# namco ®

# *N e b u l a s R a y*

## OPERATION MANUAL

# 1. Cautions

(1) Be sure to turn off the cabinet whenever installing or removing the PC board.

(2) Be sure to use an edge connector which is applied to the JAMMA standard. Any modifications such as    cutting the edges of PC boards will cause a failure and also will be out of our guarantee for repair.

(3) Never test the PC boards for conductivity with a multimeter or similar device. The PCB contains sensitive chips which could be destroyed even by the internal voltage of such a device.

(4) Foreign matters or dust on the PC boards will cause a failure. Turn off the power and clean the PC boards with a brush or similar thing.

(5) When transporting the PC boards, wrap them with sponges or air caps and pack them in a card board box so that they can avoid a direct impact from outside during shipment.

(6) For maintenance, contact your distributor.

# 2. Specifications

(1) Control panel:      One-side 2-P specifications
   · 8-direction lever:    2 (1P, 2P,  1 each)
   · Button switch:       4 (1P, 2P,  2 each)
   · Start switch:        2 (1P, 2P,  1 each)

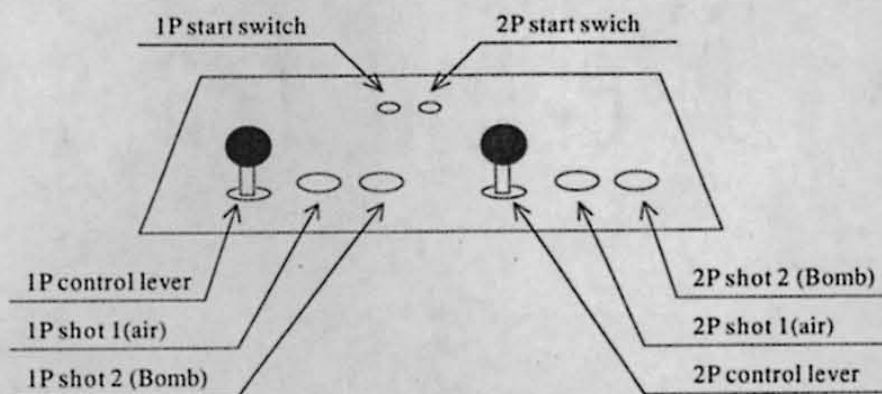(2) PC board size:       310 x 360 mm

(3) Direction of monitor:  Vertical



Fig. 1

# 3. Connection

(1) Connection of control panel
See below to connect the control panel to the cabinet (See P3: PC board Connector Table).

(2) Connection of PC board
Connect the PC board to the cabinet (see P3: PC Board Connector Table).
Using the PC board with a stereo cabinet allows you to enjoy a stereophonic effect (See P3: Connection to Stereo Cabinet).

# 4. Explanation of PC Boards

(1) Option switches
No.1 to "ON" for Test Mode.
No.2 to "ON" for Screen Freeze.
Normally, all of the option switches are "OFF".

(2) Speaker volumes
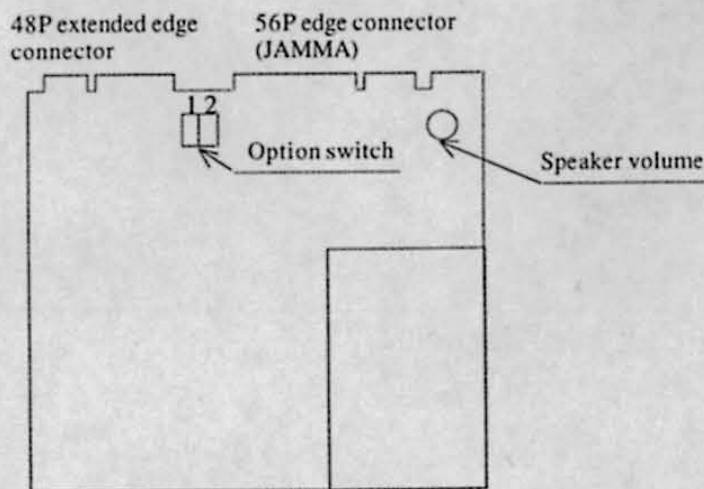To decrease the sound volume of the speaker, turn the speaker volume counter-clockwise.



Fig. 2

Specified Connector

Use a DDK 225D-10024C2-2312 as a 48P extended edge connector.

