PCR100

SPECIFICATIONS

FOR

MAGNETIC CARD READER

Manual Slide type

ＺＵ－Ｍ１１２１□１

OCT. 1991

1. INTRODUCTION

This specification describes about manual slide type magnetic card reader, featuring small size, light weight and high performance which enable to read card data encoded by following ISO2 standard.

2. PRODUCT NAME
2.1 Product Name : Manual slide type magnetic card reader
2.2 Model No. :

```
     1   2   3   4   5   6   7   8   9  10
     Z   U  —  M   1   1   2   1  [ ]  1
```

Magnetic head specification(S:standard)
(L:Long life)

3. FUNCTION
3.1 Card operation : One way (Refer to appearance)
3.2 Read/Write : Read only

4. EQUIPMENT SPECIFICATION
4.1 Out dimension : 90mm(L) × 25mm(W) × 24mm(H)
4.2 Weight : Approximately 25g
4.3 Supplied voltage
(1) Supplied voltage : +5VDC ± 10% / Lipple(Less than50mVp-p)
(2) Current consumption : TYP. 3mA, MAX. 6mA
(3) Maximum applied voltage : +7VDC
4.4 Connector : Molex-Japan Co.,Ltd.53261-0690(Refer to 7.5)
4.5 Environment requirement : At indoor

5. BASIC FEATURES
5.1 Card operating speed : 8~150 cm/sec
5.2 Magnetic head
(1) Numbers of channel : 1
(2) Core width : 1.5mm
(3) Core material : ☐Permalloy(S:Standard)
☐Sendust (L:Long life)

6. CARD STANDARD

6.1 Card standard

Card Standard	ISO
	Track 2nd
Recording density	75 BPI
Recording capacity	40Characters (5bit code)
Recording method	FM

Track 2nd⋯   ISO 2 (ABA) :American Bankers Association Standard

6.2 Location of tracks

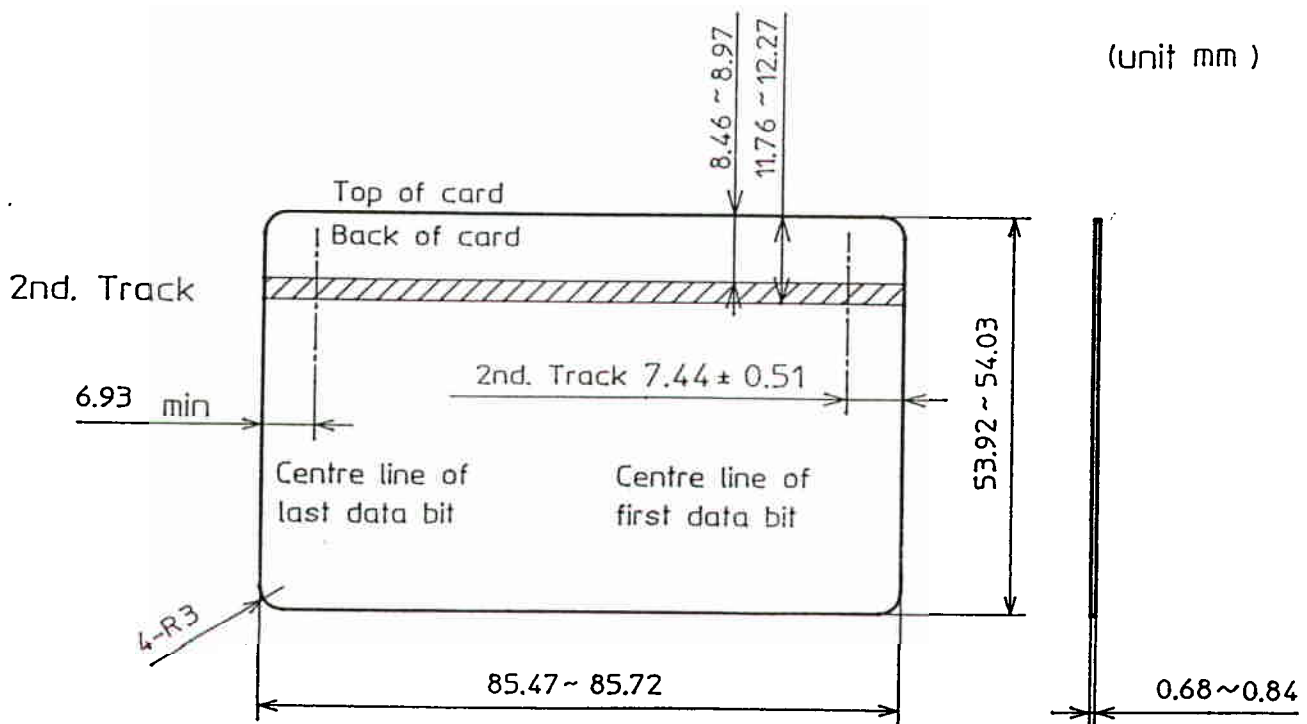ISO (1 Track) ISO 7810,ISO 7811

Coercive force(Hc):300∼3000(Oe)

