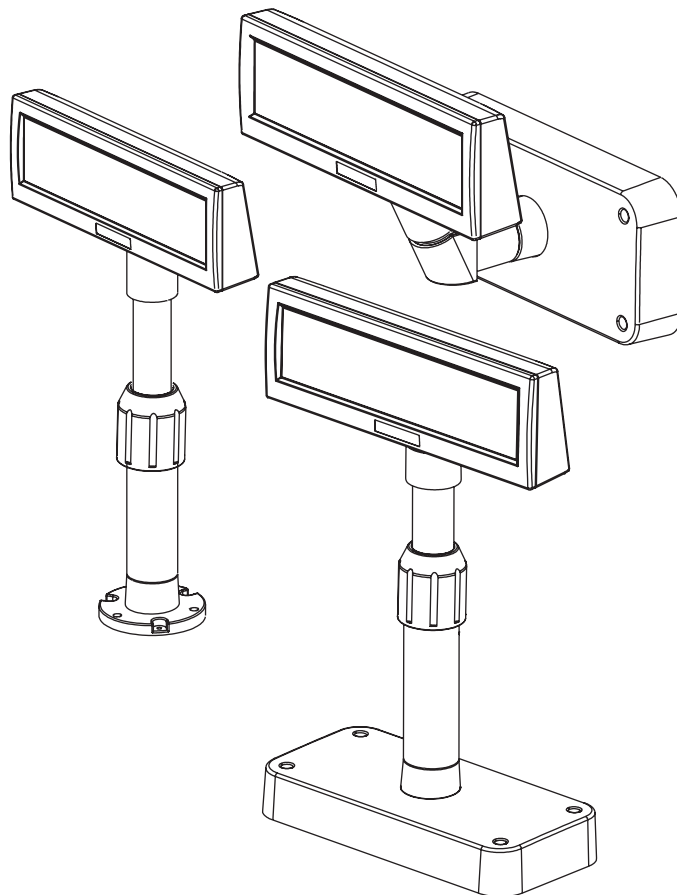


# User's Manual

# **BCD-1000 Series**

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**Customer Display**  
**Rev. 1.00**



## ■ Safety Precautions

In using the present appliance, please keep the following safety regulations in order to prevent any hazard or material damage.



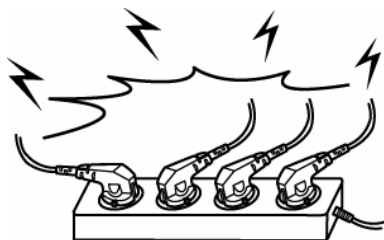
### **WARNING**

Violating following instructions can cause serious injury or death.

#### **Do not plug several products in one multi-outlet.**

- This can provoke over-heating and a fire.
- If the plug is wet or dirty, dry or wipe it before usage.
- If the plug does not fit perfectly with the outlet, do not plug in.
- Be sure to use only standardized multi-outlets.

PROHIBITED



#### **You must use only the supplied adapter.**

- It is dangerous to use other adapters.

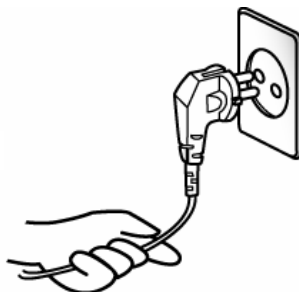
PROHIBITED



#### **Do not pull the cable to unplug.**

- This can damage the cable, which is the origin of a fire or a breakdown of the printer.

PROHIBITED



#### **Keep the plastic bag out of children's reach.**

- If not, a child may put the bag on his head.

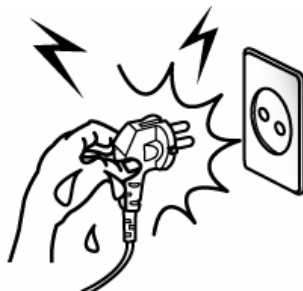
PROHIBITED



#### **Do not plug in or unplug with your hands wet.**

- You can be electrocuted.

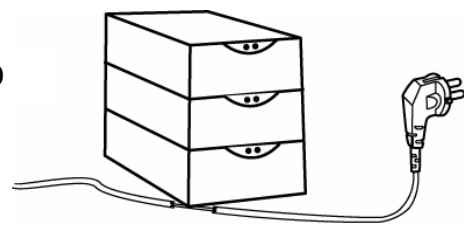
PROHIBITED



#### **Do not bend the cable by force or leave it under any heavy object.**

- A damaged cable can cause a fire.