# 5. Test Mode

(!) The PC Boar enters the test mode by setting the test switch on the PC Board to "ON" on the game screen. And the test menu screen is displayed on the monitor. Use the test switch (For connection, see P3: PC Board Connector Table) on the cabinet or the option switch on the PC Board. (see P1: 4.(1) Option switches)
When an item is selected by operating the 1P control lever up and down and the 1P shot 1 switch is pushed, the selected test screen is displayed.

(2) Game fees can be changed on the coin option screen, and the game difficulty can be changed on the game option screen. Select an item by operating the 1P control lever up and down, and change its contents using the 1P shot 1 switch (see the option setting table). After that, push the 1P shot 2 switch to return to the test menu screen.

```
FLIP    [OFF] ——————————— (a) The screen can be turned upside down by pushing the IP shot 1 switch
SWITCH TEST ——————————— (b) Switch test screen
SOUND TEST ——————————— (c) Sound test screen
COIN OPTIONS ——————————— (d) Coin option screen (Setting of game fees)
GAME OPTIONS ——————————— (e) Game option screen (Setting of game difficulty)
UARTS TEST ——————————— (f) Not used
OBJECT TEST ——————————— (g) Not used
SCROLL TEST ——————————— (h) Scroll test screen
A.D.S. ——————————— (i) Game data display screen
COLOR TEST ——————————— (j) Color test screen (for monitor adjustment)
CONVERGENCE TSTE ——————————— (k) Cross hatch pattern (for monitor adjustment)
RS-232C TEST ——————————— (l) Not used
```

(Test menu screen)

```
        COIN OPTIONS
      [DEFAULTS IN GREEN]

GAME COST : ————————————————— ①
   1 COIN 1 CREDIT
DISCOUNT TO CONTINUE : ——————— ②
   NO
COIN 1 MECH VALUE : ——————————— ③
   1 COIN COUNT AS 1 COIN
COIN 2 MECH VALUE : ——————————— ④
   1 COIN COUNT AS 1 COIN
COIN 3 MECH VALUE : ——————————— ⑤
   1 COIN COUNT AS 1 COIN
COIN 4 MECH VALUE : ——————————— ⑥
   1 COIN COUNT AS 1 COIN
BONUS FOR QUANTITY BUY IN : ——— ⑦
   NONE
FREE PLAY : ——————————————————— ⑧
   NO
```

(Coin Options screen)

```
        GAME OPTIONS
      [DEFAULTS IN GREEN]

DIFFICULTY LEVEL : ———————————— ⑨
   MEDIUM
FIGHTER : ————————————————————— ⑩
   3
EXTEND TYPE : ————————————————— ⑪
   150,000 PTS.
MUSIC IN ATTRACT : ——————————— ⑫
   YES
SPEAKER OUT : ———————————————— ⑬
   STEREO
CREDIT MODE : ————————————————— ⑭
   COMMON
COIN COUNTER : ———————————————— ⑮
   TYPE A : 1 COUNTER
```

(Game Options screen)

(Option setting table)

| Item | Contents | |
|---|---|---|
| ① Game fees | one count required for one game (one credit) | 1< ⌈1 - 9⌋ |
| ② DISCOUNT | 50% discount when continuing a play | NO <, YES |
| ③ COIN 1 MECH VALUE | Count per coin | 1< ⌈1 - 9⌋ |
| ④ COIN 2 MECH VALUE | Count per coin | 1< ⌈1 - 9⌋ |
| ⑤ COIN 3 MECH VALUE | Not used | |
| ⑥ COIN 4 MECH VALUE | Not used | |
| ⑦ BONUS COIN | One additional coin per the specified number of coins | NONE < / 2 Coins Give 1 Coin / 9 Coins Give 3 Coins |
| ⑧ FREE PLAY | NO <, YES | |
| ⑨ DIFFICULTY LEVEL | MEDIUM < [VERYEASY , EASY , MEDIUM , HARD , VERY HARD] | |
| ⑩ FIGHTER | 3 (Standard) <, [1,2,3,4,5,] | |
| ⑪ EXTEND TYPE | 150,000PTS. < [150.000PTS , 300.000PTS , NO BONUS , 150.000 · 500.000PTS ] | |
| ⑫ MUSIC IN ATTRACT | YES <, NO | |
| ⑬ SPEAKER OUT | STEREO <, MONO | |
| ⑭ CREDIT MODE | COMMON (Credit is common to 1P and 2P) < / EACH ONE (Credit is set for 1P and 2P each) | |
| ⑮ COIN COUNTER | TYPE A : 1COUNTER ( 1Coin counter for 2slots) < / TYPE B : 2COUNTERS ( 1Coin counter for each 1slot) | |

