Edition 1a

OKVM-088U

KVM Matrix Router

User manual

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CHAPTER 1. Product Introduction and Installation

The OKVM-088U is the KVM (Keyboard Video Mouse) Matrix switcher, offering full cross switching funtions of 8 PC operated machines to 8 operators. The product enables to allocates jobs for each of 1 to 8 operators to operate 8 machines.
The product gives video (DVI; Digital Vedio Interace) and Keyboard and mouse through USB of PCs or servers to manage machines in its input side and switches them to one (1) to eight (8) operators in its output side.

In addition, it enables that video and audio of such a PC could be discributed to all or any of operators, but Keyboard and Mouse based on USB are limited in one-to-one connection.

- Switching System of DVI Video/Stereo Audio/USB for Keyboard and Mouse
- DVI Video Resolution: WUXGA(1920x1200) at refresh rate 60Hz or 1920x1080P for digital TV
- Data Bandwidth of Video: 1.65Gbps in maximum
- Stereo Audio (Right /Left)
- EDID Interface: Save at EEPROM at each input entry of the product any of user owned or specific EDIDs.
- Supports long-distance extension by optical KVM Extender
- Supports not only Windows, but also SUN and MAC OS servers or PCs
- Offers control of the product over various interface
    - ✧ Control by command codes over RS-232C or TCP/IP
    - ✧ WEB Control
    - ✧ PC Program Control
- Shipping group

  OKVM-088U Main Body: 1 SET

  Hard Product Case: 1 EA

  Keys for Hard Case: 2 EA

  AC/DC Power Adaptor (12V/10A, AC110V-240V): 1 EA

  AC Power cord: 1 EA

  User Manual: 1 EA

  PC Program CD: 1 EA

  Firmware Download Cable (9 pins to PS2): 1 EA

  Firmware Download Gender (25 pins to 9 pins): 1 EA

RS-232 Cable (crossed type): 1 EA

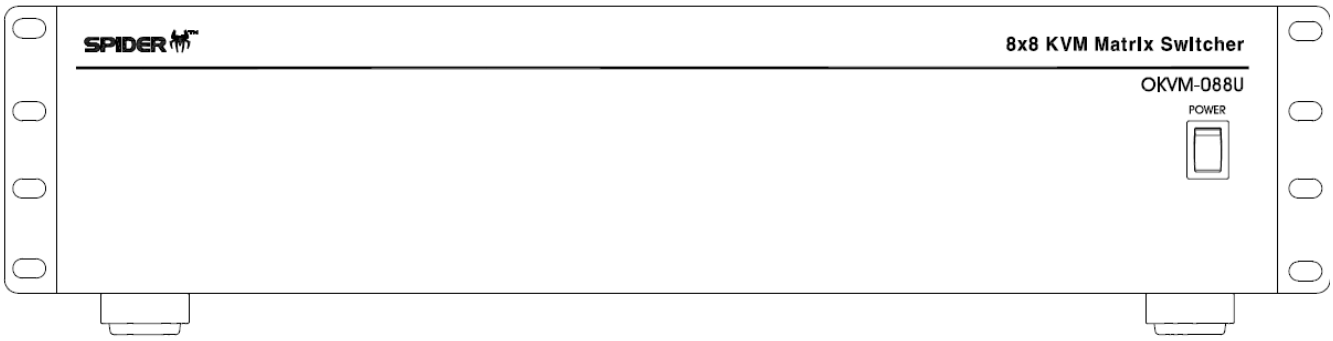
RJ-45 UTP (crossed type) Cable: 1 EA

1.1 Safety Notices in Use of Products

- Use power cables or connecting cables which are in the shipping group as guided user manual.
- Use DVI and USB cables only certified or verified in electrical safety so as not to make any electrical shock or damage to the product.
- Do not use the product to be installed vertically or loaded any heavy weights over it, which subjects to be unknown causes of malfunction.
- Avoid any liquids, magnet materials, and flammable materials.
- Do not try to open the product in any case.
- Turn the power off and contact to the service account if any abnormality happens.

1.2 Description of Product Front and Rear Panels

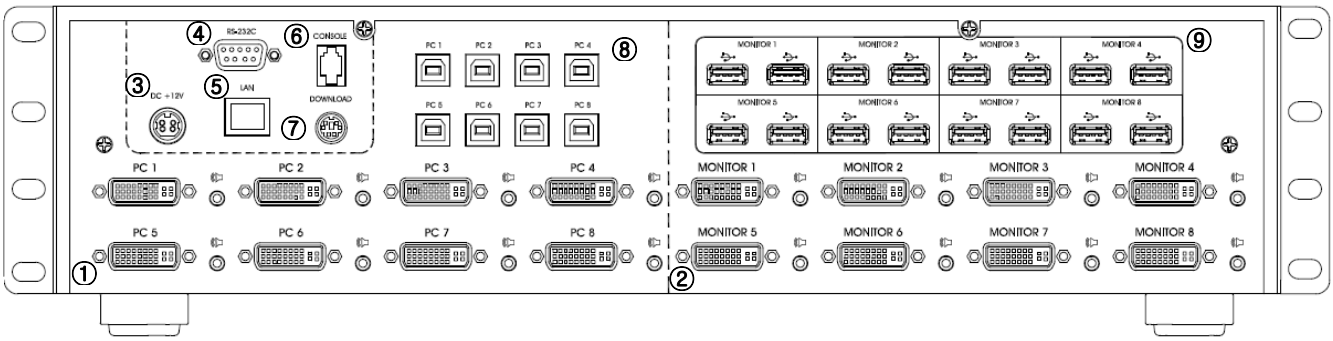
The OKVM-088U is so designed as to be equipped with rack brackets as an accessory on the standard 19” rack. The power switch locates on the front panel as shown in Figure 1-1.



[Fig. 1-1] Front Panel

All input or output ports including DVI in/out, USB in/out and power inlet are installed on the rear panel and their features are as follows and the drawing is as shown in Fig. 1-2.

- 8 x DVI and Stereo Audio Input Ports - female type: ①
- 8 x DVI and Stereo Audio Output Ports - female type: ②
- DC power receptacle + 12V: ③
- RS-232C Serial Port: ④
- 10/100 Base Ethernet Port: ⑤
- Console Box Extending Port: ⑥
- Download Port - firmware Download: ⑦
- USB B Type Ports – to connect to USB of Systems: ⑧
- USB A Type Ports – to connect Keyboard / Mouse to Operators: ⑨



[Fig. 1-2] Rear Panel

1.3 Quick Installation Guide

To guide the initial installation, follow through the procedure as below.

①. Confirmation of Network Set-up
Confirm the set-up of KVM MATRIX in reference of initial setting of Chapter 3.2.1..

②. RACK MOUNTING
Recommend to securely install the product on rack by using rack-ears in the shipping group before cabling.
Mount the product by screwing the rack-ears with L-shape wrench to meet the front-face of product to the rack.

③. Connect DVI in/out, USB cables and an interface cable of RS-232C or LAN to control PC.

④. Turn On the power on the front panel after connecting the power adaptor to the power jack on the rear panel.

⑤. Set the status of matrix switching into 1-to-1 by using PC program or command codes in reference as Chapter 2 or Chapter 3.

⑥. Boot up all server operated machines connected to the KVM MATRIX.

⑦. Refer the troubleshooting in case of PC monitors displaying not in normal.

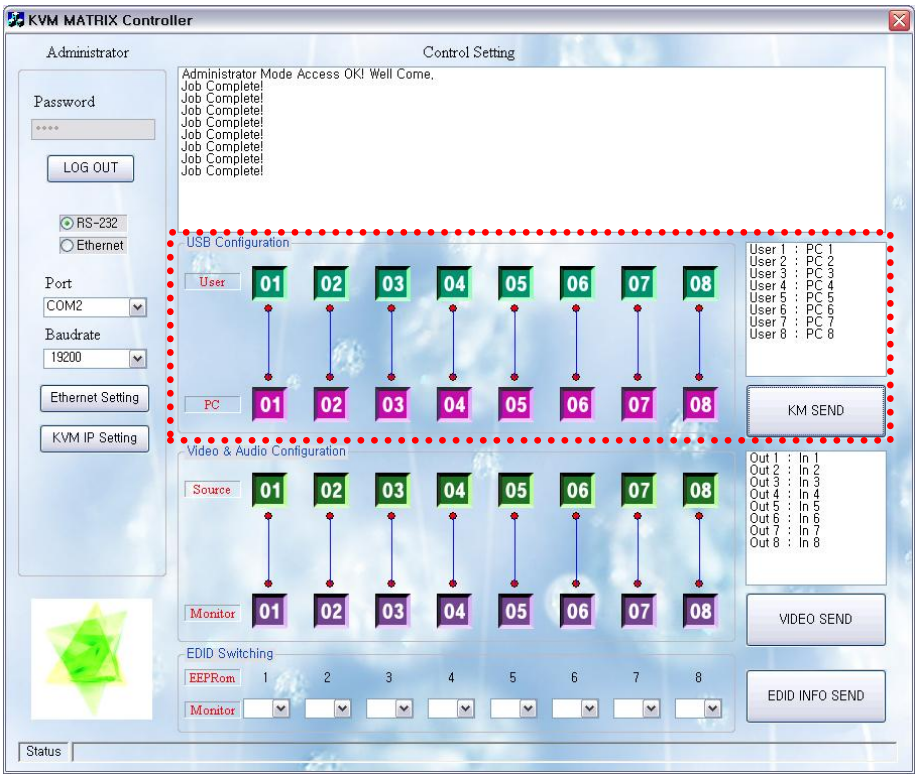
CHAPTER 2. Operation Instruction

2.1 Operation Summary

KVM Matrix OKVM-088U enables each operator to manage PCs or Servers for machines or while operating a PC, at the same time any of other operators could monitor it by distributing the video but keeping the connection of their USB to each machine.

2.1.1 One-to-one connection of PC and Operator

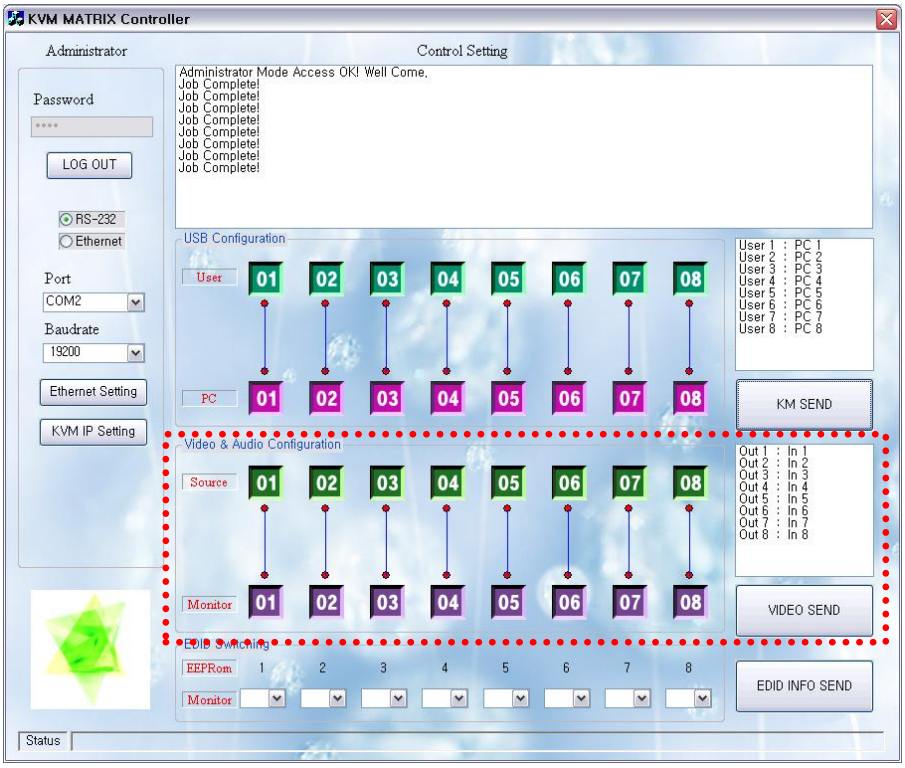
It switches both DVI for video and USB for keyboard and mouse at one time. The PC program in CD gives function to maneuver switching as shown in Fig. 1-3. Refer further details of operation to the chapter 3.