PROHIBITED





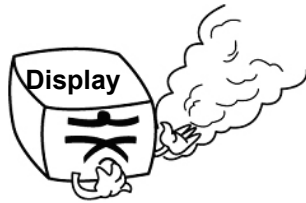
**CAUTION**

Violating following instructions can cause slight wound or damage the appliance.

**If you observe a strange smoke, odor or noise from the Display, unplug it before taking following measures.**

- Switch off the Display and unplug the set from the mains.
- After the disappearance of the smoke, call your dealer to repair it.

**TO UNPLUG**



**Keep the desiccant out of children's reach.**

- If not, they may eat it.

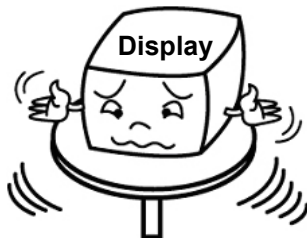
**PROHIBITED**



**Install the printer on the stable surface.**

- If the Display falls down, it can be broken and you can hurt yourself.

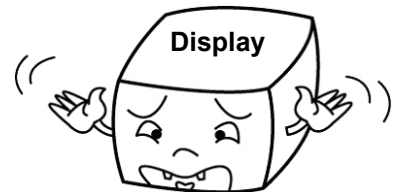
**PROHIBITED**



**Use only approved accessories and do not try to disassemble, repair or remodel it for yourself.**

- Call your dealer when you need these services.

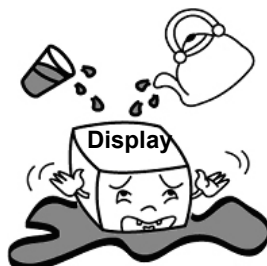
**DISASSEMBLING  
PROHIBITED**



**Do not let water or other foreign objects in the Display.**

- If this happened, switch off and unplug the Display before calling your dealer.

**PROHIBITED**



## ■ Warning - U.S.A

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates uses, and can radiate radio frequency energy and if not installed and used according to the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.



1. The VFD on the Display Unit is sensitive to shock.  
Any jarring, throwing, or dropping of the product package can easily result in product damage and malfunction. Please exercise care in handling.
2. Make sure to use the main cable and power unit included in the product package. Any use of other such products can result in damage and shortening of product life.
3. The VFD Module is highly susceptible to damage from static electricity. For any product servicing that requires product disassembly, make sure to place aluminum or copper foil and/or conductive foam on the conductor surface during work.
4. Use of any freon-based chemical products is strictly prohibited. Any use of a freon-based spray can cause a static electrical charge that can damage the product.
5. Users are encouraged to carefully review all precautions and warning indications for product installation and use.

## ■ Waste Electrical and Electric Equipment (WEEE)



This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources. Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling. Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.

## ■ Label Material : PET

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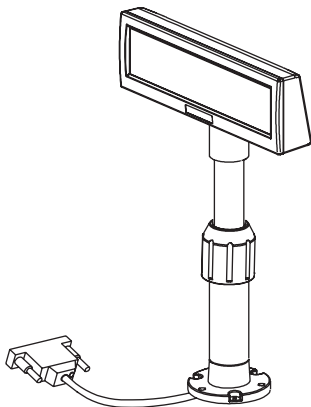
# 1. Complete Product Configuration

## 1-1 Diagrams by Product Type

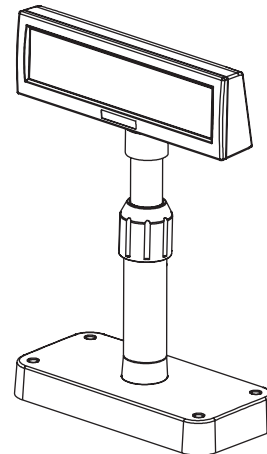
The display types offered include the following :

Desk-Top Type (BCD-1000D), Desk-Top Fix Type (BCD-1000DN),  
and Wall Mount Types (BCD-1000W, BCD-1000WN).

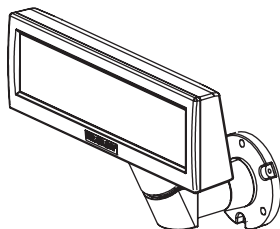
The DF & WF types do not have a PCB.



