

# **GUIDANCE OF VUE-DEBUGGER SERIES**

GUIDANCE OF VUE-DEBUGGER SERIES ENGLISH PDF VERSION CREATED BY PLANET VIRTUAL BOY

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## **00) Contents**

The contents of this data are specification currently determined or examined as of June, 1995.

Since it may be changed in the future, I ask you to approve.

- 01) Introduction
- 02) Development environment
- 03) Product composition
- 04) The feature of ISAS and ISLINK
- 05) The feature of ISW
- 06) C compiler VUE (VUCC)
- 07) PAL specification monitor output board VUE
- 08) The interface board VUE only for IBM
- 09) Emulation RAM extension 4 M-byte VUE
- 10) VUE-DEBUGGER composition figure
- 11) Video boy VUE
- 12) The exclusive scanner VUE
- 13) Video boy VUE composition figure
- 14) VUE flash gang writer
- 15) Others
- 16) The procedure of purchase

## **01) Introduction**

VUE-DEBUGGER series is a development support system for developing the software for the virtual boys (VIRTUAL BOY) by Nintendo Co., Ltd.

VUE-DEBUGGER consists of hardware, such as software of the control software (ISW) for an assembler (ISAS), RINKA (ISLK), and VUE-DEBUGGER and a VUE-DEBUGGER main part, a scanner, and a controller. These can use the IBM-PC / AT compatible machine for a host computer, and can advance it in the environment which unified assembling [ of a program ], and development from a link to debugging.

In the development environment by VUE-DEBUGGER series, with an assembler language, a program is developed and debugging is advanced using ISW. ISW also enables debugging on an assembling source level not to mention symbolic debugging. moreover Program development by the C language can be furthered by using C compiler (VUCC) of an option. Of course, debugging on C source level can be performed also in this case.

Moreover, it is an option in order to create 3D image data which is the feature of VUE. The rendering tool VUE (software) which operates on PowerMacintosh is prepared.

## **02) Development environment**

In order to operate VUE-DEBUGGER, the environment shown below is needed.

### **Hardware**

#### Computer

MS-DOS or PC DOS should operate made in [ 80386 and 80486 ] Intel or by the IBM-PC / AT compatible machine which carried CPU of Pentium.

#### Memory

2 M bytes or more of memory which can be used should be secured to 200 K bytes or more and the extended memory at the conventional memory. In addition, it recommends that I have 4 M bytes or more of extended memory prepared.

#### Mouse

The Microsoft mouse or the thing based on this.

#### Expansion slot

Even an ISA expansion slot is used.

#### Video adapter

VGA (Video Graphics Array) Or SVGA (Super VGA).

#### Disk

500 K bytes or more of empty domain is required for 1 M bytes or more and ten PORARI to installation.

### **Software**

#### OS

MS-DOS or more than PC DOS Version 5.0

#### Mouse driver

The thing by which standard appending is carried out at MS-DOS or PC DOS, or the thing based at this.

The interface board only for IBM of an option is mounted in connection between VUE-DEBUGGER and a computer at the ISA expansion slot of a computer, and it connects with a SCSI interface.

### **03) Product composition**

VUE-DEBUGGER consists of the following products.

#### **Hardware**

VUE-DEBUGGER

The main part for virtual boys of a debugger

The exclusive scanner VUE

The goggles type display which displays a virtual boy's solid picture

Controller

The controller for virtual boys

#### **Software**

ISAS

Relocatable assembler. ISAS.EXE of the MS-DOS version and ISAS4G.EXE of DOS / the 4GW version are contained.

ISLK

RINKA. ISLK.EXE of the MS-DOS version and ISLK4G.EXE of DOS / the 4GW version are contained.

ISW

Control software for VUE-DEBUGGER of the multi-window type which operates on MS-DOS or PC DOS.

## 04) The feature of ISAS and ISLK

ISAS is the crossing assembler of two paths and is the relocatable assembler whose source program can be divided into a file and can assemble for every module.

Moreover, ISLK links the object file generated at the time of assembling, and creates the ISX file which can be loaded to a debugger. Since the information for debugging is included, a debugger can perform efficient symbolic debugging and source level debugging in this ISX file.

There are the following features in ISAS and ISLK.

