SPECIFICATIONS
Manual Slide Type Magnetic Card Reader
ZU-M1363 1

NOTE:

Panasonic Communications Co., Ltd.
Devices and Components Company
2111 Ueda Usa Oita 879-0493 Japan
TEL: 0978-37-0965

REF No. MIS-DG60A179

REF A

DATE 6 DEC 2006
PREPARED T. Konohashi
LAWS M. Fujimura
APPROVED M. Kawasaki
QA M. Katsuta
SALES

KOK-B3-601-T2 Issue 1
<table>
<thead>
<tr>
<th>Revision No.</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCR-9111A</td>
<td>JUL.2001</td>
<td>Initial Release</td>
</tr>
</tbody>
</table>
| MIS-DG60A179A | DEC.2006| Altered our corporate name to Panasonic Communications Co., Ltd. Devices and Components Company Information Equipment Category This Card reader is RoHS compliant version.  
· The connector terminals for I/O connector have been changed from the solder plating to the tin one  
Molex 53261-1290 → 53261-1271                                                                 |

Information in this document is subject to change without notice. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of Panasonic / Panasonic Communications Co., Ltd.
CONTENTS

1. INTRODUCTION .......................... 1
2. PRODUCT NAME .......................... 1
3. FUNCTION .............................. 1
4. EQUIPMENT SPECIFICATION .......... 1
5. BASIC FEATURES ........................ 1
6. CARD STANDARD ........................ 2
7. CIRCUIT CONSTRUCTION .......... 3
8. ENVIRONMENTAL CHARACTERISTICS 5
9. UNIT LIFE AND RELIABILITY .... 6
10. PERIOD OF GUARANTEE ........ 6
11. MAINTENANCE ......................... 6
12. HANDLING PRECAUTIONS .......... 6
13. APPEARANCE .......................... 8
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 ISO1,2,3 standards.

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 3 6 3 □ 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 30g
4.3 Supplied voltage
   (1) Supplied voltage : +5VDC±10% / Ripple(Less than 50mVp-p)
   (2) Current consumption : TYP. 9mA, MAX. 12mA
   (3) Maximum applied voltage : +7VDC
4.4 Connector : Molex-Japan Co., Ltd. 53261-1271 (Refer to 7.5)
4.5 Environment requirement : At indoor

5. BASIC FEATURES
5.1 Card operating speed : 10～120 cm/sec
5.2 Magnetic head
   (1) Numbers of channel : 3
   (2) Core width : 1.4mm
   (3) Core material : □ Permalloy(S:Standard)
                      □ Sendust (L:Long life)
6. CARD STANDARD

6.1 Card standard

<table>
<thead>
<tr>
<th>Card Standard</th>
<th>ISO 1</th>
<th>ISO 2</th>
<th>ISO 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recording density</td>
<td>Track 1st</td>
<td>Track 2nd</td>
<td>Track 3rd</td>
</tr>
<tr>
<td>210 BPI</td>
<td>75 BPI</td>
<td>210 BPI</td>
<td></td>
</tr>
<tr>
<td>Recording capacity</td>
<td>79 Characters</td>
<td>40 Characters</td>
<td>107 Characters</td>
</tr>
<tr>
<td>(7 bit code)</td>
<td>(5 bit code)</td>
<td>(5 bit code)</td>
<td></td>
</tr>
<tr>
<td>Recording method</td>
<td>FM</td>
<td>FM</td>
<td>FM</td>
</tr>
</tbody>
</table>

Track 1st ...... ISO 1 (IATA) : International Air Transport Association
Track 2nd ...... ISO 2 (ABA) : American Bankers Association Standard
Track 3rd ...... ISO 3 (MINTS) : Mutual Institutions National Transfer

6.2 Location of tracks

ISO (3 Tracks) ISO 7810, ISO 7811

Coercive force (Hc) : 300 ~ 3000 (Oe)

![Fig. 6.2 Location of tracks](image-url)
7. CIRCUIT CONSTRUCTION

7.1 Block diagram

![Block Diagram]

Fig. 7.1 Block diagram

7.2 Interface requirement

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

![Connection Diagram]

(Card Reader side) Cable (System side)

