

Hybrid Manual Insertion Card Reader V4KU Series

[DRAFT]

Rev. A	17 Jun, 2002
Rev. B	10 Sep, 2002
Rev. C	15 Jan, 2003
Rev. D	25 Mar, 2003
Rev. E	21 Aug, 2003

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1. Model Name

№	Comm. I/F	Magnetic read			Smart card *3	SAM	Bezel	Module Name	Comment
		Track 1	Track 2	Track 3					
1	USB	R*1	R	R	Y *2	Y *3	Round Type	V4KU-01JR-001	To be released
2	USB	R	R	R	Y	Y	Flat Type	V4KU-01JF-001	
3	USB	R	R	R	Y	Y	None	V4KU-01JN-001	To be released
4	USB	R*1	R	R	Y *2	Y *3	Round Type	V4KU-01JS-001	

- *1 R : Magnetic reading function
 *2 Smart card : 8 contacts for C1 to C8 are provided (Middle position).
 *3 Y : 1SAM Provided

2. Features

2.1 Card Operation

Manual insert and pull out operation

2.2 Interface

USB (Universal Serial Bus) interface. Version 2.0 Full speed supported.

2.3 Magnetic Card Read

- (1) Reading track : Track No.1, 2 and 3.
 (2) Reading direction : Bi-directional capability (insert/pull out)
 (3) Read operation speed : 100-1000mm/s (At flat card)
 (4) Capable of simultaneous reading track No.1, 2 and 3.

2.4 IC Card Read/Write

- (1) Protocol Handling : T=0 and T=1
 (2) Data byte reading/writing : Inverse convention (MSB first, negative logic)
 and Direct convention (LSB first, positive logic)
 (3) Clock during/after ATR : 3.5712 MHz (Conform to ISO / IEC 7816-3)
 (4) Communication speed : T=0: 1etu = 372 / (3.5712 x 10⁶) sec
 (Constant Value)
 T=1: 1etu = (372/D) x 1 / (3.5712 x 10⁶) sec
 D=1(Default), 2, 4
 (5) Vpp : Not used
 (6) Vcc : 5V / 3V (Type A and Type B)
 (7) IC contact location : Eight contacts for C1 to C8 are provided.
 (ISO middle position)

*Number and location of contacts on IC card are specified in ISO 7816-2 figure 2

2.5 Memory card Read/Write

Memory cards using SIEMENS 4418, 4428, 4432 and 4442 chips are supported

2.6 SAM (Secure Application Module)

(1) 1SAM

1 SAM can be controlled by installing a SIM socket and electrical parts.

(2) Multiple SAMs(5SAMs) <OPTION>

This Card Reader can control 5 SAMs (max.) by connecting a SAM extension board (optional). Provided the board that supports 1 SAM is installed.

2.7 Program Download Function

Host can change program of Card Reader by a download command.

2.8 LED Indicator

LED Indicator is equipped. LED has three colors (Red, Green, Orange).

LED Indicator informs the card status and result.

2.9 Card Lock Function

Inserted card is locked mechanically and prevented from removing.

(1) Lock function is activated by below condition.

- a) The card is fully inserted.
- b) Under communication with IC card.
- c) The Host transmits a command to active the lock.

(2) Lock function is deactivated automatically on a power failure.

2.10 Shutter

A mechanical shutter opens by a trigger of a card width, and prevents the introduction of foreign objects that are narrower than a card.

2.11 Security Case (OPTION)

The case with the tamper-evident

Blocking obtaining internal signals. Evidence is kept by removing the case.

3. Applicable Card

3.1 Magnetic Card

ISO/IEC 7810, ISO/IEC 7811-1,2,3,6

3.2 IC Card

ISO/IEC 7816-1,2,3

EMV4.0 Level1

3.3 Memory Card

SLE4418, SLE 4428, SLE 4432, SLE 4442

3.4 SAM(Secure Application Module)

ENV1375-1(ID 000)

4. Specification

4.1 Mechanical Specification

(1) External Dimensions(Refer to Outline Drawing for the detail dimensions)

i)V4KU-01JR-001	Width	: 78.0mm
	Height	: 54.0mm
	Length	: 133.0mm
ii)V4KU-01JF-001	Width	: 101.6mm
	Height	: 76.2mm
	Length	: 133.0mm
iii)V4KU-01JN-001	Width	: 70.0mm
	Height	: 33.7mm
	Length	: 127.0mm
iv)V4KU-01JS-001	Width	: 80.0mm
	Height	: 50.0mm
	Length	: 133.0mm

(2) Weight

Weight : Less than 500g

(3) Installation

Mounting bracket is prepared with four holes to install the card reader to the fascia. (Refer to Outline Drawing)

