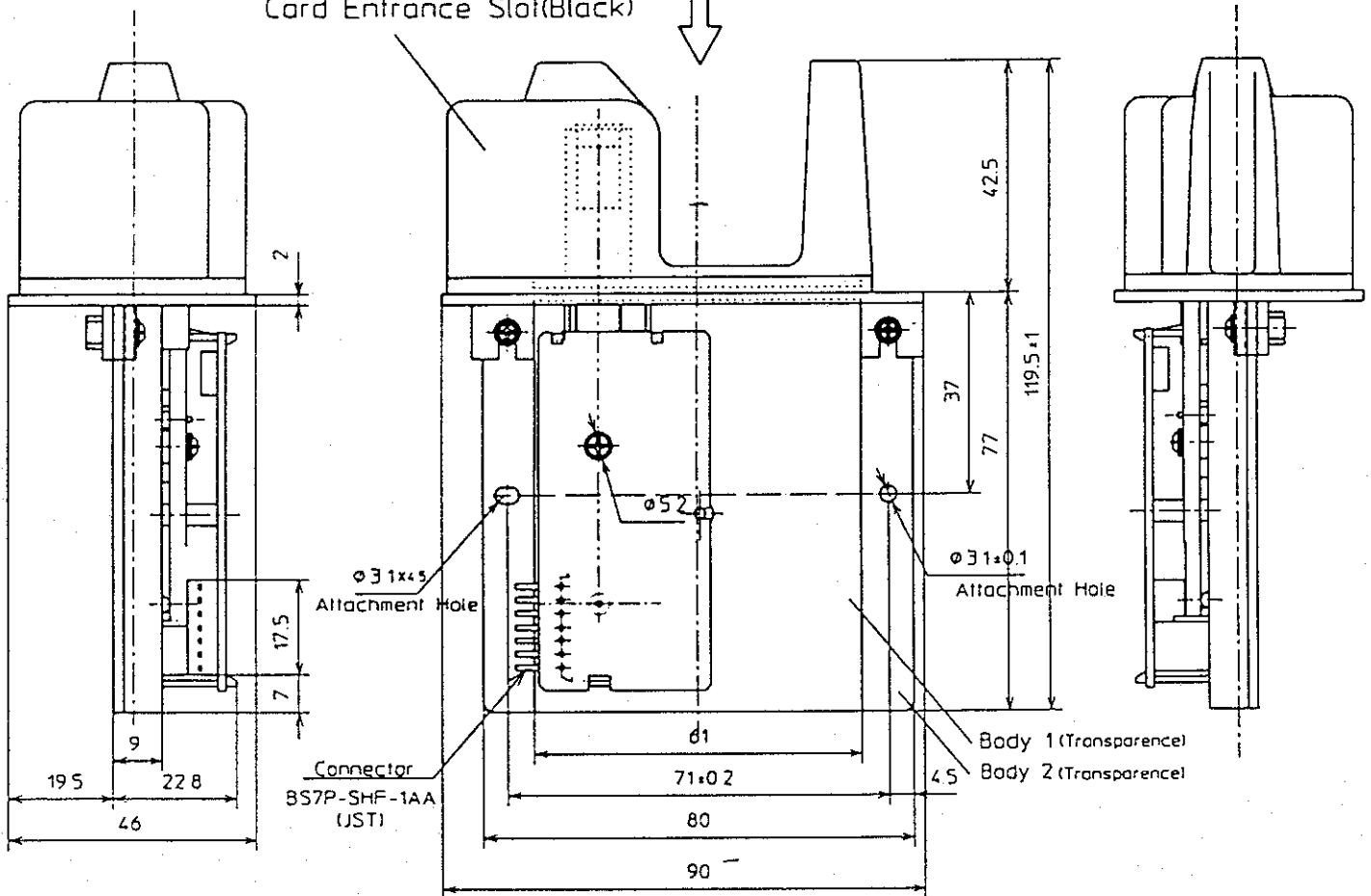
### 6. NOTES FOR BETTER OPERATION

- (1) The card should be inserted in the specified direction.
- (2) Cards which meet standards should be used.
- (3) Cards should not be dirty, scratched or deformed.