- The MS-DOS version which operates on a conventional memory, and DOS / the 4GW version which operates on an extended memory are prepared. Especially, with DOS / the 4GW version, the processing time of assembling or a link is shortened and restrictions of buffer capacity, such as a symbol, are also mitigated greatly. For this reason, a performance is demonstrated when developing a large-scale program.
- Since source level debugging information can be outputted, debugging on a source level can be performed on ISW. Of course, an output is possible also for the symbolic information for performing symbolic debugging on an assembler level.
- The mode which develops the command of V810SF the optimal is prepared, and description of NIMONIKKU is made easy.
- Since the evaluation formula using various operators, such as an arithmetic operator almost equivalent to the C language and a logical operator, can be used, a complicated evaluation formula can also be described clearly.
- The false command required for description of an assembling program is prepared abundantly. Moreover, within the macro false command, since operation of a condition formula or a character sequence is possible, it is rich in extendibility, such as macroscopic recursion-izing.
- ISAS and ISLK correspond to no less than 65816 processors which are CPUs for super famicom, and also have compatible mode with IS65 assembler of our company. In addition, about the speed of an assembling link, two to 3 times and improvement in the speed are timed compared with the conventional thing (IS65 and ISLINK of our company).

## 05) The feature of ISW

It is the software for controlling VUE-DEBUGGER, and is the multi-window type debugger software which operates on MS-DOS. There are the following features in ISW.

\*The multi window which can overlap a man machine interface can be adopted, and it can be visually operated using a mouse. The main window and its function are shown below.

### Sauce window

A source file is displayed. It is on the source list displayed on this window, and execution of a program, step execution, execution to a cursor position, a setup of a break point, etc. can be performed.

### Disassemble window

A disassemble list is displayed. It is on the disassemble list displayed on this window, and execution of a program, step execution, execution to a cursor position, a setup of a break point, etc. can be performed. Moreover, since the line assembling function is prepared, direct NIMONIKKU can be inputted on a window.

### Dumping window

The dumping list of memories is displayed. Moreover, direct data can be inputted on a window.

### Register window

The contents of a register are displayed. When the contents of a register are changed by step execution etc., it is displayed that a change portion is known. Moreover, the contents of a direct register can also be inputted on a window.

### Stack window

The contents of a stack are displayed.

### Break window

A setup of a break point and the display of the contents of a setting are performed.

### Watch window

A setup of a watch point and the display of the contents of a setting are performed.

### In SUPEKUTO window

The contents of a variable are displayed.

### History window

The execution result is indicated by disassemble.

### Command window

The input of a command and the execution result of a command are displayed.

### Help window

The help of ISW is displayed.

\*Prepare a command window and enable it to do main debugging work also by the command. A command system is the debugger for super famicom of our company. Since it is based on IS-DEBUGGER (SHVC) etc., it can shift easily from the conventional development environment.

\*The break point is preparing one hardware break point and ten software break points.

\*A history feature can be prepared and the execution history of a user program can be referred to. 32K-word RAM is carried as a memory for histories.

\*By uniting and using ISAS and ISLK, a source level can be debugged on ISW. VUCC of an option is used and source level debugging by the C language is possible.

\*The value of a local variable or other variables can be easily checked only by carrying out the mouse click of the variable checking on a source window at the time of source level debugging by the C language. These information is displayed on an in SUPEKUTO window.

\*A series of commands are registered into a file, and the function to perform automatically is prepared. At the time of ISW starting, initial setting of the debugging environment which needs to be performed each time, and the row of two or more commands with much use frequency can be registered as one command, can be performed, and it is very convenient.

\*The state of a window and the information on a watch point and a command history are saved at a file, and the resume function which returns these to a former state at the time of a reboot is prepared.

\*VUE-DEBUGGER can be equipped with the VUE flash memory cassette for virtual boys, and the program under debugging can be written in a flash memory. The write-in time to a flash memory cassette is 50 seconds and high speed in 16M bit for 30 seconds at 8M bit. Moreover, it is also possible to equip with a VUE flash memory cassette or a VUEEPROM cassette, and to read the contents.

## **06) C compiler VUE (VUCC)**

It is C compiler for virtual boy program development. By describing a program by the C language and using this C compiler, the development efficiency of a program can be raised greatly. The ISX file for reading with a debugger is made from the assembling file object file which C compiler outputted by using ISAS-ISLK. If an ISX file including source level debugging information is created, it loads to ISW. Debugging on C source level can be performed especially more.

\*It is based on ANSI-C language specification.

\*The ISX file compiled and created as the debugging option (-g), source level debugging information is included and source level debugging of C is attained with an ISW debugger.