4.2 Power Requirement

- (1) Input Voltage
24.0VDC (21.6V-26.4V including ripple)
- (2) Ripple
Less than 100mVp-p
- (3) Current Consumption (Input Voltage:24V)
 - Waiting (normal) :Less than 50mA
 - In operation
 - Magnetic card :Less than 100mA
 - IC card :Less than 1.0A(solenoid on)
- (4) Power Failure
Detection voltage level :Less than 18.0V

4.3 Environmental Condition

- (1) Operation
 - Temperature :+0 to 50 degree (Celsius)
 - Humidity : 5 to 85% RH
no condensation and absolute air humidity of 24.39 g/m³ or less
(=Max Dew Point 29 degree)
- (2) Storage
 - Temperature :-25 to 70 degree (Celsius)
 - Humidity : 5 to 90% RH
no condensation and absolute air humidity of 40.0 g/m³ or less
(=Max Dew Point 37.1 degree)

4.4 General

- (1) Insulation Resistance :20M or more at DC100V
(At normal temperature and humidity)
- (2) Dielectric Strength :500VAC for 1 minute
- (3) Durable Vibration
 - Frequency :10-150 Hz
 - Single vibration width :0.10mm
 - Acceleration :15mm/s²
 - Direction :X,Y,Z
- (4) Shock Endurance
 - Acceleration :150mm/s²
 - Direction :X,Y,Z

4.5 Interface

4.5.1 Communication interface

- | | |
|------------------------|--|
| (1) Protocol Version | USB Version 2.0 certified |
| (2) Power supply | Self-powered |
| (3) Device Class | Human Interface Devices (HID) class |
| (4) Transmission Speed | Full Speed (12Mbps) |
| (5) Transmission Type | Interrupt Out for command
Interrupt In for response |

4.5.2 Signal explanation and pin layout

(1) USB interface connector

Type B Connector (USB I/F Cable between Host and C/R is not included)

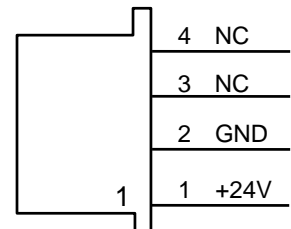
(2) Power supply connector

4 nodes, 2.54mm pitch in serial 5046-04A(Molex Japan) is used in PCB

Pin assignment of C/R

Pin No.	Assigned power rails
1	+24V: Power supply
2	GND: Power ground
3	NC
4	NC

(Cable with connector for Power supply is not included)



Counter Connector
(connector on the side of cable)

5. Life

Unit life: 800,000 passes or 5 years, whichever comes earlier. (1 pass denotes one round trip)