7. APPEARANCE



Card Entrance Slot(Black)

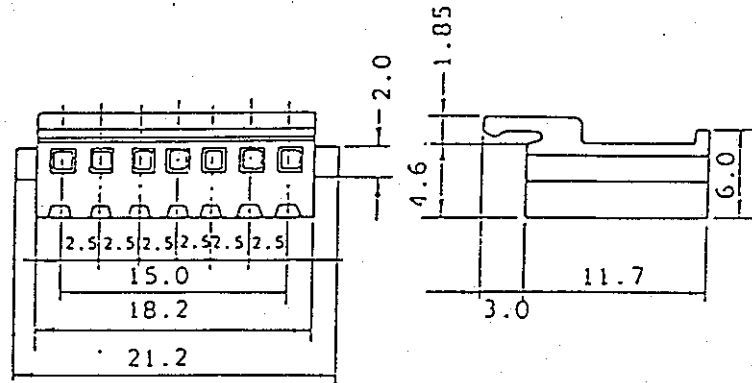


General Tolerance: ±0.5

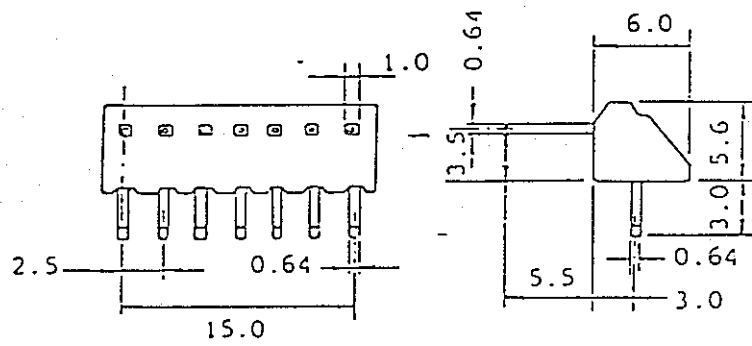


## 8. CONNECTOR DIMENSION

### Housing (H7P-SHF-AA)



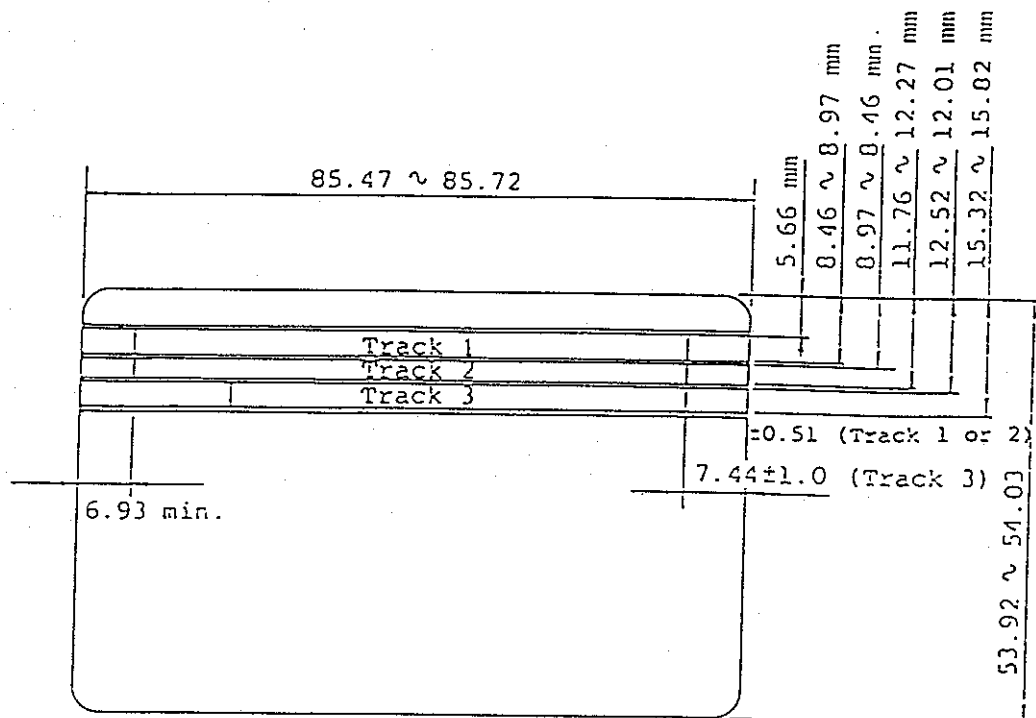
### POST (BS7P-SHF-1AA)