[Fig. 1-3] One-to-one switching of both Video/Audio and USB by PC program

2.1.2 Distribution Method of Video/Audio

It enables video and audio switching in independence of USB Switching. The instruction shows as in Figure 1-4 when using the PC program in CD. Refer further details for application in the chapter 3.



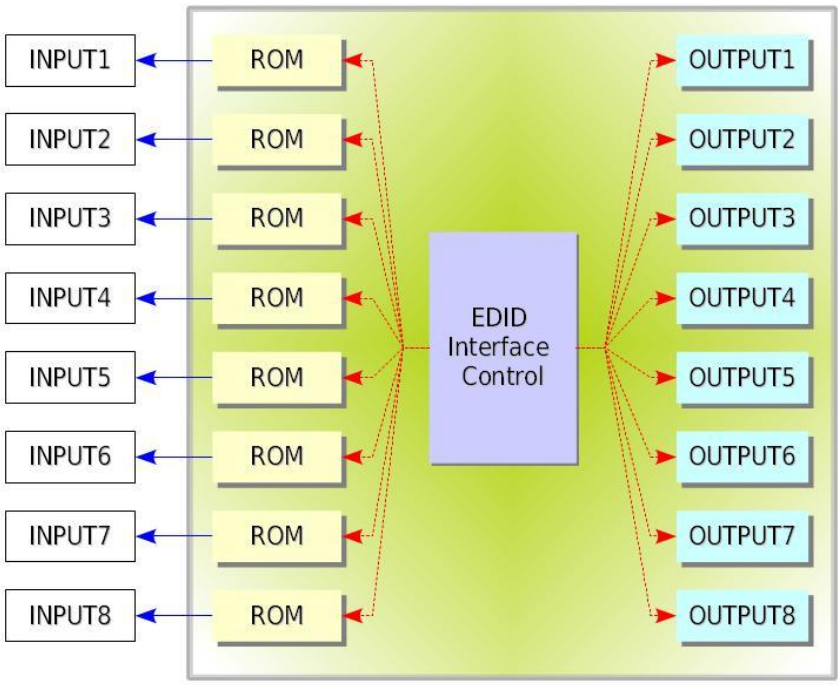
[Fig. 1-4] Video/audio distribution in separation of USB switching in PC program

2.1.3 EDID INTERFACE

The EDID (Extended Display Identification Data) stored in EEPROM of monitors gives all information to the PC or server such as manufacturer, seller, identification, and parameters regarding basic characteristics or features. It makes Plug and Play when the PC boots up.

The KVM MATRIX product is designed to store suitable EDID to each EEPROM at the entry of inputs. This feature has users constitute PCs in machines so as to match to monitors for each operator.

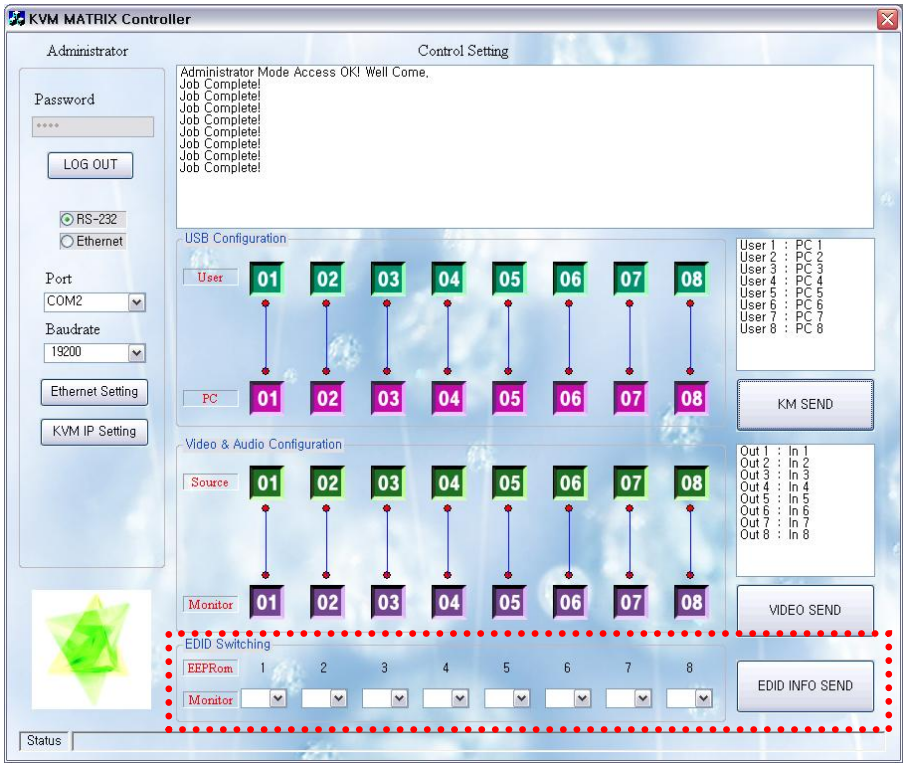
As shown in Fig. 1-4, setting input and output makes reading the EDID and storing in each EEPROM and later if PC connects, then it reads the EDID in EEPROM.



[Fig. 1-5] Schematic Drawing of EDID Interface

2.1.4 EDID Control

It shows how to save EDID to the targeted EEPROM as shown in the Fig. 1-6 below when used in PC program. Refer further details to the chapter 3.



[Fig. 1-6] EDID Storing in EEPROM

2.2 Management of OKVM-088U

The OKVM-088U is to be managed over interface of Ethernet or RS-232C of a control PC. The PC program and firmware in CD could be updated from time to time.

2.2.1 Command Codes

The command codes are consisted of ASCII and all listed on the table 2-1. The basic command string is as follows;

All command string starts with Start Byte (1 Byte).

Start (1 Byte) + Port Type (3 Bytes) + Command (1 Byte)
+ Data Length (3 Bytes)
+ Data 1`st (2 Bytes) + Data 2`nd (2 Bytes) + …..
+ End (1 Byte)

The regarding terminology is referred as

- Port Type: Data to decide control port of Matrix

- ALL : Commands except for Switching
- DVI : Switching only for DVI & Audio
- USB: DVI & AUDIO & USB Switching
- ROM : Setting EDID

◆ Command: Execution DATA
◆ DATA Length: Length of Command DATA
◆ DATA…In-out: Channel Number or Network Information
◆ End: STOP DATA

[Table 2-1] Command Codes Sheet

Command Type		ASCII	HEX	Description	Byte
Start		*	0x2A	Start Code	1
Port Type		ALL	0x41, 0x4c, 0x4c	Commands except for Switching	3
		all	0x61, 0x6c, 0x6c		
		DVI	0x44, 0x56, 0x49	Switching only for DVI and Audio	
		dvi	0x64, 0x76, 0x69		
		USB	0x55, 0x53, 0x42	All together Switching of DVI, Audio, USB	
		usb	0x75, 0x73, 0x62		
		ROM	0x52, 0x4F, 0x4D	EDID Switching	
		rom	0x72, 0x7F, 0x7D		
Command	Create	0	0x30	Connects or disconnects the selected input and output channels	1
	Cancel	2	0x32	Cancels the connection of selected channel	
	Upload Data	3	0x33	Upload the connections information to controller	
	Check Connection	4	0x37	Uploads the right or wrong of all connections	
	EDID Write	D	0x44	Reads EDID from display And writes to EEPROM	
	Network Configuration	S	0x53	Set up network information	1
Data Length		Variable		Data Length	3
Data 1`st		Variable		Output Ch or Input Ch	2
Data 2`nd		Variable		Input Ch or Output Ch	2
End		!	0x21	End Code	1

The response data after executing the above commands is shown as table 2-1 as acknowledgement.

[Table 2-1] Explanation of ACK Signals

Acronym	HEX	Description	Byte
Error	0x05	Matrix received the irregular data packet	1
Job Complete	0x06	Completed the operation per command	1
Connection OK	0xA0	Connection has been successfully done	1

The response data is tossed back right after the command executes. You can receive the value, 0x06, when the command executes in success. Otherwise, you will receive the value, 0x05.

The following examples show set-up over RS-232C, UDP, or Telnet.

2.2.1.1 CREATE COMMAND

The command, CREATE enables to set up the wanted in-out configuration of cross-switching.

Format of command line:
Start (*) + Port Type (Variable) + Command (0) + Data Length (Variable) +
Data 1`st (Variable) + Data 2`nd (Variable) + ….. + End (!)

1) Example of cross-switching of Video and Audio

Ex. 1> One (1) channel connection of Output Ch1 ➔ Input Ch1

***DVI00040101!**

	START	Port Type	Command	Data Length	Data 1`st	Data 2`nd	End
					Output Channel	Input Channel	
ASCII	*	DVI	0	004	01	01	!

Ex. 2> Eight (8) channels connection: All Output Ch ➔ Input Ch 4

***DVI00320104020403040404050406040704080 4!**

	START	Port Type	Command	Data Length	Data 1`st	Data 2`nd
					Output Ch	Input Ch
ASCII	*	DVI	0	032	01	04

	Data 3`rd	Data 4`th	Data 5`th	Data 6`th	Data 7`th	Data 8`th
	Output Ch	Input Ch	Output Ch	Input Ch	Output Ch	Input Ch
ASCII	02	04	03	04	04	04

	Data 9`th	Data 10`th	Data 11`th	Data 12`th	Data 13`th	Data 14`th
	Output Ch	Input Ch	Output Ch	Input Ch	Output Ch	Input Ch
ASCII	05	04	06	04	07	04

	Data 15`th	Data 16`th	End
	Output Ch	Input Ch	
ASCII	08	04	!

2) Example of switching setup for Video, Audio and USB Port

Note: One PC should be connected to only one USB port.

Ex. 1> One (1) channel connection of PC Number1 ➔ USB Port Number 1

***USB00040101!**

	START	Port Type	Command	Data Length	Data 1`st	Data 2`nd	End
					USB Number	PC Number	
ASCII	*	USB	0	004	01	01	!