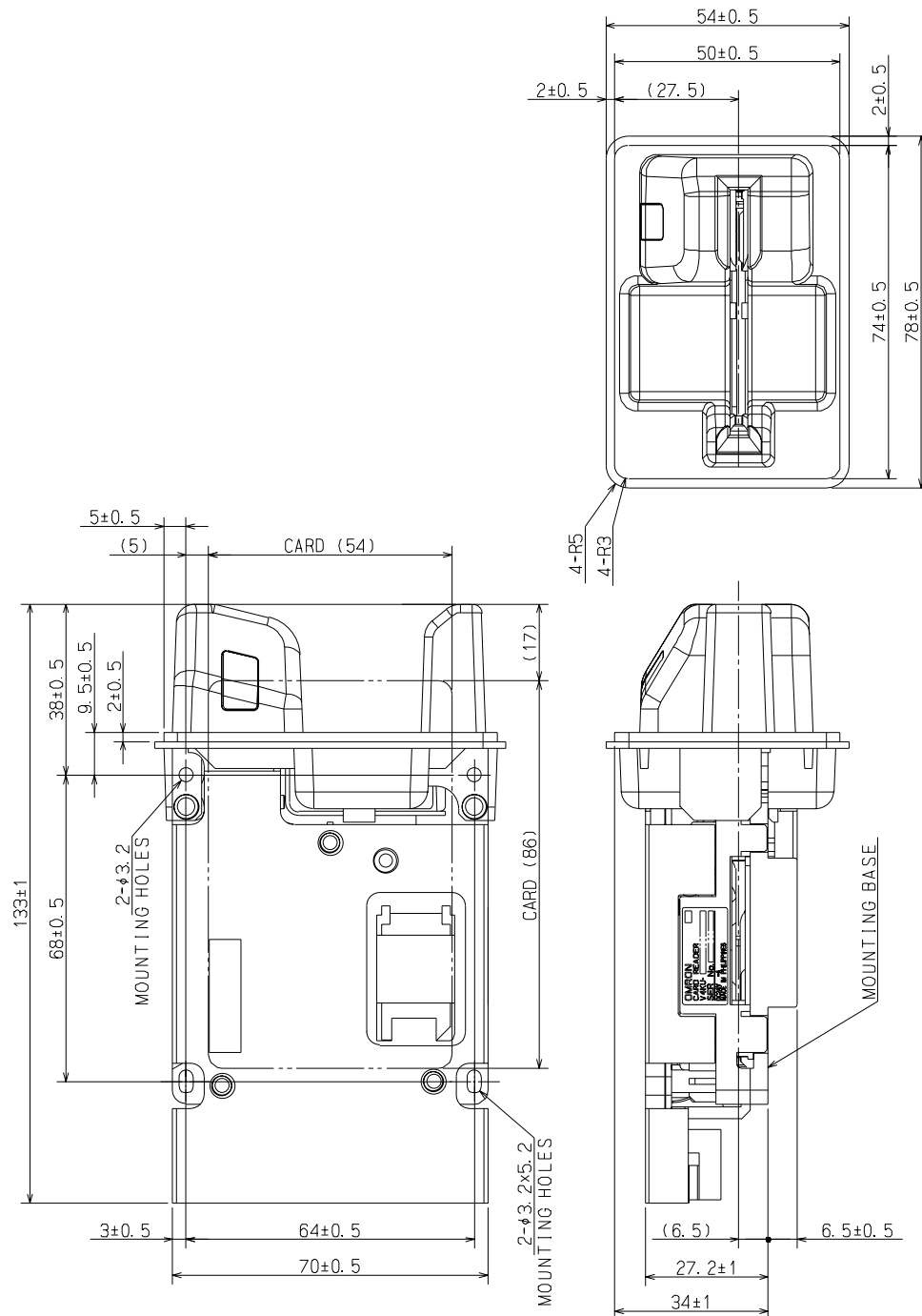
Note

- 1) Magnetic head life is 1,000,000 passes.
- 2) IC contact unit should be replaced every 300,000 operations.