\*Since it is C compiler only for VUE(s), it is a virtual boy's hardware. The code suitable for (memory mapping) is outputted.

\*Highly efficient code optimization processing is realized and pull out the performance of V810SF. An execution code is generated.

## **07) PAL specification monitor output board VUE**

It is a monitor output board for outputting the solid picture of a scanner to the television monitor for which the PAL system video input or the RGB input is prepared.

It mounts in a VUE-DEBUGGER main part, and it is green and the picture for left eyes and the picture for right eyes are displayed on a television monitor as red in false, respectively. Moreover, it is also possible to choose and display the picture only for left eyes and the picture only for right eyes.

\*Debugging work can be recorded on videotape in video. Reappearance and a check of the seldom generated bug become easy, and debugging efficiency increases.

\*The check of the same screen can do the contents of a VUE scanner by two or more person number by projecting on a television monitor. Power is demonstrated at the time of a specification arrangement and a demonstration.

\*While the necessity that a programmer peeps into a scanner at the time of development decreases sharply and mitigating the burden of a developer's eyes, working efficiency also increases.



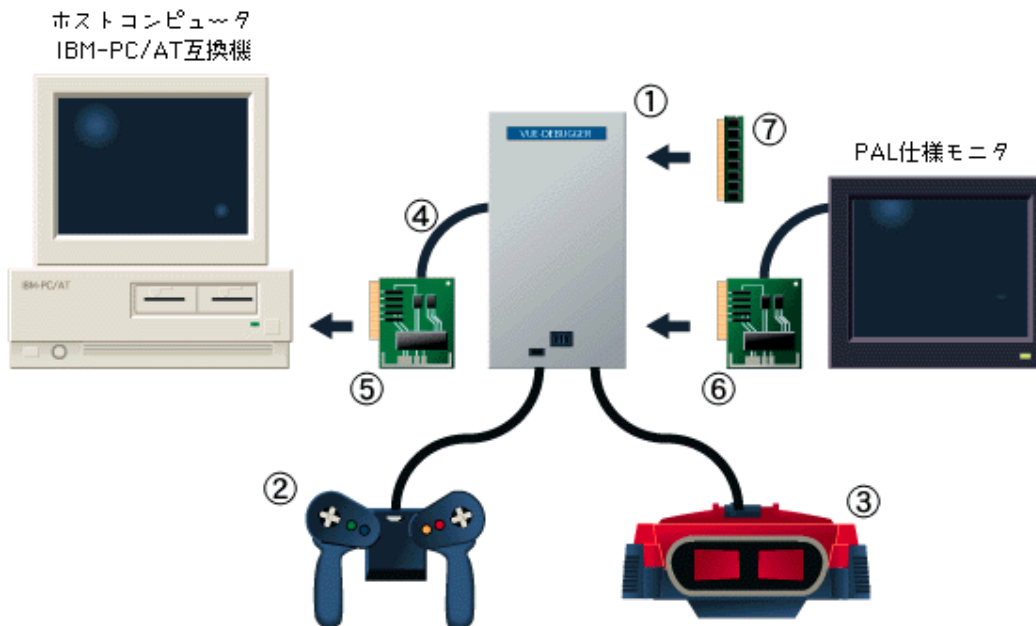
## **08) The interface board VUE only for IBM**

It mounts in the ISA expansion slot of the IBM-PC / AT compatible machine of a host computer, and a computer is connected with VUE-DEBUGGER. Since the SCSI interface is adopted, VUE-DEBUGGER and a computer can communicate at high speed. In addition, with the board currently used by development tool IS-DEBUGGER for super famicom and IS-CHARACTER of our company, this interface board is common and can be used.

## **09) Emulation RAM extension 4 M-byte VUE**

It is the option which extends 4 more M bytes of emulation RAM of VUE-DEBUGGER. VUE-DEBUGGER mounts 4 M bytes of emulation RAM as standard. By extending 4 M bytes, it becomes 8 M bytes of emulation RAM.