Ex. 2> Eight (8) channels direct –through connection

***USB00320101020203030404050506060707080 8!**

	START	Port Type	Command	Data Length	Data 1`st	Data 2`nd
					USB Number	PC Number
ASCII	*	USB	0	032	01	01

	Data 3`rd	Data 4`th	Data 5`th	Data 6`th	Data 7`th	Data 8`th
	USB Number	PC Number	USB Number	PC Number	USB Number	PC Number
ASCII	02	02	03	03	04	04

	Data 9`th	Data 10`th	Data 11`th	Data 12`th	Data 13`th	Data 14`th
	USB Number	PC Number	USB Number	PC Number	USB Number	PC Number
ASCII	05	05	06	06	07	07

	Data 15`th	Data 16`th	End
	USB Number	PC Number	
ASCII	08	08	!

2.2.1.2 CANCEL COMMAND

It cancels input output connection.

Format of Command Line:
Start (*) + Port Type (Variable) + Command (2) + Data Length (002) + PC Number(2 Bytes) + End(!)

1) Example of cancellation for Video and Audio

Ex> Disconnect input 1 video and audio.

***DVI200201!**

	START	Port Type	Command	Data Length	Data 1`st	End
					PC Number	
ASCII	*	DVI	2	002	01	!

2) Example of cancellation for Video, Audio and USB

Ex> Disconnect input 1 video, audio and USB.

***USB200201!**

	START	Port Type	Command	Data Length	Data 1`st	End
					PC Number	
ASCII	*	USB	2	002	01	!

2.2.1.3 UPLOAD DATA REQUEST

UPLOAD DATA REQUEST

It shows current input output connection status of Matrix.
Format of Command Line:
Start (*) + Port Type (ALL) + Command (3) + Data Length (000) + End(!)

***ALL3000!**

	START	Port Type	Command	Data Length	End
ASCII	*	ALL	3	000	!

ACK Data

	START	Port Type	Command	Data Length
ASCII	*	DVI	0	032

Video & Audio Connection	Data 1`st	Data 2`nd	Data 3`rd	Data 4`th	Data 5`th	Data 6`th	Data 7`th	Data 8`th
	Output Ch	Input Ch	Output Ch	Input Ch	Output Ch	Input Ch	Output Ch	Input Ch
ASCII	01	04	02	04	03	04	04	04

Video & Audio Connection	Data 9`th	Data 10`th	Data 11`th	Data 12`th	Data 13`th	Data 14`th	Data 15`th	Data 16`th
	Output Ch	Input Ch	Output Ch	Input Ch	Output Ch	Input Ch	Output Ch	Input Ch
ASCII	05	04	06	04	07	04	08	04

USB Connection	Data 1`st	Data 2`nd	Data 3`rd	Data 4`th	Data 5`th	Data 6`th	Data 7`th	Data 8`th
	USB Number	PC Number	USB Number	PC Number	USB Number	PC Number	USB Number	PC Number
ASCII	01	04	02	04	03	04	04	04

USB Connection	Data 9`th	Data 10`th	Data 11`th	Data 12`th	Data 13`th	Data 14`th	Data 15`th	Data 16`th
	USB Number	PC Number	USB Number	PC Number	USB Number	PC Number	USB Number	PC Number
ASCII	05	04	06	04	07	04	08	04

EDID Connection	Data 1`st	Data 2`nd	Data 3`rd	Data 4`th	Data 5`th	Data 6`th	Data 7`th	Data 8`th
	ROM Number	Sink Number	ROM Number	Sink Number	ROM Number	Sink Number	ROM Number	Sink Number
ASCII	01	04	02	04	03	04	04	04

EDID Connection	Data 9`th	Data 10`th	Data 11`th	Data 12`th	Data 13`th	Data 14`th	Data 15`th	Data 16`th
	ROM Number	Sink Number	ROM Number	Sink Number	ROM Number	Sink Number	ROM Number	Sink Number
ASCII	05	04	06	04	07	04	08	04

	End
ASCII	!

2.2.1.4 CHECK CONNECTION

It checks the status of physical line for communication between KVM Matrix and control server.

Format of Command Line:
Start (*) + Port Type (ALL) + Command (7) + Data Length (000) + End (!)

***ALL7000!**

	START	Port Type	Command	Data Length	End
ASCII	*	ALL	7	000	!

If the connection line is ready to communicate, OKVM-88U will return ACK, 0x06. If it is not ready or not connected properly, OKVM-88U will send other ACK except 0x06.

2.2.1.5 EDID CONFIGURATION

It reads EDID from connected displays and stores it into EEPROM.

Format of Command Line:
Start (*) + Port Type (ROM) + Command (D) + Data Length (Variable) + ROM Number(Variable) +Sink Number(Variable) + ….. + End(!)

Ex.> Sets (Output 4 display→ All Input EEPROM)
***ROMD032010402040304040504060407040804!**

	START	Port Type	Command	Data Length	Data 1`st ROM Number	Data 2`nd Sink Number
ASCII	*	ROM	D	032	01	04

EDID Connection	Data 3`rd ROM Number	Data 4`th Sink Number	Data 5`th ROM Number	Data 6`th Sink Number	Data 7`th ROM Number	Data 8`th Sink Number
ASCII	02	04	03	04	04	04

EDID Connection	Data 9`th ROM Number	Data 10`th Sink Number	Data 11`th ROM Number	Data 12`th Sink Number	Data 13`th ROM Number	Data 14`th Sink Number
ASCII	05	04	06	04	07	04

	Data 15`th ROM Number	Data 16`th Sink Number	End
ASCII	08	04	!

2.2.1.6 NETWORK CONFIGURATION

It makes the KVM Matrix configured for Ethernet communication.

Format of Command Line:
Start (*) + Port Type (ALL) + Command (S) + Data Length (048)
+ IP Address 1`st + IP Address 2`nd + IP Address 3`rd + IP Address 4`th
+ Sub Net Mask 1`st + Sub Net Mask 2`nd + Sub Net Mask 3`rd + Sub Net Mask 4`th
+ Gateway 1`st + Gateway 2`nd + Gateway 3`rd + Gateway 4`th + End(!)

Ex.> If the Ethernet parameters are set as follow.

IP Address : 125.135.199.139
Subnet Mask : 255.255.255.128
Gateway : 125.135.199.254

***ALLS048125.135.199.139.255.255.255.128.125.135.199.254.!**

	START	Port Type	Command	Data Length
ASCII	*	ALL	S	048

Gateway Data	IP Address 1`st	IP Address 2`nd	IP Address 3`rd	IP Address 4`th
ASCII	125.	135.	199.	254.

Subnet Mask Data	Subnet Mask 1`st	Subnet Mask 2`nd	Subnet Mask 3`rd	Subnet Mask 4`th
ASCII	255.	255.	255.	128.

IP Address Data	Gateway 1`st	Gateway 2`nd	Gateway 3`rd	Gateway 4`th
ASCII	125.	135.	199.	254.

	End
ASCII	!

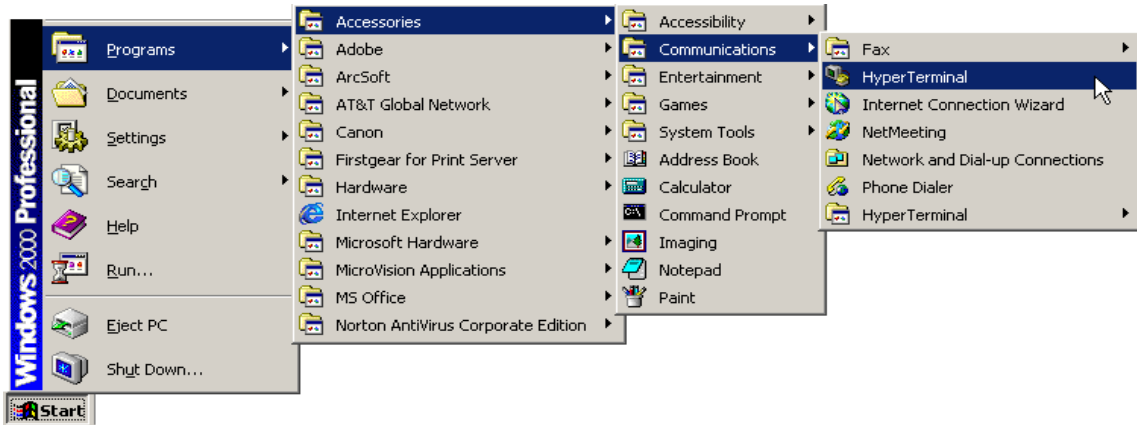
2.2.2 RS-232C Control

◆ HyperTerminal

OKVM-088U can be controlled by Window Hyper-terminal over RS-232C.

To set the Hyper-terminal,

A. Go to Start > Programs > Accessories > Communications > HyperTerminal



[Fig. 2-1] Menu for Hyper-terminal

B. Select Hyper-terminal then go to new connection. Select new name and icon.

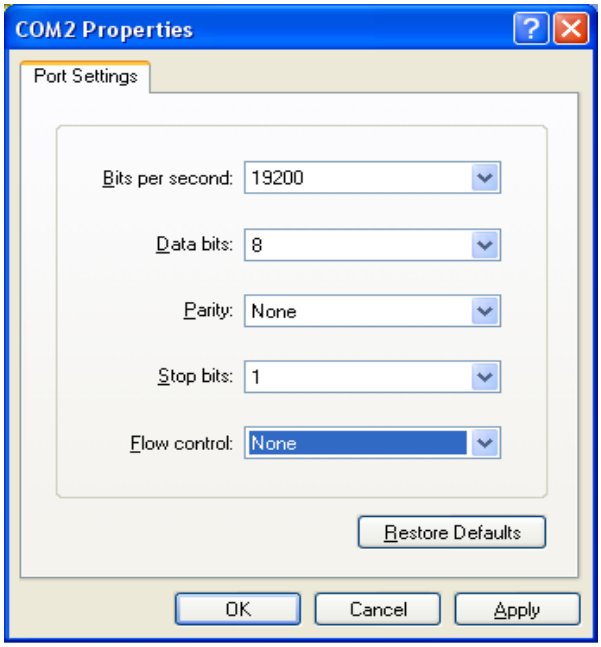
[Fig. 2-2] Initial configuration

[Fig. 2-3] Dialog connection

C. Press OK then go to Dialog connection window.

D. Ignore Country, Area Code and Phone Number and select available COM port number to communicate with OKVM-088U.

E. Press OK then go to COM Properties dialog box.



[Fig. 2-4] COM Properties Dialog

F. Set the parameter as follows.

- Bits per second (baud rate): 19200 (recommended)
- Data bits: 8
- Parity: None
- Stop bits: 1