| Example | Game fees | | ① | ② | ③④ | ⑦ | Credit display | (Note) Set ③,④ corresponded to Coin Mech 1&2 in use. |
|---|---|---|---|---|---|---|---|---|
| | 1 game | Continue | | | | | | |
| | 100 yen | 100 yen | 1 COIN 1CREDIT | NO | 1COUNT 1COIN | NONE | CREDIT 0 | |
| | 100 yen | 50 yen | 2 COINS 1CREDIT | YES | 1COUNT 2COINS | NONE | CREDIT 0/2 | |

# 6. PC Board Connector Table

JAMMA edge connector (56P 3.96 mm pitch)

| Solder side | Terminal No. | | Parts side |
|---|---|---|---|
| GND | A | 1 | GND |
| GND | B | 2 | GND |
| +5V | C | 3 | +5V |
| +5V | D | 4 | +5V |
| | E | 5 | |
| +12V | F | 6 | +12V |
| Insertion error preventing | H | 7 | Insertion error preventing |
| Coin counter 2 | J | 8 | Coin counter 1 |
| | K | 9 | Coin lockout 1 |
| Speaker (-) | L | 10 | Speaker (+) |
| Audio (GND) | M | 11 | Audio (+) |
| Video GREEN | N | 12 | Video RED |
| Video SYNC | P | 13 | Video BLUE |
| Service switch | R | 14 | Video GND |
| | S | 15 | Test switch |
| Coin switch 2 | T | 16 | Coin switch 1 |
| 2P start switch | U | 17 | IP start swich |
| 2P lever UP | V | 18 | IP lever UP |
| 2P lever DOWN | W | 19 | IP lever DOWN |
| 2P lever LEFT | X | 20 | IP lever LEFT |
| 2P lever RIGHT | Y | 21 | IP lever RIGHT |
| 2P shot 1 | Z | 22 | IP shot 1 |
| 2P shot 2 | a | 23 | IP shot 2 |
| | b | 24 | |
| | c | 25 | |
| | d | 26 | |
| GND | e | 27 | GND |
| GND | f | 28 | GND |

· Do not connect anything to the blank connectors.
· Both lockout solenoid and coin counter operate on +12V.
· Connect the switches to N.O. terminals such as a microswitch, and the GND to the COM terminal.

```
           N.O.
       o────
COM  o          
       o────
           N.C.
```
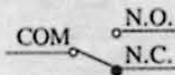
· The supply voltage is available within ±5%. For use in the best condition, get the supply voltage as close to the specified voltage as possible.

(Recommended power capacity)

| +5V ±5% | 4.0A or more |
|---|---|
| +12V ±5% | 2.0A or more |

Extended edge connector (48P 2.54 mm pitch)

| Solder side | Terminal No. | | Parts side |
|---|---|---|---|
| Speaker R (-) | A1 | B1 | Speaker R (+) |
| | A2 | B2 | |
| | A3 | B3 | |
| | A4 | B4 | |
| Insertion error preventing key | A5 | B5 | Insertion error preventing key |
| | A6 | B6 | |
| | A7 | B7 | |
| | A8 | B8 | |
| | A9 | B9 | |
| | A10 | B10 | |
| | A11 | B11 | |
| | A12 | B12 | |
| | A13 | B13 | |
| | A14 | B14 | |
| | A15 | B15 | |
| | A16 | B16 | |
| | A17 | B17 | |
| | A18 | B18 | |
| | A19 | B19 | |
| | A20 | B20 | |
| | A21 | B21 | |
| | A22 | B22 | |
| | A23 | B23 | |
| | A24 | B24 | |

· Do not connect anything to the blank connectors.

[Connection to stereo cabinet]
(1)STEREO / MONO setting
Select the speaker output in the game option screen at the test menu screen.

<Caution>Monophonic cabinets do output only the left-hand sound even if the stereophonic setting is selected.

(2) Connection to speakers
· Connect the (L) speaker to the speaker output of 56P edge connector (JAMMA) on the PC board.
· Connect the (R) speaker to the (R) speaker output of 48P extended edge connector

* Use a DDK 225D-10024C2-2312 as a 48P extended edge connector.