(unit mm)

Fig.6.2 Location of tracks

7. CIRCUIT CONSTRUCTION

7.1 Block diagram

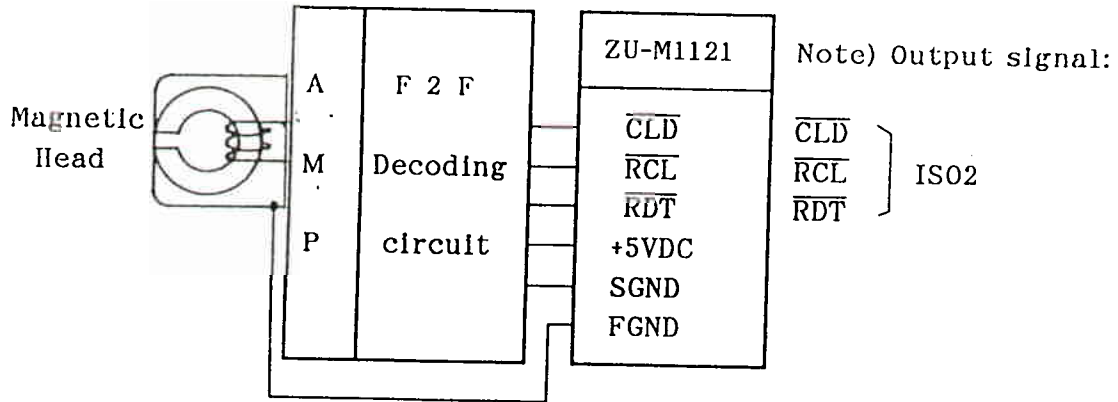Fig 7.1 Block diagram

7.2 Interface requirement

(1) Signal Level   : CMOS level
(2) Signal Logic   : Low active
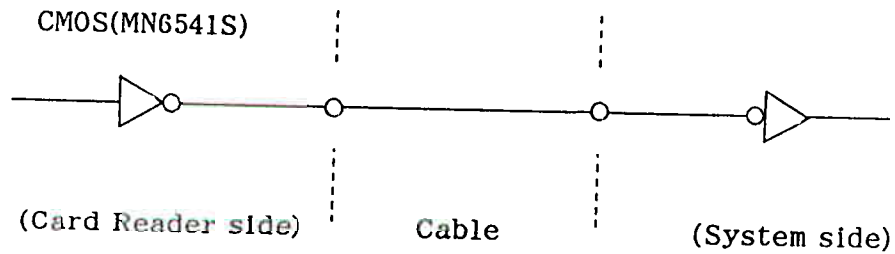(3) Connection condition

Fig 7.2 Connection of output circuit

(4) Output voltage

Table 7.2 Output voltage

	Min(V)	Max(V)	Conditions
H level "0"	4.0	Vcc	$I_{OH} = -1.0mA$
L level "1"	–	0.4	$I_{OL} = 4.0mA$

9. UNIT LIFE AND RELIABILITY

9. 1　Life Magnetic head　:☐　300,000 times pass　(S:Standard)
　　　　　　　　　　　　　　　　:☐ 1,000,000 times pass　(L:Long life)
　　　(conditions)　In a clean office room.
　　　　　　　　　　In damp or dirty atmosphere, the life may be 1/3 to 1/5
　　　　　　　　　　of the above figure.

9. 2　Error rate　　　　　　:　Less than 0.1%
　　　(conditions)　This error rate is obtained when a new normal card(data
　　　　　　　　　　"1010"···)is horizontally passed at the standard speed
　　　　　　　　　　(30∼60cm/sec.)by manual operation in the clean environ
　　　　　　　　　　-ment at delivery from our company.

10. PERIOD OF GUARANTEE
　　As per PIC's policy of warranty.

11. MAINTENANCE
　　Because of difficulty at changing components on the P.C Board,
　　replace of whole unit is recommended for service and maintenance.