G. Press OK to execute Hyper-terminal.

H. Send serial command (Refer to Chp. 2.2.1)

2.2.3 Ethernet Control

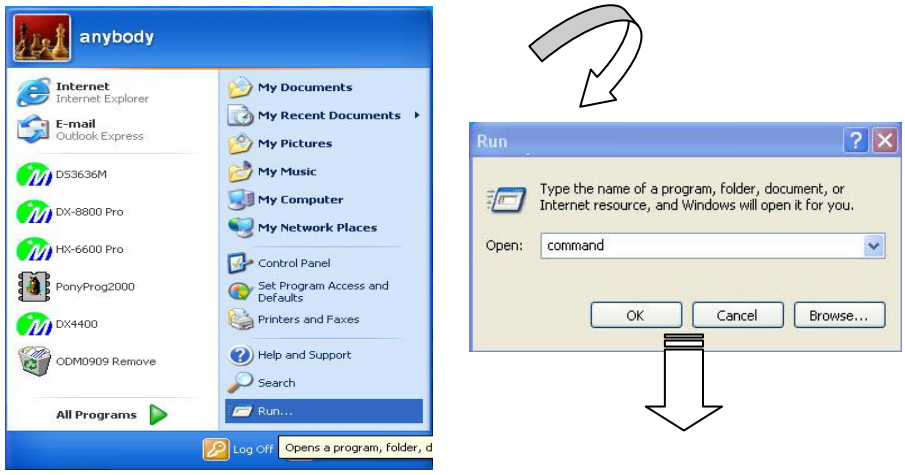
2.2.3.5 TELNET

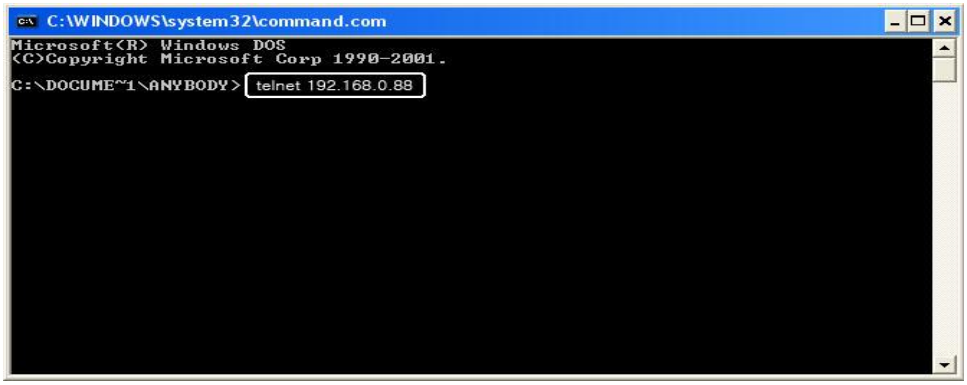
Telnet is a terminal emulation program for TCP/IP networks such as the Internet.

The Telnet program runs on your computer and connects your PC to a server on the network. You can then enter commands through the Telnet program and they will be executed as if you were entering them directly on the server console. This enables you to control the server and communicate with other servers on the network

A. Select **Start** menu and select **Run**.

B. Type **command** as shown below.





[Fig. 2-5] TELNET window

C. Select **OK** to open the command window.

D. Type the command: **telnet 192.168.0.88**

E. Send serial command (Refer to Chp. 2.2.1)

2.2.3.6 UDP

OKVM-88U can be controlled by UDP. The configuration method for IP Address is same as that of TCP/IP. But the port number is fixed at 3000.

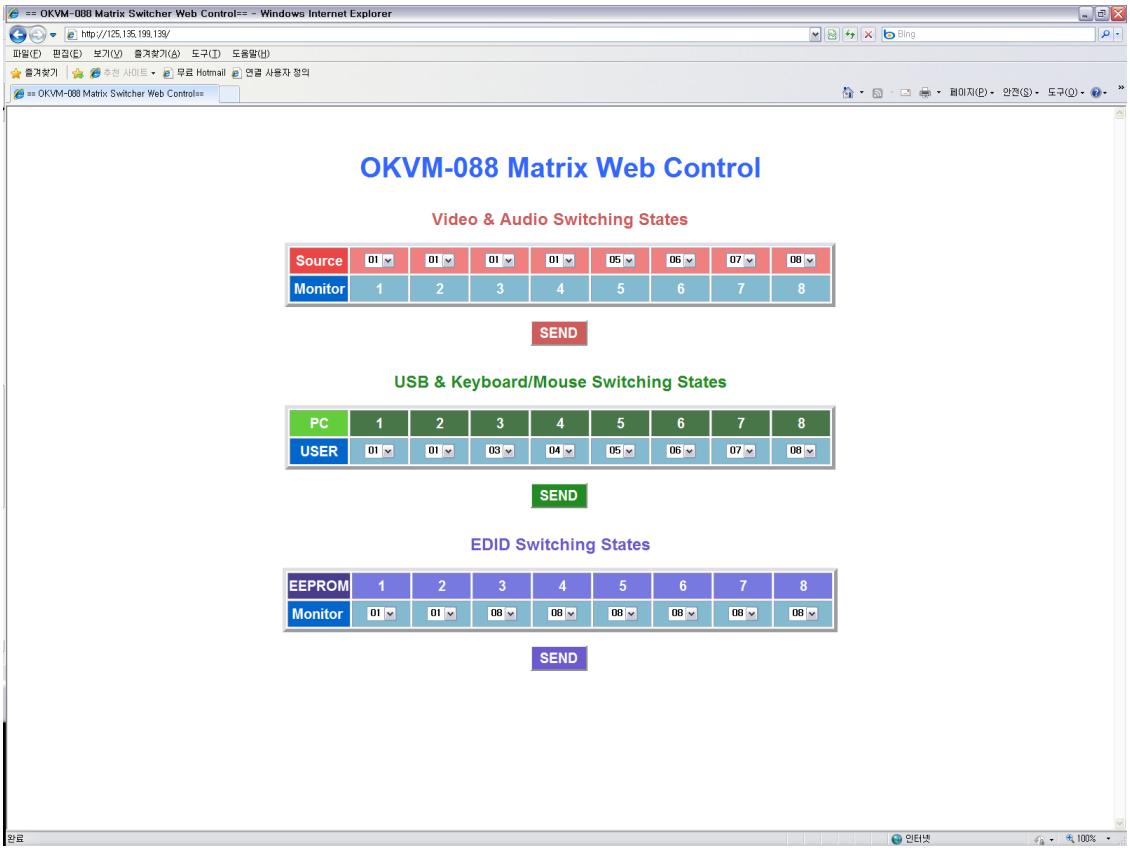
2.2.3.7 WEB

WCP (web control panel) is the control method by standard web browser. Microsoft Explorer is highly recommended.

Execute web browser and type the matrix IP Address as follows.

http://192.168.000.088

Then, it shows Web control window as below.



[Fig. 2-7] Web Control window

Video & Audio Switching States

- ☐ To control Video and Audio switching, select Source (#PC) on the first table.
- ☐ To make connection, press SEND.

USB & Keyboard Mouse Switching States

- ☐ To control USB only, select USER number on the second table.
- ☐ To make connection, press SEND.

EDID Switching States

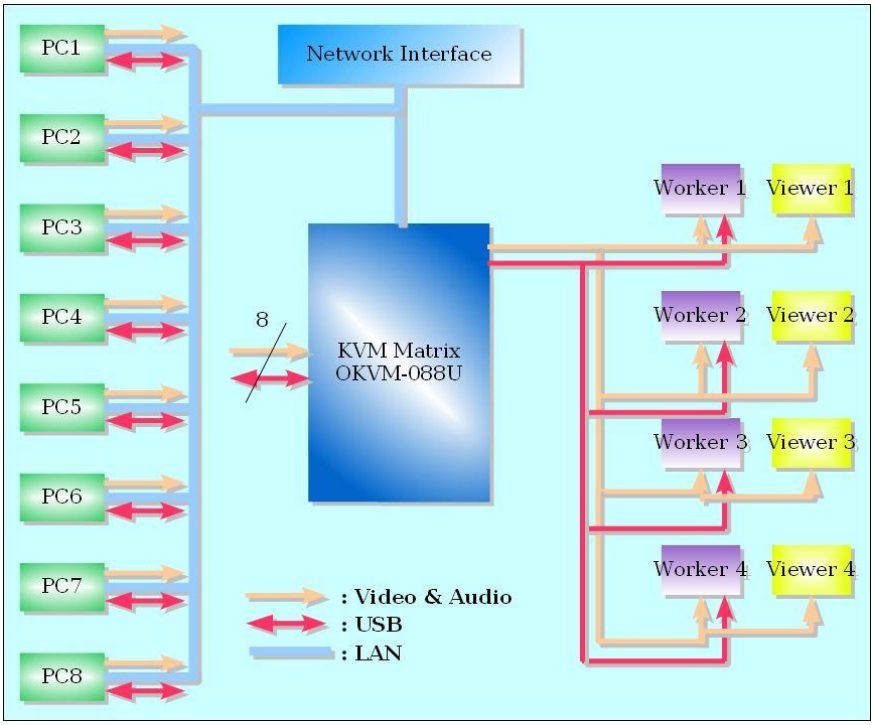
- ☐ To read EDID from attached displays and store in the EEPROM, select monitor number.
- ☐ Press SEND.

2.3 Example of KVM Matrix Configuration

The following examples help to understand KVM Matrix and its systems. But the other configuration could be done up by number of PCs and workers and specific requirements to operate whole system.

2.3.1 Control by workers at Remote Sites

4 Workers with additional 4 viewers

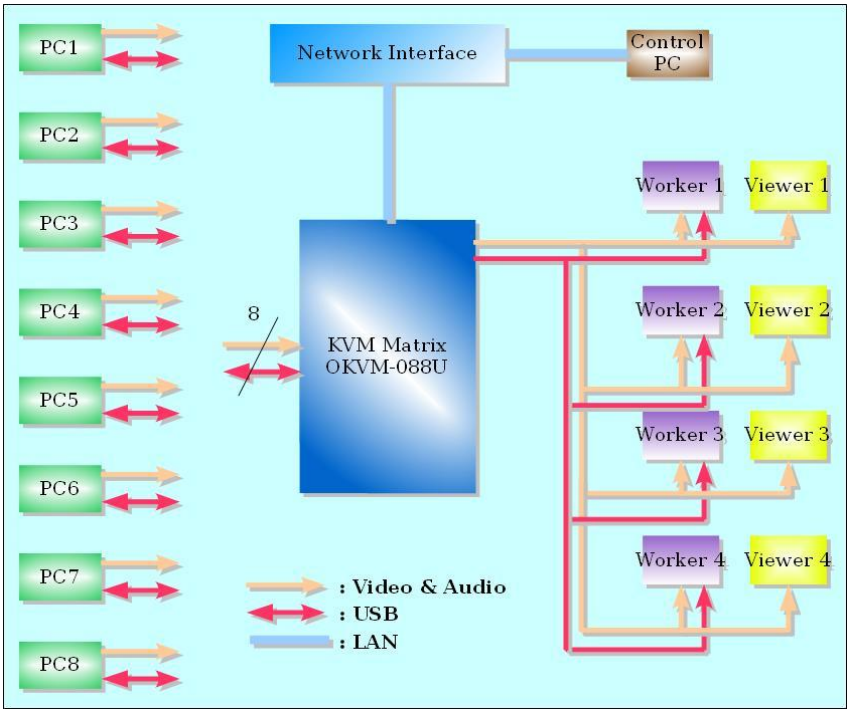


[Fig. 2-8] Control by workers at remote sites

A. Each worker can access other PCs, which are not allocated by other workers.
B. The control software should be installed in all PCs.

2.3.2 Control by Control PC

4 Workers with additional 4 viewers



[Fig. 2-9] Control by control PC

A. Master user allocates each PC to each worker. Workers can't access other PCs until the new connection happens by master user.