(Japan Solderless Terminal MFG Co., Ltd.)

## 9. MAGNETIC CARD SPECIFICATION

### 9.1 CARD SPECIFICATION



- |                         |  |
|-------------------------|--|
| (1) Thickness           | : $0.76 \pm 0.08$  |
| (2) Transformation      | : 2 mm max.  |
| (3) Impermeability rate | : More than 2.0<br>(Measured by light permeance desitometer) |

### 9.2 MAGNETIC CHARACTERISTICS

- |   |                                       |
|---|---------------------------------------|
| (1) Coercive force (Hc)                       | : $24 \times 10^3$ A/m (300 Oe ± 12%) |
| (2) Residual flux ( $\phi_r$ )                | : $1.25 \pm 0.15$ maxwell/cm          |
| (3) Squareness ratio<br>( $\phi_r / \phi_m$ ) | : More than 0.70                      |

## 10. LIFE OF PARTS

Magnetic head : 500,000 passes

\*Condition . . . . . In a clean office room.

In damp or dusty atmosphere, the life may be  
1/3 to 1/5 of the above figure.

## 11. MAINTENANCE METHOD

When replacing parts, exchange the card reader unit.

## 12. HANDLING PRECAUTIONS

### 12.1 MOUNTING METHOD

- (1) Mount on a flat surface, with due care not to apply excessive force on the card reader main body.
- (2) The controllability is most stable when installed so that the card may run in the vertical direction.
- (3) The controllability will be further stabilized when card guide plates are installed before and after the card running part of the card reader.

### 12.2 HANDLING METHOD

- (1) Since the reading performance depends on the card inserting direction, insert correctly in the specified direction.  
The inserting direction is specified in the outline drawing of the specification.  
If the card is inserted obliquely, the contact of the card and magnetic head is poor, and it may lead to reading error.
- (2) When inserting the card, the card hits against the head and the action may be dull only for a moment to cause reading error.  
It must be noted that this phenomenon is likely to occur when the card is inserted slowly.
- (3) As for card running speed, manipulate within specified speed range.  
It may result in an error if card operation is interrupted or extremely accelerated or decelerated. A stable card handling speed by man is usually 30 to 60 cm/sec.

### 12.3 CAUTIONS

- (1) Use specified card.(ISO)

Use the card with the coercive force of  $24 \times 10^3 \text{ A/m}$  (300 Oe) for ISO.

- (2) Store the card carefully so as not to soil, injure or deform it.

In particular, deposit of solid matter on the magnetic stripe surface may result in a trouble.

- (3) To prevent wear of the magnetic head, clean the head by periodically passing a cleaning card.

For example, in a clean office room, pass the cleaning card about once a week. If the magnetic head is heavily stained, clean the head by soaking the felt part of the cleaning card in alcohol properly.

- (4) When installing the card reader, avoid dusty, hot or damp place, or near magnetic field or object generating inductive noise (printer, LED display unit, CRT, etc.).

Do not use in a place exposed to direct sunlight.

- (5) When storing, pay attention to dust, heat, humidity and other environmental conditions.

- (6) Do not touch the printed circuit board with bare hand.

Note particularly static electricity.

- (7) Do not supply power from other outlet than connector.

Pay special attention to the polarity of power source and wrong connection of connector.

- (8) Check the noise, static electricity, etc., with the card reader being incorporated in the equipment.

- (9) In the condition of low temperature (under  $-20^\circ\text{C}$ ), provide heating system separately to warm up card reader.