## 10) VUE-DEBUGGER composition figure



- (1) VUE-DEBUGGER
- (2) Controller (attachment)
- (3) The exclusive scanner VUE (VUE-DEBUGGER attachment)
- (4) SCSI cable (VUE-DEBUGGER attachment)
- (5) The interface board VUE only for IBM
- (6) PAL specification monitor output board VUE
- (7) Emulation RAM extension 4 M-byte VUE

VUE-DEBUGGER accessories  
Terminus resistance  
Power supply cable

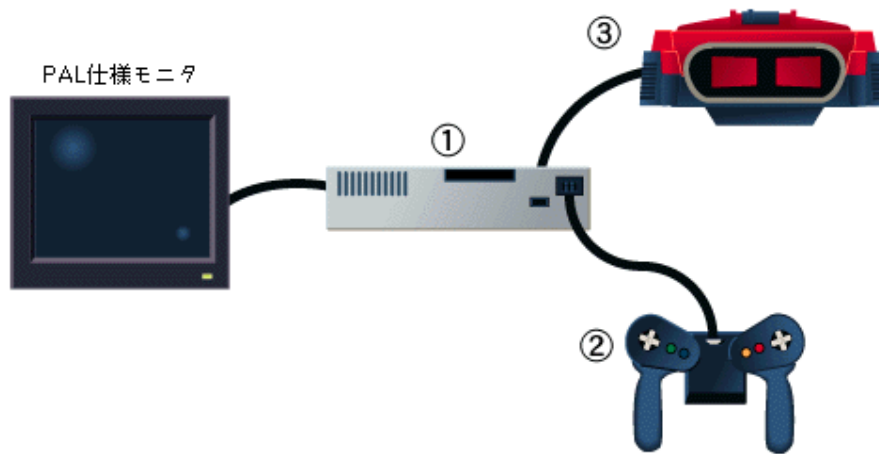
## 11) Video boy VUE

Only by connecting the television monitor by which the PAL system video input or the RGB input is prepared for the video boy VUE, a virtual boy's solid picture is displayed on a television monitor in false. If a virtual boy's game cassette is mounted in the video boy VUE, it is as green as red respectively and the picture for left eyes and the picture for right eyes can be displayed on a television monitor. Moreover, it is also possible to choose and display the picture only for left eyes and the picture only for right eyes. Since the check of the same screen can be performed by two or more person number, power is demonstrated at the time of debugging etc. at the time of a specification arrangement at the time of a demonstration.

## 12) The exclusive scanner VUE

It is an exclusive scanner linked to the video boy VUE. According to my having this option used, a game can be carried out completely like a virtual boy by the video boy VUE. In addition, this exclusive scanner VUE is a product equivalent to the scanner contained in VUE-DEBUGGER.

## 13) Video boy VUE composition figure



- (1) Video Boy VUE
- (2) Controller (Video Boy VUE Attachment)
- (3) Exclusive Scanner VUE

Video boy VUE accessories  
Red/green glasses  
Stereo AV cable  
Power supply cable

## 14) VUE flash gang writer

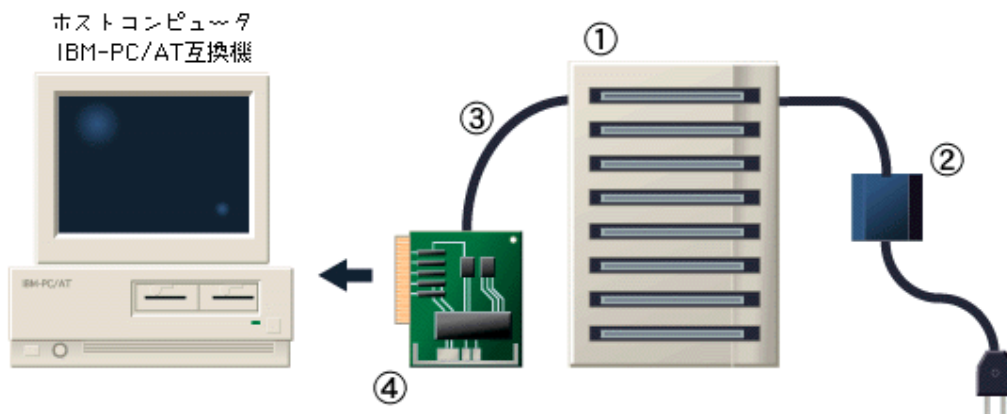
\*It is the VUE flash memory cassette of a maximum of eight sheets with the gang type which can be written in simultaneous. 32-bit CPU is carried, it writes in and reading can be processed high-speed. As for the write-in time when eight sheets are simultaneous, the write-in time of one 8 M bit flash memory cassette is 90 seconds for 40 seconds.

\*Correspond to the flash memory cassette (8M bit and 16M bit).