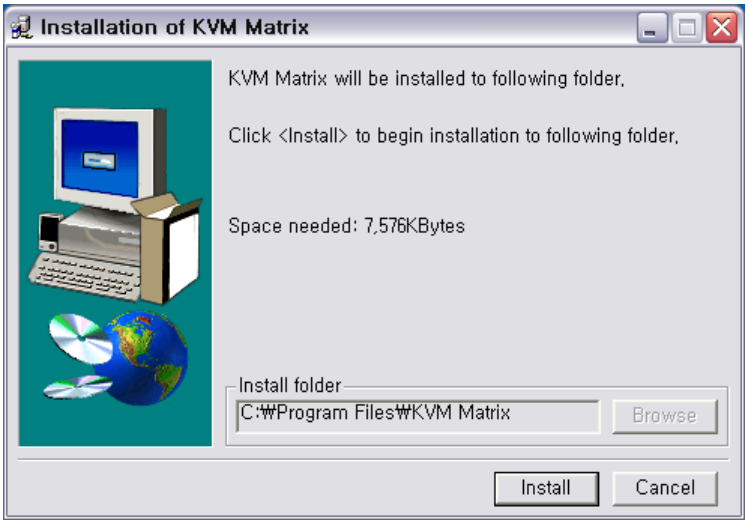
CHAPTER 3. PC program

3.1 Installation of PC Program

Insert the installation CD in CD reader then it starts auto-run and shows the windows as below.

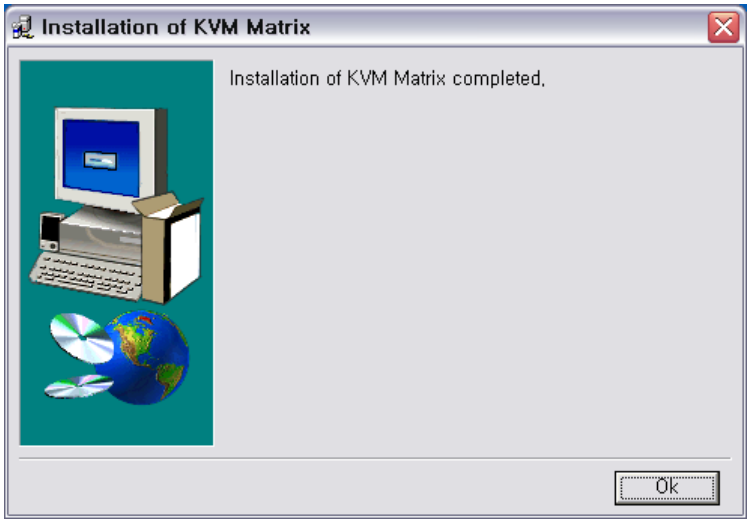
[Fig. 3-1] Installation of PC program

Click Next and specify the program destination in your PC.
The default directory is; C:\Program Files\KVM Matrix.
Click install to start the program installation.



[Fig. 3-2] PC program destination

Click 'Ok' to complete the installation.



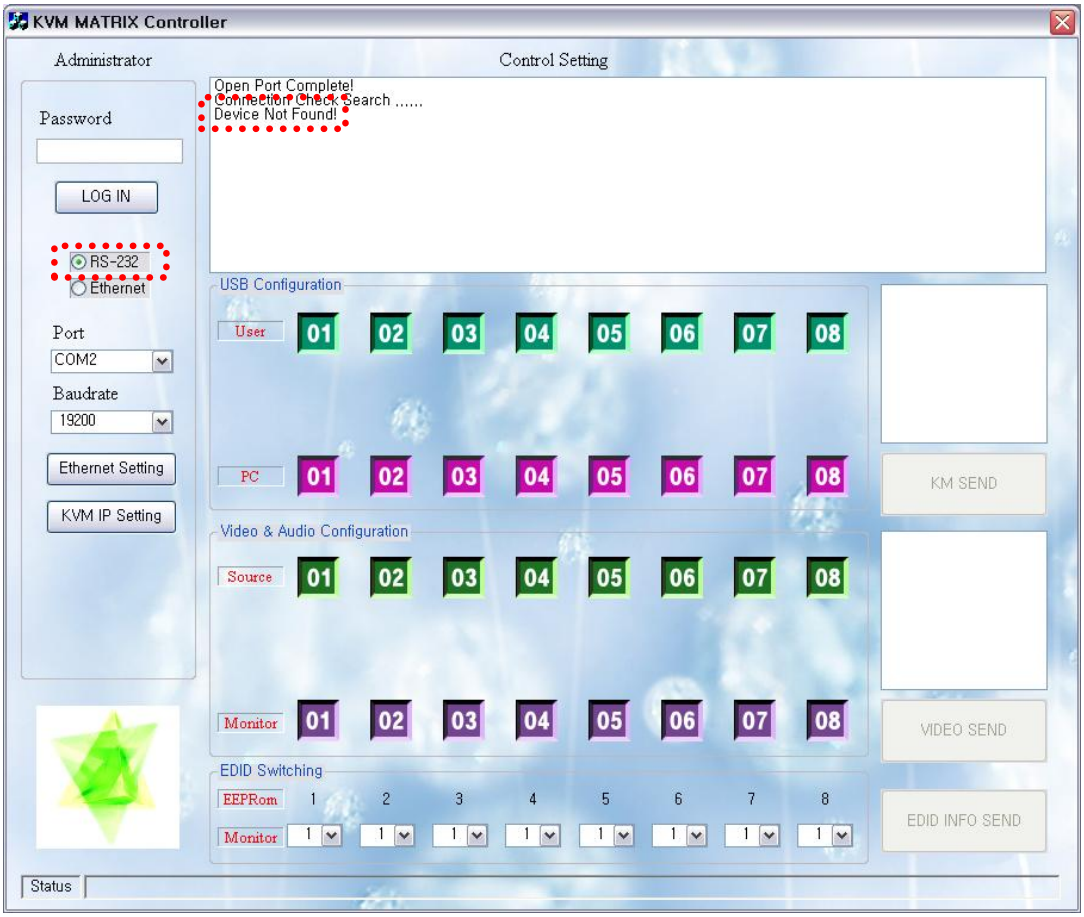
[Fig. 3-3] Installation completion of PC program

3.2 PC program Execution

3.2.1 Initial Setup

Precaution of execution
Power on after check the connection status of RS-232C cable.

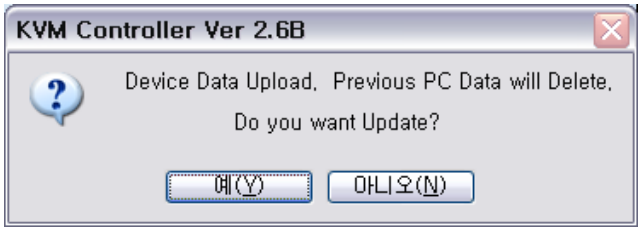
1) Execute as Start ➔ Program ➔ KVM Matrix ➔ KVM Matrix Controller.
2) As PC program is started, it checks the connection status with equipment via RS-232C.
3) In case of wrong connection or communication failure, “Device Not Found!” will be displayed.
4) Click RS-232C on PC program, “Port Closed” will be displayed.
5) Click RS-232C after check Comport setup, Connection status, Power on status of equipment.



[Fig. 3-4] Execution of PC program

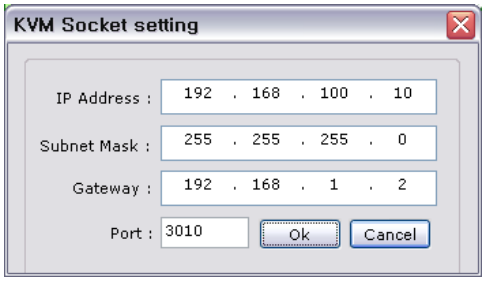
6) When communication is succeeded, the message box will be appeared to check DATA Upload as shown below.

“Device Connected.”
“RS-232C Connection Check Success.”



[Fig. 3-5] Question box of Data upload

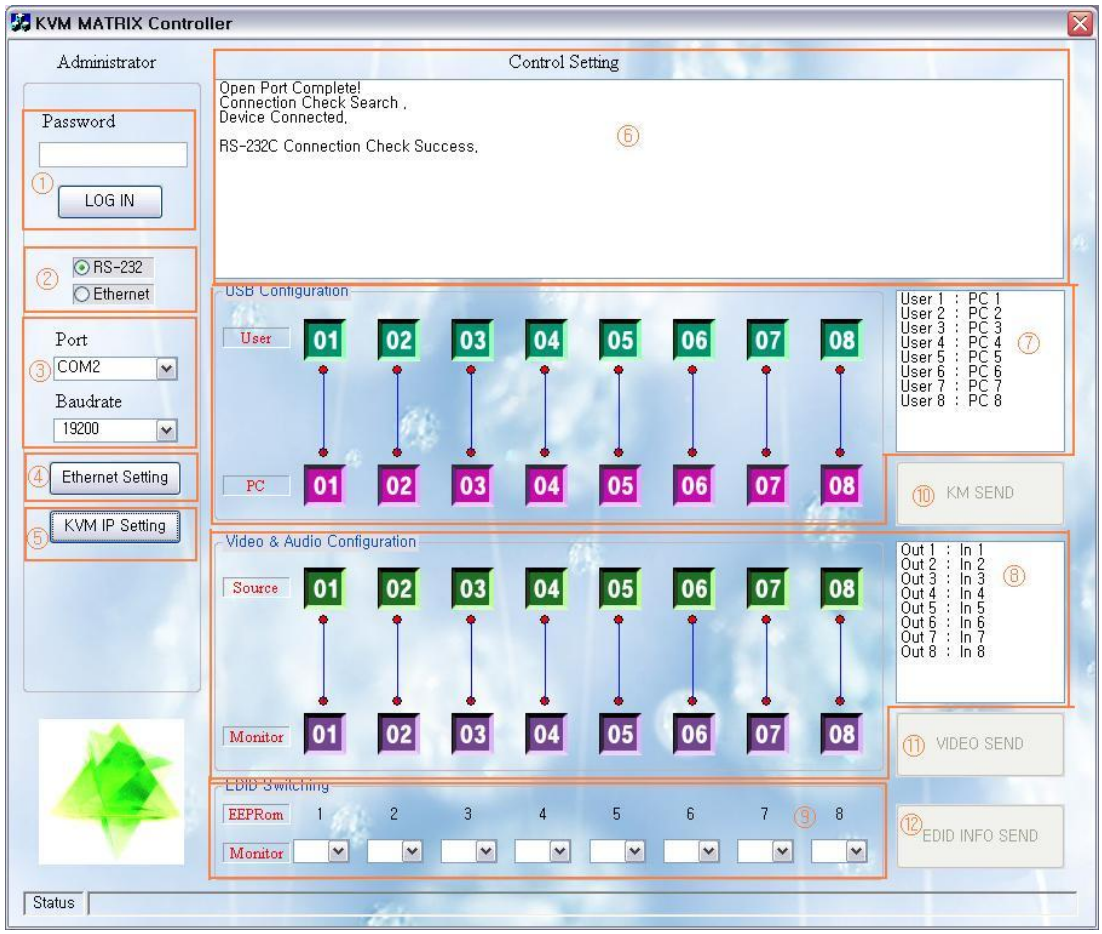
7) Set up the Network of KVM Matrix after RS-232C is connected and the message box will be appeared with KVM IP Setting button in the left as shown below.



[Fig. 3-6] Network setup

8) Click Ok button after enter all items.
9) Complete the initial procedure of KVM Matrix control by PC program.