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)　When mounting on the equipment,take due care so that faces of the
　　　　　constructive device except for the attaching face shall not
　　　　　contact the flexible printed circuit board.
　　(3)　The controllability is most stable when installed so that the card
　　　　　may run in the vertical direction.
　　(4)　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 300～3000 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 touch the flexible printed circuit board with hands.
   (8) Do not supply power from other outlet than connector.
          Pay special attention to the polarity of power source and wrong
          connection of connector.
   (9) Check the noise, static electricity, etc., with the card reader
          being incorporated in the equipment.

7. 3 Explanation of input/output signal

Input/output signals are $\overline{\text{CLD}}, \overline{\text{RCL}}, \overline{\text{RDT}}$, SGND, FGND and effective operation Mode for each of these signals shall be " L" level for all.

(1) $\overline{\text{C L D}}$ (CARD LOAD) : The $\overline{\text{CLD}}$ line will be Low when a Magnetic Card is running in the Magnetic Card Reader.
The $\overline{\text{CLD}}$ line will be High when the Card is stopped or not present in the Card reader.

(2) $\overline{\text{R C L}}$ (READ CLOCK): This is used to sample the data line by it's falling edges.
The time relationship of the clock with respect to the order signals is shown in Figure 7.4.

(3) $\overline{\text{R D T}}$ (READ DATA) : At the moment $\overline{\text{RCL}}$ change from High to Low; $\overline{\text{RDT}}$ is " 1" when the $\overline{\text{RDT}}$ line is Low , and $\overline{\text{RDT}}$ is "0" when the $\overline{\text{RDT}}$ line is High.

(4) S G N D   : Signal GND

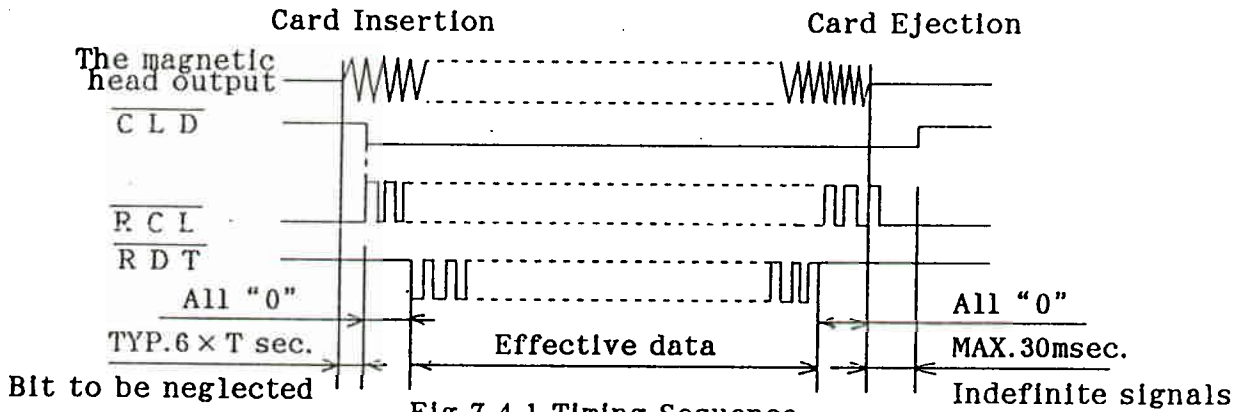(5) F G N D   : Frame GND

7. 4 Output signal timing chart

Fig 7.4.1 Timing Sequence

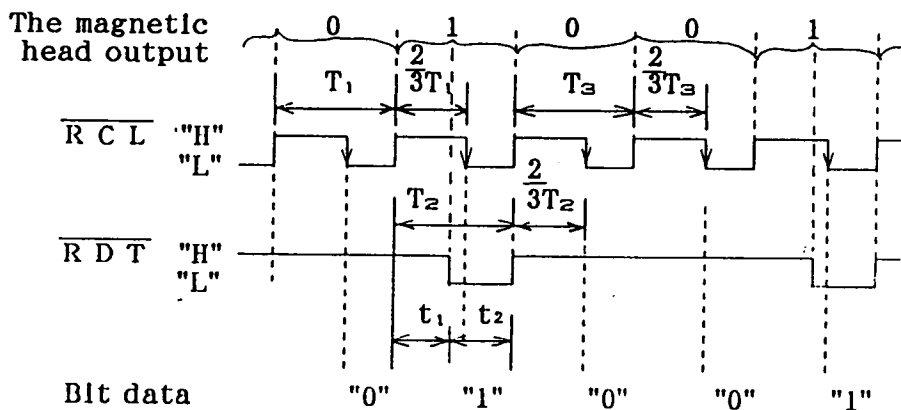$\overline{\text{R C L}}$ & $\overline{\text{R D T}}$ Detail timing chart