Fig 7.2 Connection of output circuit

(4) Output voltage

<table>
<thead>
<tr>
<th>Condition</th>
<th>Min(V)</th>
<th>Max(V)</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>H level &quot;0&quot;</td>
<td>4.0</td>
<td>Vcc</td>
<td>( I_{OH} = -1.0 \text{mA} )</td>
</tr>
<tr>
<td>L level &quot;1&quot;</td>
<td>-</td>
<td>0.4</td>
<td>( I_{OL} = 4.0 \text{mA} )</td>
</tr>
</tbody>
</table>
7. 3 Explanation of input/output signal

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

(1) CLD (CARD LOAD): The CLD line will be Low when a Magnetic Card is running in the Magnetic Card Reader. The CLD line will be High when the Card is stopped or not present in the Card reader.

(2) RCL (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) RDT (READ DATA): At the moment RCL change from High to Low; RDT is "1" when the RDT line is Low, and RDT is "0" when the RDT line is High.

(4) SGND: Signal GND
(5) FGND: Frame GND

7. 4 Output signal timing chart

Card Insertion Card Ejection

The magnetic head output

<table>
<thead>
<tr>
<th>CLD</th>
<th>RCL</th>
<th>RDT</th>
<th>All &quot;0&quot;</th>
<th>Effective data</th>
<th>All &quot;0&quot;</th>
<th>MAX. 30msec.</th>
<th>Indefinite signals</th>
</tr>
</thead>
</table>

RCL & RDT Detail timing chart

The magnetic head output

<table>
<thead>
<tr>
<th>RCL</th>
<th>&quot;H&quot; &quot;L&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDT</td>
<td>&quot;H&quot; &quot;L&quot;</td>
</tr>
</tbody>
</table>

Bit data

| "0" | "1" | "0" | "0" | "1" |

Fig 7.4.1 Timing Sequence

Fig 7.4.2 Timing Sequence (Detail)

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

\[ T = T_1 + T_2 = T_3 \]

\[ T_1 = T_2 = T_3 \]

\[ T (\text{sec}) = \frac{2.54 \text{cm/inch}}{\text{Recording density (BPI)}} \times \frac{1}{\text{Card speed (cm/sec)}} \]
7. 5 Terminal No. of connector
   (1) Maker : Molex-Japan Co., Ltd.
   (2) Model No. Connector 53261-1271 (Connect for PC Board)
       Housing 51021-1200
       Terminal 50079-8000
   (3) Pin No. & Signal Name

   ZU-M1363 (Card reader side)

<table>
<thead>
<tr>
<th>Connector Pin No.</th>
<th>Signal Name</th>
<th>Connector Pin No.</th>
<th>Signal Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FGND</td>
<td>7</td>
<td>RDT2</td>
</tr>
<tr>
<td>2</td>
<td>SGND</td>
<td>8</td>
<td>RCL2</td>
</tr>
<tr>
<td>3</td>
<td>+5VDC</td>
<td>9</td>
<td>CLD2</td>
</tr>
<tr>
<td>4</td>
<td>RDT3</td>
<td>10</td>
<td>RDT1</td>
</tr>
<tr>
<td>5</td>
<td>RCL3</td>
<td>11</td>
<td>RCL1</td>
</tr>
<tr>
<td>6</td>
<td>CLD3</td>
<td>12</td>
<td>CLD1</td>
</tr>
</tbody>
</table>

   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°C
8. 2 Operating Humidity Range   : 10 ~ 90%RH (No condensation allowed)
8. 3 Storage Temperature Range  : -30 ~ 70°C
8. 4 Storage Humidity Range     : 10 ~ 95%RH (No condensation allowed) (24 hours)

   *Place the card reader in the standard environment
     (temperature: 20 ± 5°C, 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.
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
(30～60 cm/sec.) by manual operation in the clean environ-
ment at delivery from our company.

10. PERIOD OF GUARANTEE

If defects should occur within one year after acceptance inspection
of the machine due to improper material or workmanship, the defective
parts shall be replaced or repaired, free of charge.

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.
13. APPEARANCE

ZU-M1363-1

Card Sliding Direction

25.0 (MAX)
32.5
11.7

1.4 ± 0.2

90 ± 0.5

2-Ø2.2
Tapping Screw Spec.
(Nominal Diameter 2.6)

2-Ø3.2

Connector 53261-1271 (Molex)

General Tolerance: ±0.3
unit: mm