3.2.2 Menu of PC Program



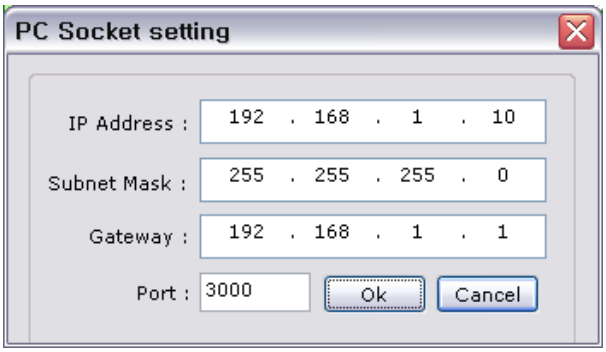
[Figure 3-7] Item description of PC program

- ① : Log in/out and Password input box for program operation (Password : 0000)
- ② : Selection of communication interface connected with equipment and on/off for communication connection (Connection status is displayed on the message box.)
- ③ : Setup of RS-232C communication (Baud rate is set as 19200.)
- ④ : Network information setup of equipment to be connected.
- ⑤ : Network information setup of KVM Matrix
- ⑥ : Message display box by program operation
- ⑦ : Interface of Video & Audio distribution and switching
- ⑧ : Interface for PC selection and control
- ⑨ : EDID setup interface
- ⑩ : Command transmission button for Video & Audio connection
- ⑪ : Command transmission button for PC selection
- ⑫ : Command transmission button for EDID setup

3.2.3 Operation with PC program

3.2.3.1 Communication Connection with KVM Matrix

1) Connect RS-232C cable or LAN cable with equipment after the initial setup as shown in previous page.
2) Click the Ethernet Setting in left side of program after program execution and the message, Device Not Found is displayed for LAN cable. The message box is shown as below.



[Figure 3-7] Network setup box

3) Click Ok button after enter Network information set in KVM Matrix on message box.
4) Enter password, “0000”to LOG IN after communication connection of KVM Matrix.

3.2.3.2 Select PC to Use

1) Select PC to be used in USB & Keyboard/Mouse Configuration of PC program.
2) Select the PC user.
3) Click KM Send button.

3.2.3.3 Video & Audio Distribution and Switching

1) Select source to be used in Video & Audio Configuration of PC program.
2) Select monitor to display.
3) Click Video Send button.

3.2.3.4 Save EDID

1) Select monitor channel to be saved in each ROM of PC program EDID Switching.
2) Click EDID INFO Send button.

A. Features

- Video/Audio/USB Switching system
- Resolution : Up to WUXGA(1920x1200 / 60Hz), 1920x1080P
- Data transmission bandwidth : Up to 1.65Gbps
- Stereo Audio(R/L)
- Enable to save any or certain EDID data of EDID interface in EEPROM of Matrix input terminal.
- Long distance signal transmission via KVM Extender
- Support SUN PC and MAC OS
- Various control interface
    - ✧ Command input and control via RS-232C, LAN
    - ✧ Integrating Ethernet control
    - ✧ PC program control
- Windows PLUG & PLAY function
- Program download by ISP Interface

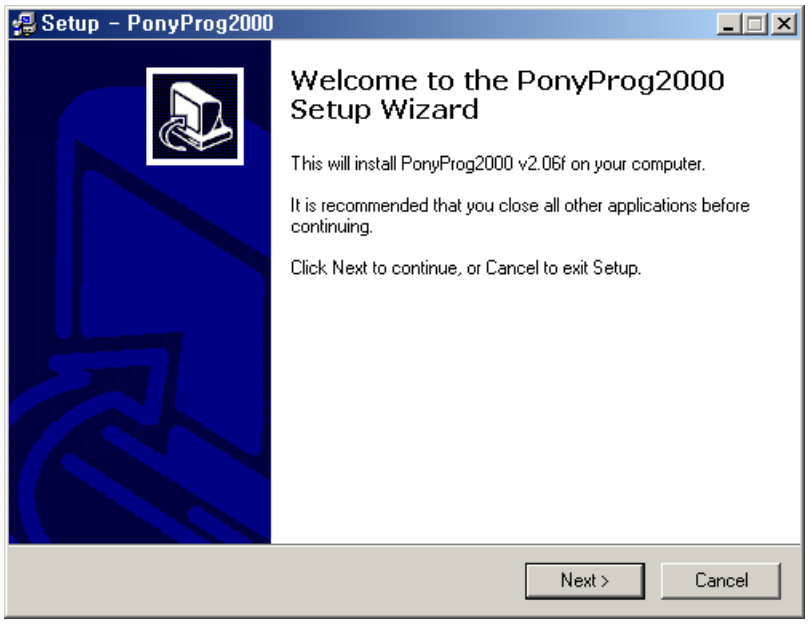
B. Specification

1) Input & Output Video Signals Type: TMDS (Transient Minimized Differential Signal)
2) DVI Signal Bandwidth: Maximum 1.65Gbps
3) Resolution: VGA (640x480) ~ WUXGA (1920x1200), 480~1080i and 1080p
4) RS232 baud rates: Set as 19,200bps
5) LAN Port: 10/100 bases
6) USB: Support Hi-speed USB 1.1
7) AC/DC Power Supply: 110~240V/1.5A, 50~60Hz, DC12V/10A
8) Size: 444 x 230 x 115mm (W x D x H) *For 8x8
9) Weight: 6.2Kg *For 8x8

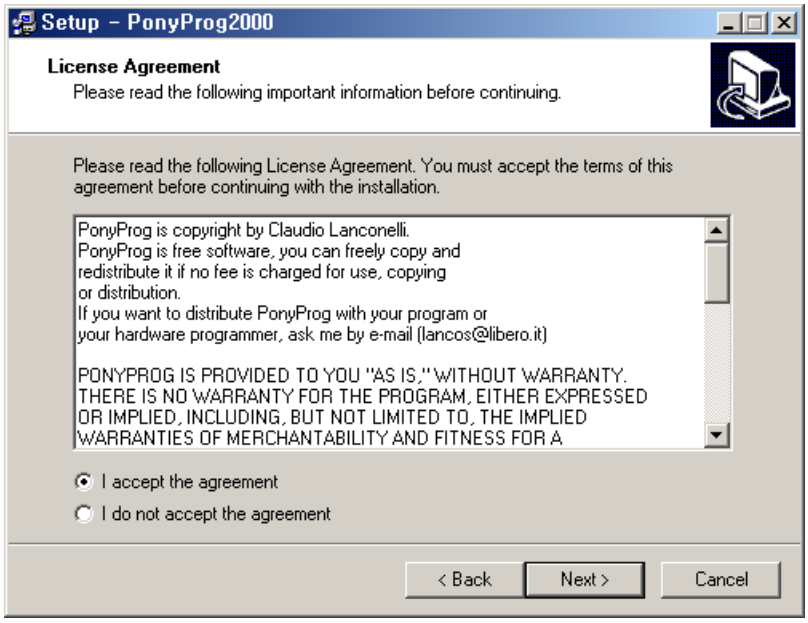
C. Firmware Downloading

1) Setup Ponyprog2000

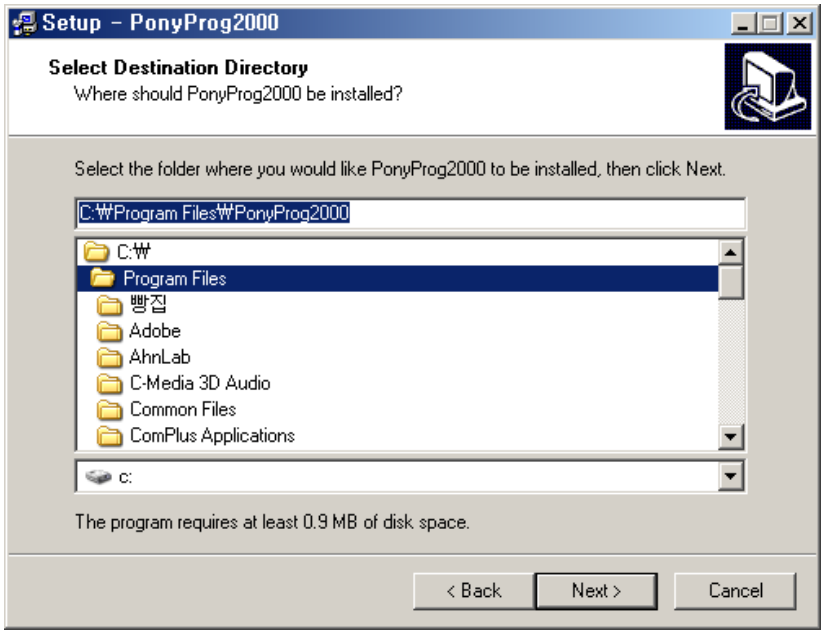
*Ponyprog 2000 is a program for firmware update in the enclosed CD and set it up as the procedure as shown below.



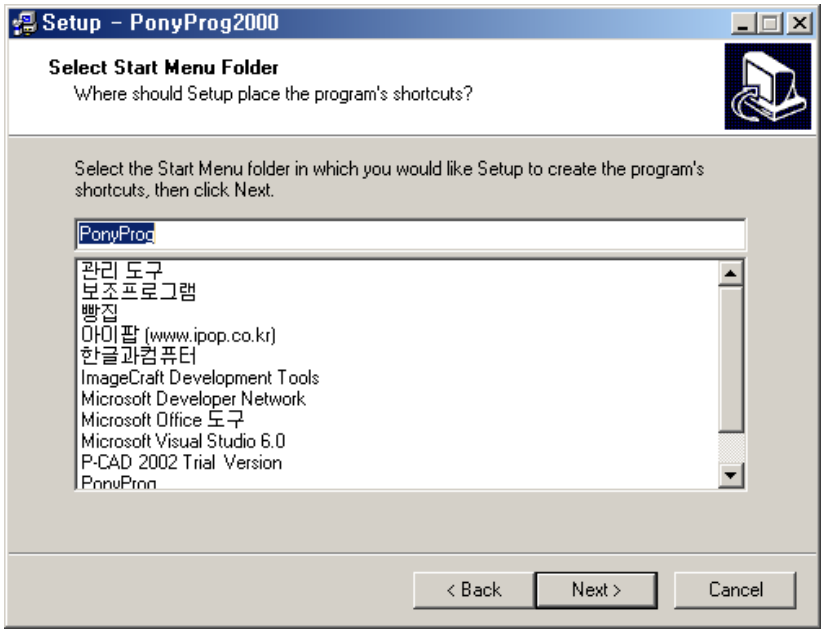
Click 'I accept the agreement' to advance the next step.