Fig 7.4.2 Timing Sequence (Detail)

When the jitter of the magnetic head output is 0%, the following equation is satisfied.

$$T = T_1 = T_2 = T_3$$
$$t_1 = t_2$$

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

7．5　Terminal No. of connector
　（1）　Maker　　：Molex-Japan Co.,Ltd.
　（2）　Model No.　Connector　53261-0690（Connect for PC. Board）
　　　　　　　　　　Housing　　　51021-0600
　　　　　　　　　　Terminal　　　50079-8000
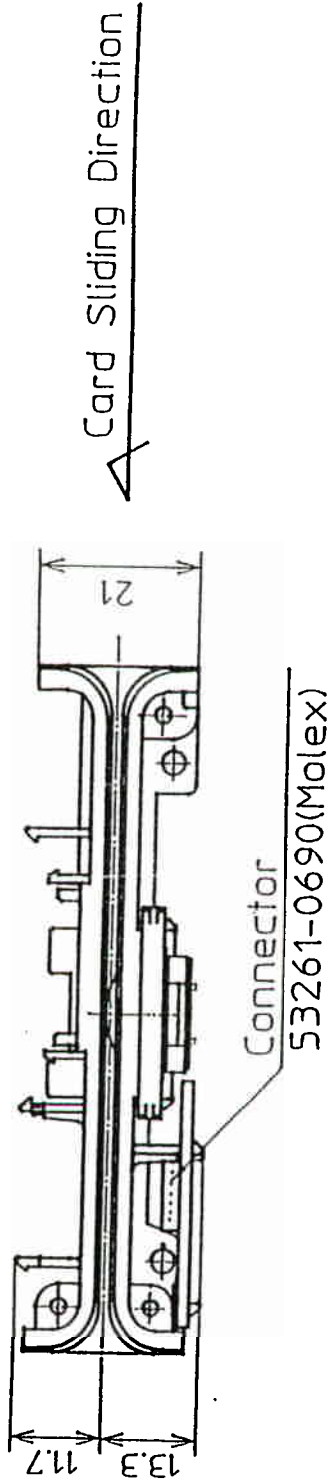　（3）　Pin No. & Signal Name

ZU-M1121 (Card reader side)

Connector Pin No.	Signal Name
1	FGND
2	SGND
3	+5VDC
4	$\overline{RDT}$
5	$\overline{RCL}$
6	$\overline{CLD}$

Note) : Make sure to use the connection cable of less
than 300mm length for the card reader.

8．ENVIRONMENTAL CHARACTERISTICS

8．1　Operating Temperature Range　:-20～60℃

8．2　Operating Humidity Range　　:10～90%RH (No condensation allowed)

8．3　Storage Temperature Range　　:-30～70℃

8．4　Storage Humidity Range　　　:10～95%RH (No condensation allowed)
　　*Place the card reader in the standard environment
　　(temperature:20±5℃,humidity: 35 to 60%RH).Leave it for 12 hours,
　and measure the functions.Make sure no abnormality is found.

8．5　Vibration　　　　　　　　　:Vibration sweep 10～50 Hz/mm
　　　　　　　　　　　　　　　　　X,Y,Z directions

8．6　Shock durability　　　　　　:30G

8．7　Others　　　　　　　　　　:Make sure the source of noise that
　　　　　　　　　　　　　　　　　may deteriorate the characteristics
　　　　　　　　　　　　　　　　　of the card reader is not present
　　　　　　　　　　　　　　　　　around the card reader.

1. APPEARANCE
ZU-M1121*1

Card Sliding Direction

Connector
53261-0690(Molex)

21

11.7

13.3

1.4 ± 0.2

3

24

CARD READER
Made in Japan

90 ± 0.5

2-ø2.2
Tapping Screw Spec.
(Nominal Diameter2.6)

78 ± 0.2

66 ± 0.2

2-ø3.2

6

12

7.5 ± 0.2

12 ± 0.2

General Differencial : ±0.3
unit : mm