\*As a host computer, use the IBM-PC / AT compatible machine and the connection between a PC / AT compatible machine and a VUE flash writer uses SCSI. The interface board VUE only for IBM is used for the SCSI interface of a PC / AT compatible machine. Connecting by VUE-DEBUGGER and daisy CHIEIN is also possible.

\*The software for controlling a VUE flash gang writer operates on MS-DOS of a PC / AT compatible machine. As a command, elimination and the writing to a flash memory cassette, verification, and reading are supported.

VUE flash gang writer composition figure



- (1) VUE flash gang writer
- (2) AC adapter (VUE flash gang writer attachment)
- (3) SCSI cable
- (4) The interface board VUE only for IBM

VUE flash gang writer accessories  
Terminus resistance

## **15) Others**

About the hardware of VUE-DEBUBGGER series, I will consider repair at the time of failure as gratis repair fundamentally. Moreover, I will correspond by on-calls, such as a loan of an alternative machine.

About software, I will upgrade by being allowed considering a user's opinion and demand as reference, and will always supply the newest version. In addition to correspondence by the telephone and facsimile, support service using the Internet is also performed. By the support by the network, the reply of the question by mail, acquisition of the newest version software, and other offers of information effective in development are considered.

Now, a Windows-compatible debugger is under development. All of assembling, a link, C compile, and debugging can be performed in the Windows environment. A user can choose the development environment in DOS using the conventional ISW, and the development environment in Windows.

There is a character creation tool of VUE in the Windows environment. The character drawn with the character creation tool of VUE can be drawn being able to display on a VUE scanner on real time, and checking an actual picture.

## 16) The procedure of purchase

I restrict and sell these goods to the company where the licensee contract is carried out with Nintendo Co., Ltd.

### 1. From a visitor

Here, I accept an order  
Inquiry sales@intsys.co.jp until

### 2. From Our Company

\* Product dispatch  
(It asks a user's registration paper and the facsimile paper of business is enclosed.)  
Software serial NO. is in a user's registration paper.  
It is attached.

### 3. From a visitor

\* After writing down a required matter in a user's registration paper,  
Please return our company.

### 4. From Our Company

\* It is after registration to a "support mailing list."  
I take out mail of the completion of registration to a visitor.

### 5. Window

- \* Inquiry mailto:sales@intsys.co.jp I come out and need your help.
- \* Mail of the visitor who has not registered in addition  
please understand that it does not receptionist, please
- \* Please give me others' inquiry by Fax. (Please use the Fax paper enclosed.)  
In the case of use of the other paper  
A software serial number, a company name, one's post, a name,  
Please specify a telephone number and a facsimile number.  
I do not receive, when a visitor cannot check.  
Be careful by mail.
- \* In an inquiry by telephone, it is at the time of hurry.  
I will accept and check. To the check which is a visitor in that case sake  
I hear a software serial number.
- \* Be sure to contact me in user change.

## VUE development tool goods / price list

Name	Value Rank
Video boy VUE	90,000 yen (according to tax)
The exclusive scanner VUE	17,000 yen (according to tax)
C compiler VUE	160,000 yen (according to tax)
VUE-DEBUGGER (with an exclusive scanner)	980,000 yen (according to tax)
PAL specification monitor output board VUE	75,000 yen (according to tax)
Emulation RAM extension 4 M-byte VUE *2	30,000 yen (according to tax)
Interface board VUE *1 only for IBM	30,000 yen (according to tax)
VUE flash gang writer	150,000 yen (according to tax)

\*1 It is required in order to connect VUE-DEBUGGER to a computer.  
(It is not enclosed by VUE-DEBUGGER.)

However, it is to IBM-PC/AT about present IS-DEBUGGER, IS-CHARACTER, and IS-SOUND.

The interface board only for IBM of a stock the direction connected  
It is common and can be used.

\*2 To VUE-DEBUGGER, it is in a standard state and 4 M bytes of  
emulation RAM

It is mounted and can extend to 8 M bytes by this option.

- MS-DOS and Windows are the trademarks of U.S. Microsoft.
- IBM and PC DOS are the trademarks of U.S. IBM Corp.
- 80386, 80486, and Pentium are the trademarks of U.S. Intel.
- Macintosh is the trademark of Apple Computer and Inc.
- DOS / 4GW are the trademarks of Rational Systems and Inc.
- V810SF is the trademark of NEC Corp.
- A virtual boy and VIRTUAL BOY are the trademarks of Nintendo.

Guidance of VUE-DEBUGGER series

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