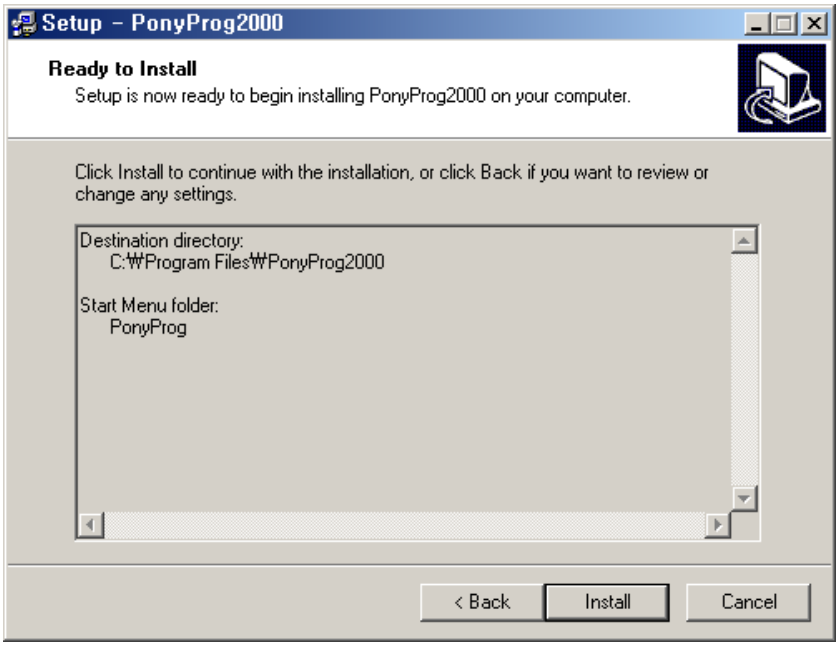
Click the ‘NEXT’ button by designating setup path.



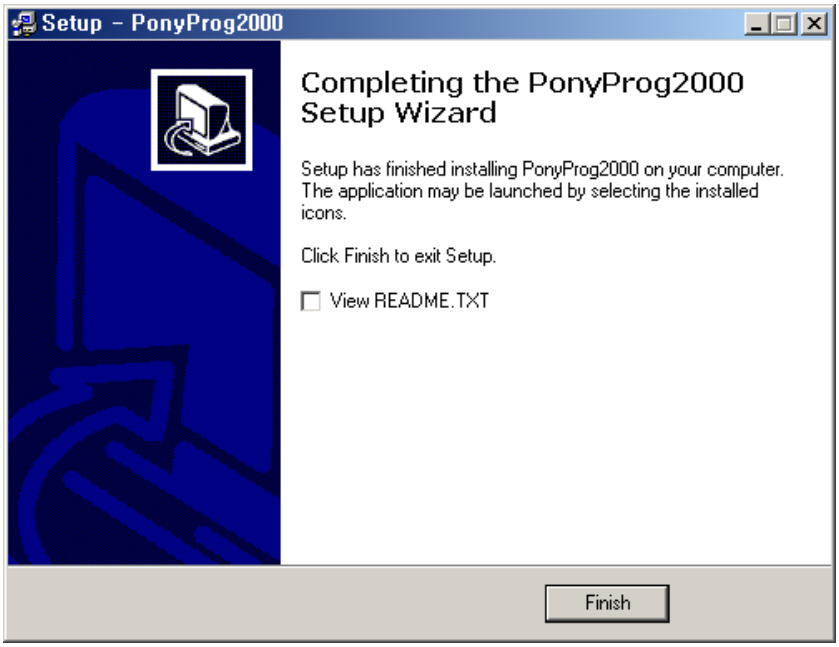
Select Start Menu Folder.



Click ‘Install’ button to start set the program in User PC.

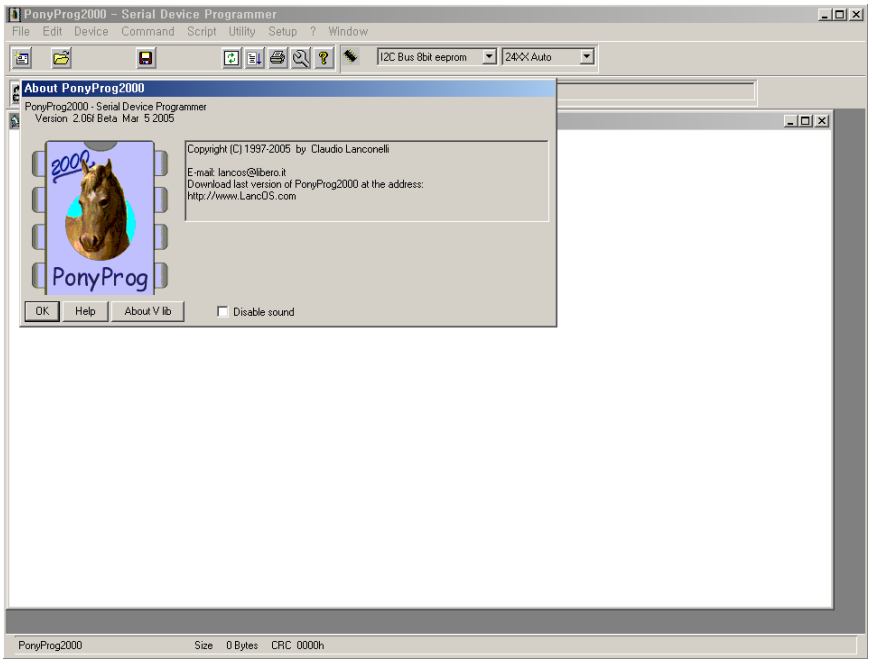


Complete the setup successfully by clicking ‘Finish’ button.

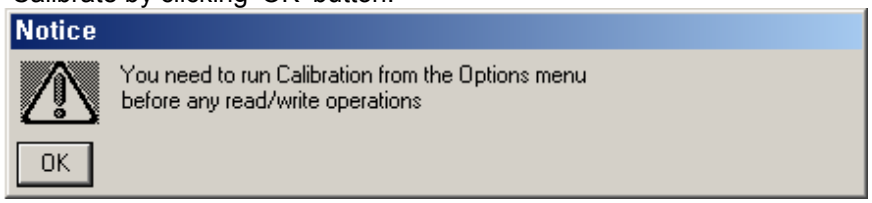


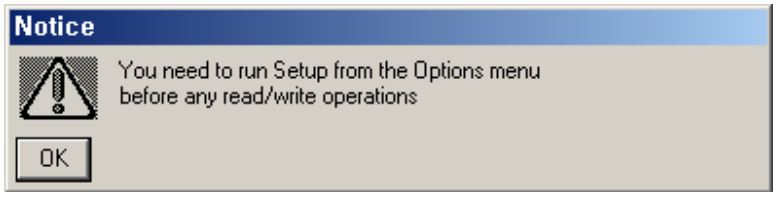
2) Download of Firmware

Execute program after connecting PC for download and product with firmware download cable and power on.

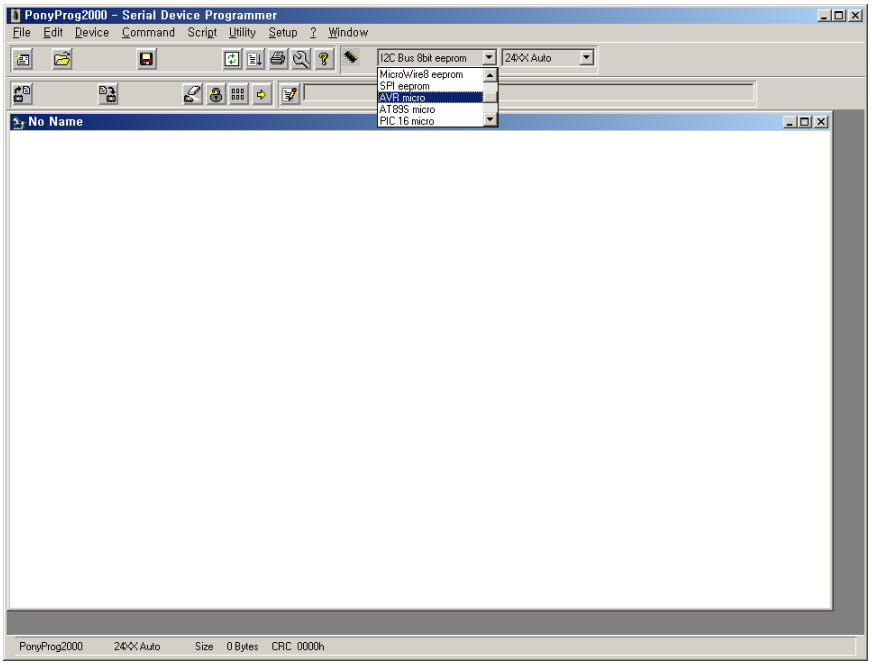


Calibrate by clicking ‘OK’ button.

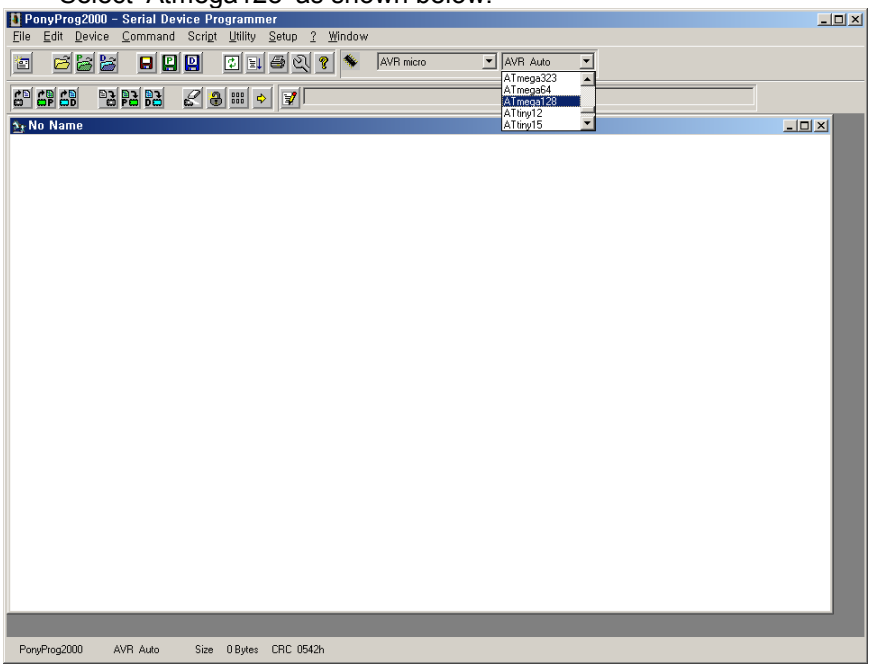




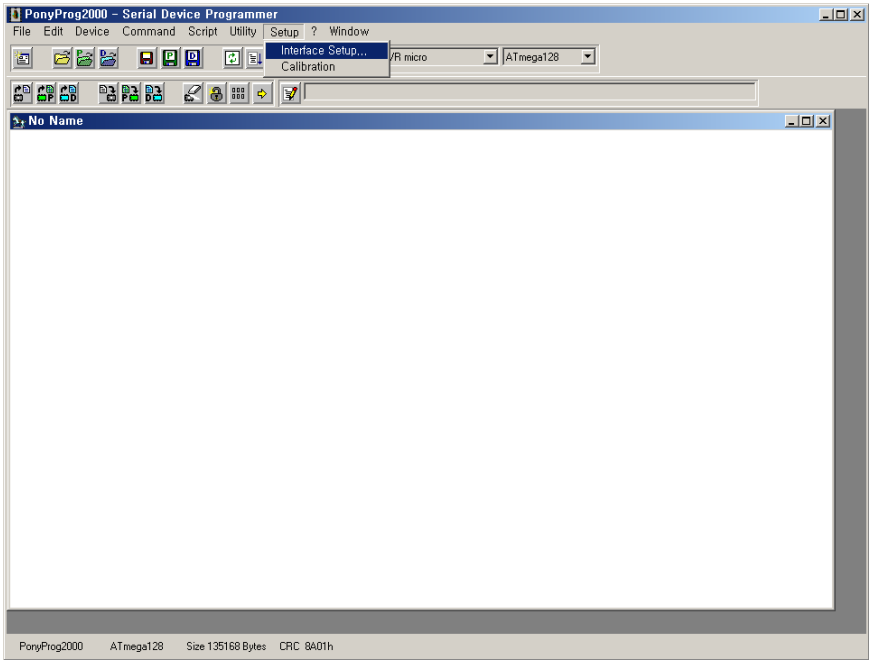
Select ‘AVR micro’ as shown below.