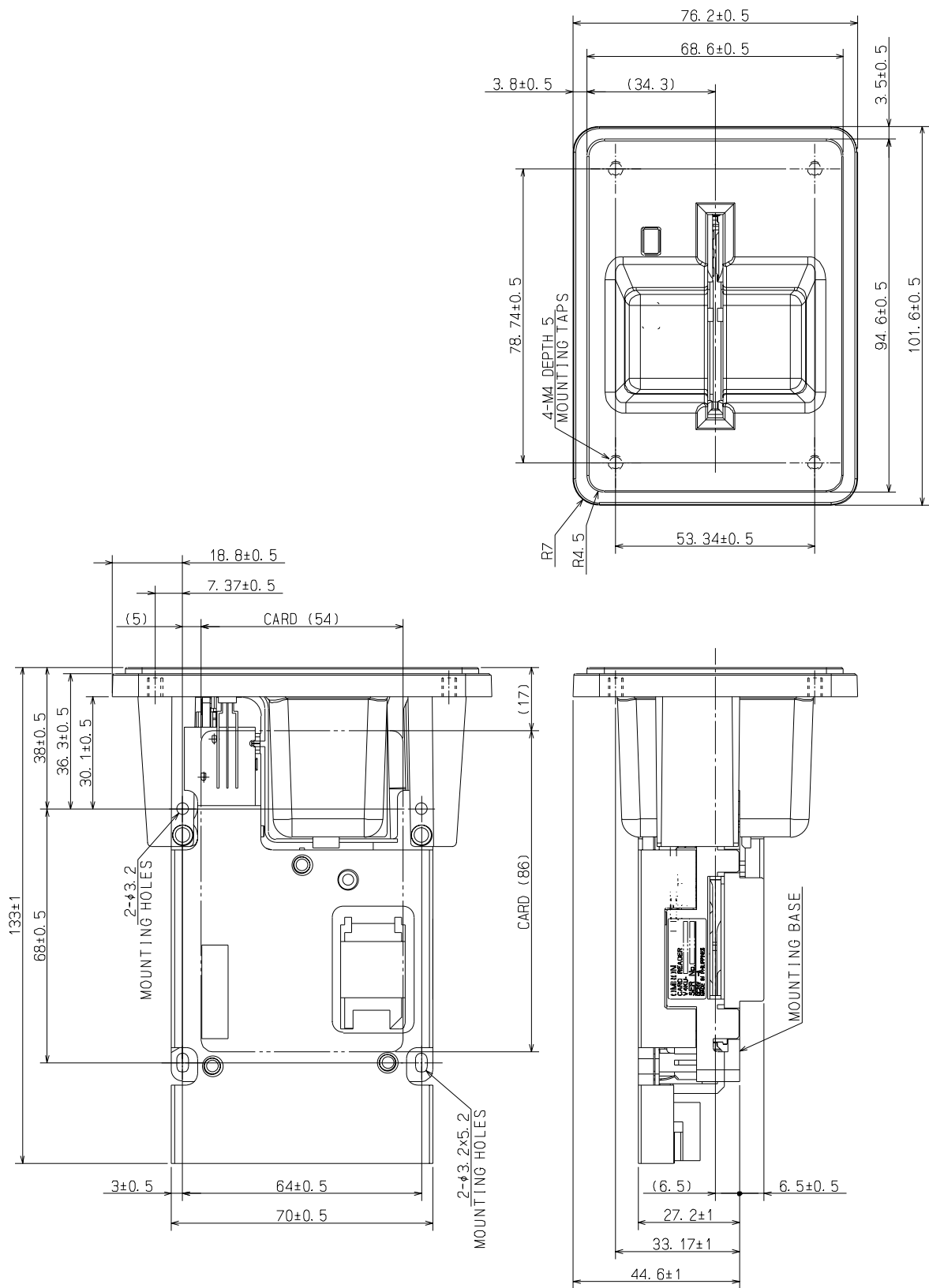
Outline Drawing

Dimensions in millimeters

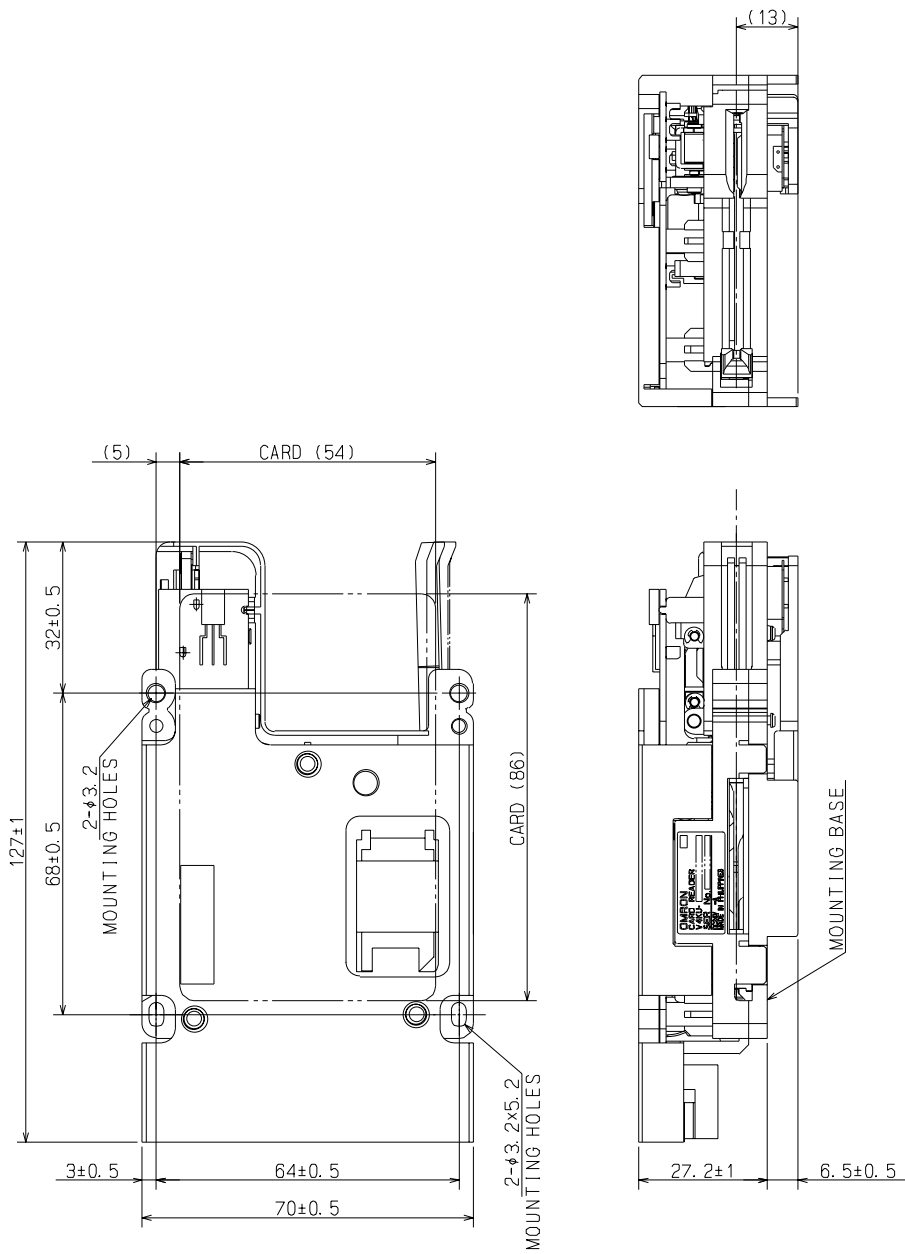
(1) V4KU-01JR-001



(2) V4KU-01JF-001



(3)V4KU-01JN-001



(4)V4KU-01JS-001