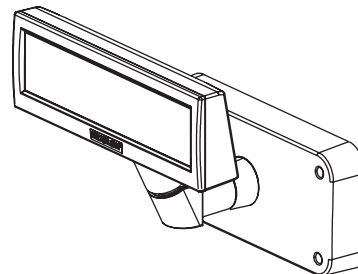
BCD-1000DN



BCD-1000D



BCD-1000WN



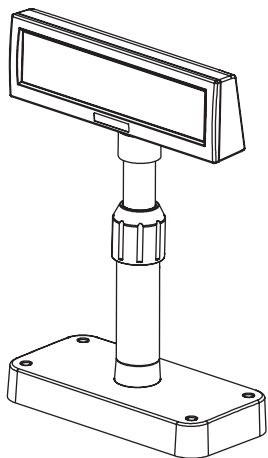
BCD-1000W

## 1-2 Pre-Installation Precautions

- 1-2-1 Avoid locations in direct sunlight or subject to excessive heat.
- 1-2-2 Avoid using or storing the printer in places subject to excessive moisture.
- 1-2-3 Do not use or store the printer in a dusty or dirty area. Avoid places subject to intense vibration or shock.
- 1-2-4 Choose a stable and flat place for proper use of the printer.
- 1-2-5 Make sure that there is enough space around the printer so that it can be used easily.

## **2. Unpacking**

### **2-1 BCD-1000D Type**



**Display Set**

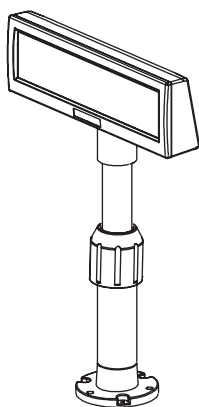


**Manual**



**Install CD**

### **2-2 BCD-1000DN Type**



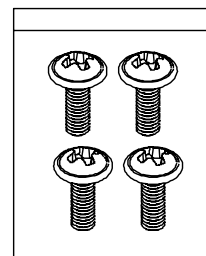
**Display Set**



**Manual**

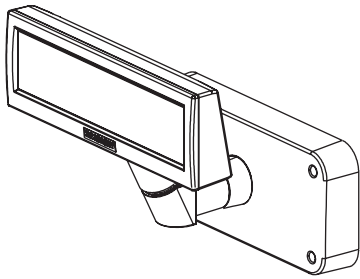


**Install CD**

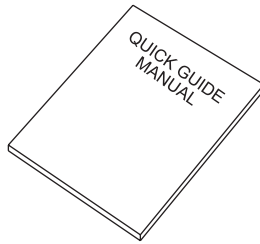


**Screw  
(M3\*10) Tapping**

**2-3 BCD-1000W Type**



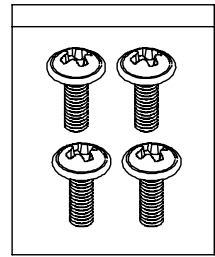
Display Set



Manual

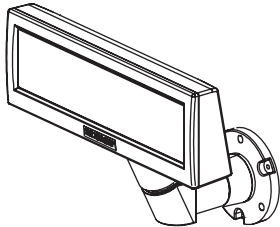


Install CD

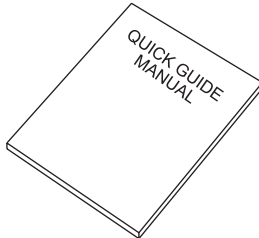


Screw  
(M3\*10) Tapping

**2-4 BCD-1000WN Type**



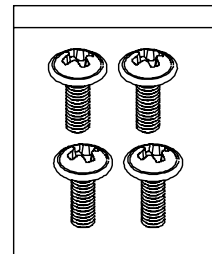
Display Set



Manual



Install CD



Screw  
(M3\*10) Tapping

**※ NOTE**

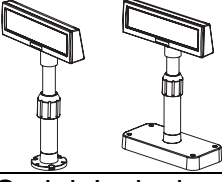
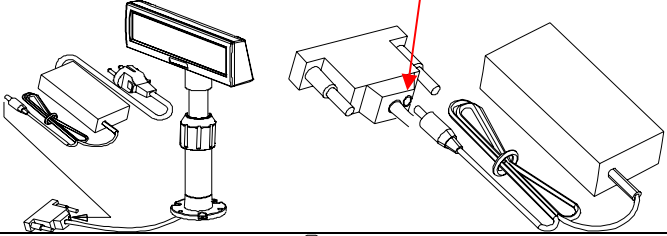
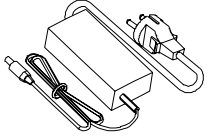
Check to see if all components listed above are present and are undamaged after opening the box. If any component is damaged or missing, contact the dealer from which the product was purchased.