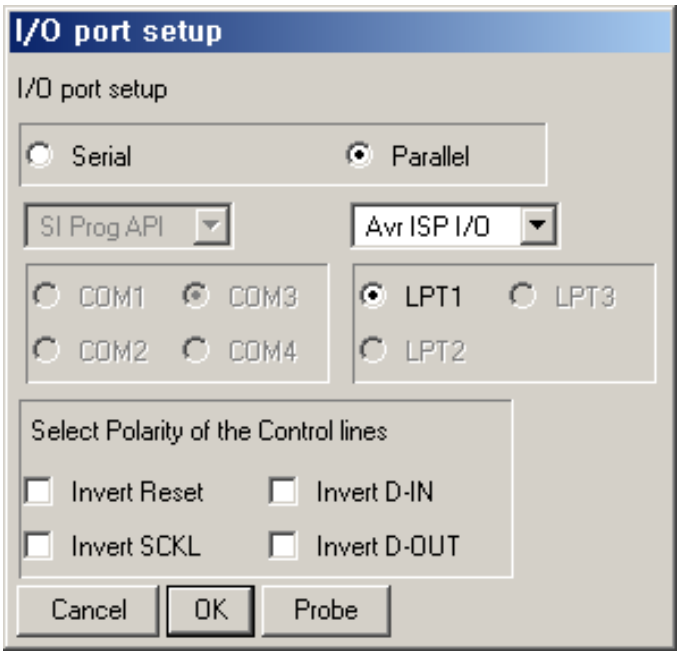
Select ‘Atmega128’ as shown below.



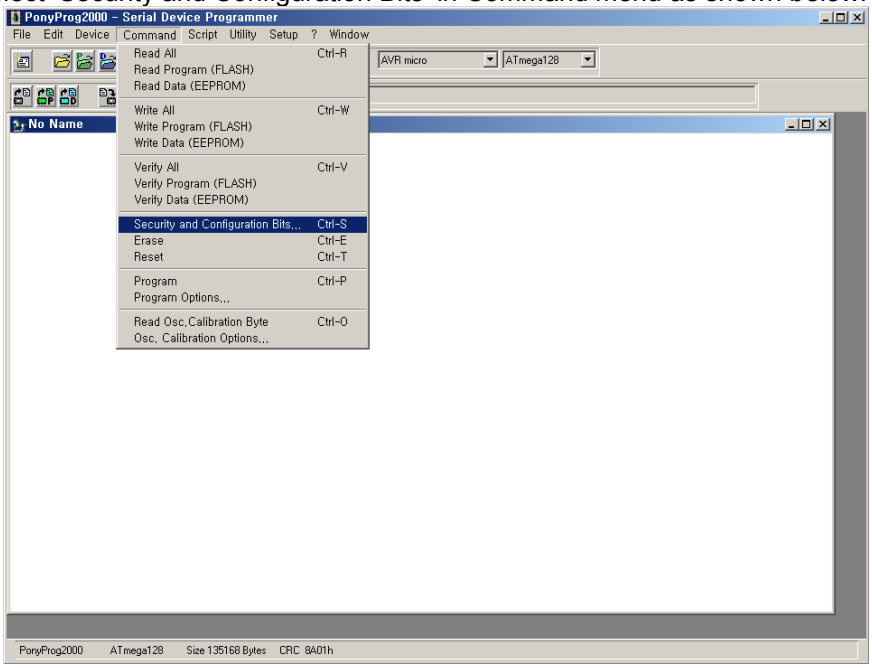
Select ‘Interface Setup’ in Setup menu as shown below.



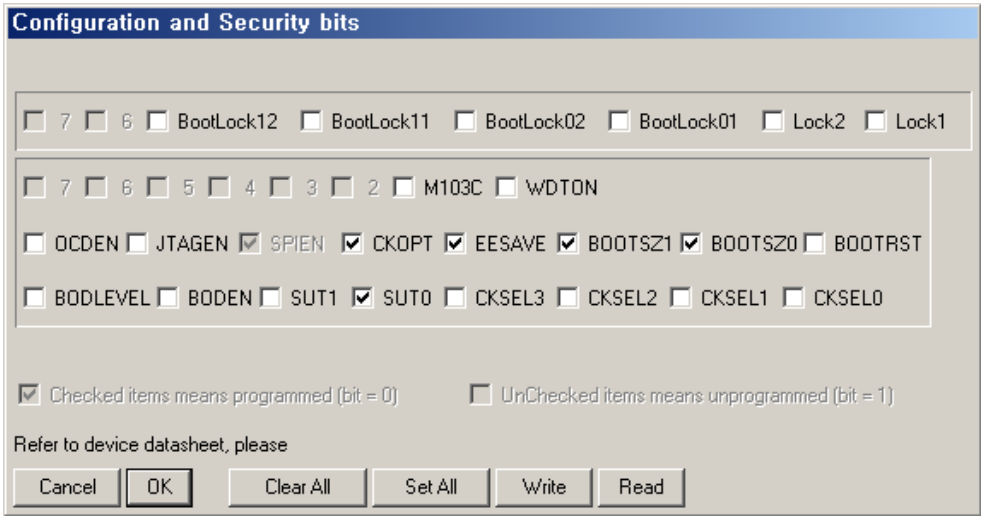
Click ‘OK’ button after set I/O port as shown below.



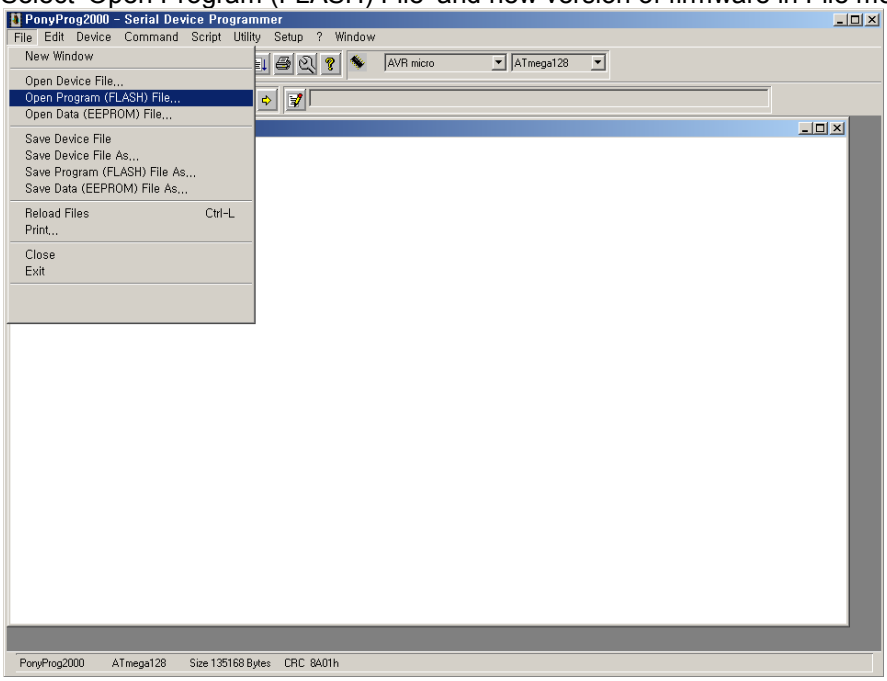
Select ‘Security and Configuration Bits’ in Command menu as shown below.



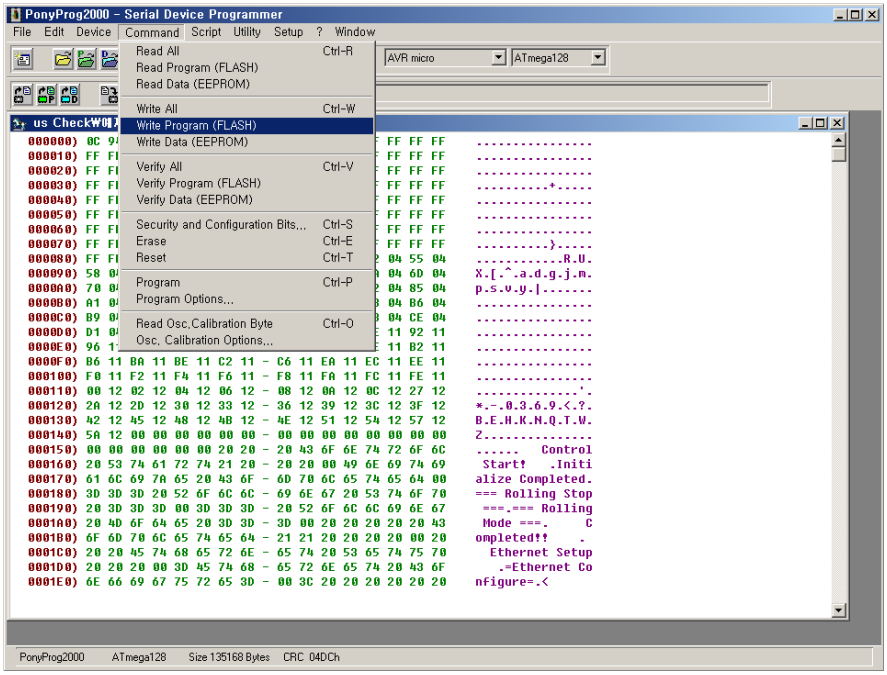
Check the option is same as below by click ‘Read’ button and recheck after ‘Clear All’ if it is not same. Click ‘Write’ button and ‘Read’ button to check the option is set as below.



Select ‘Open Program (FLASH) File’ and new version of firmware in File menu.

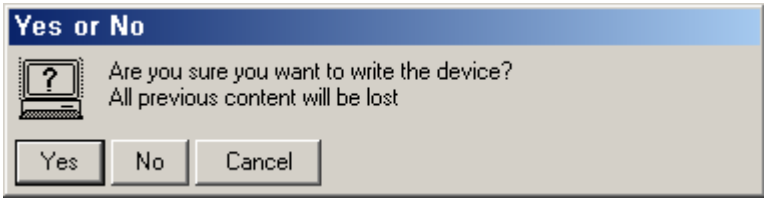


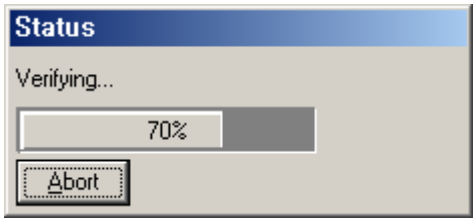
Select ‘Write Program(FLASH)’ in Command menu.



Select ‘OK’ button to start download process.

.





Firmware download is completed and system is operated with new version of firmware.
Please restart the products after the completion.

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