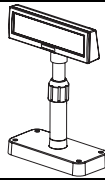
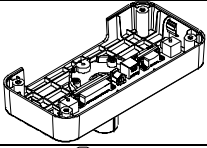
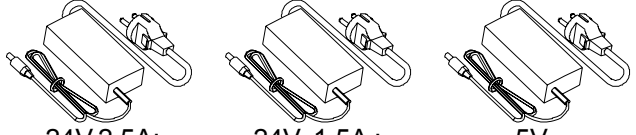
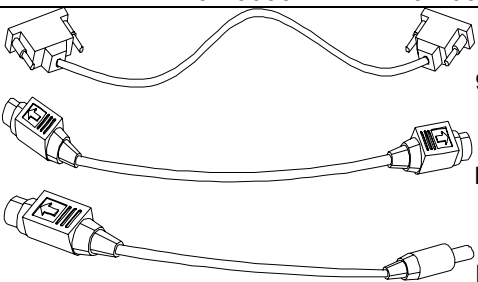
### 3. Defaults & Options by Product Type

#### 3-1 Serial Type

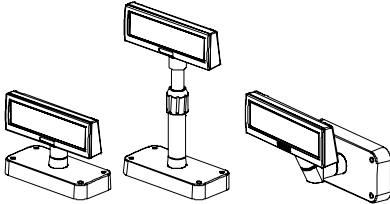
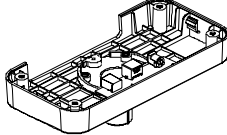
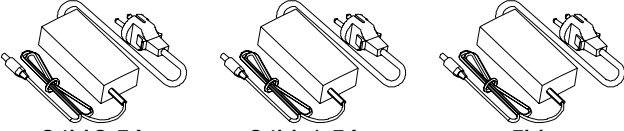
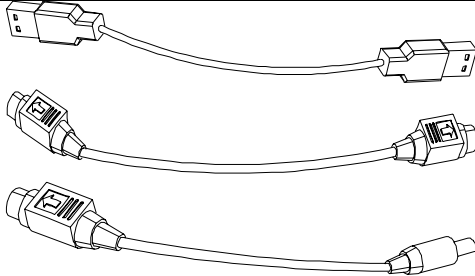
3-1-1 Direct Type : Direct connection with the VFD, bypassing the Board

Item	VFD- Serial	Etc
Set Default		
Connection	<p>Connection of Serial Jack via separate SMPS Usage Voltage: 5~24V(2pin)</p> 	
Power Default	 5V (K410-00001A)	

3-1-2 Pass through Type (Data : Host (PC) → VFD → Printer)

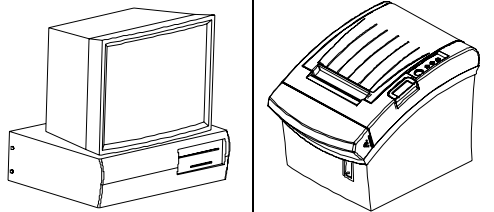
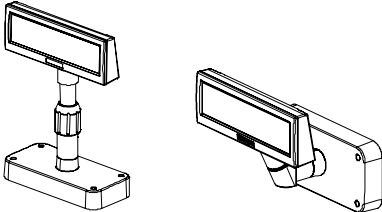
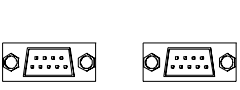
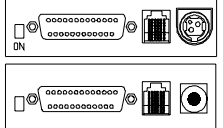
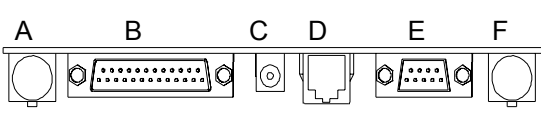
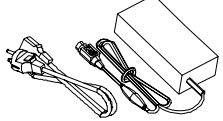
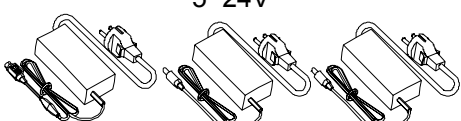






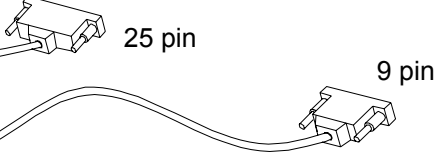



Item	VFD- Serial	Etc
Set Default		
Board Default		
Power Option	 24V,2.5A: K404-00007A      24V, 1.5A : K402-00008B      5V K410-00001A	
Cable Option	 9P.25PF (K604-00086A) Power Cable 3P/3P 1.8M (K610-00005B) Power Cable 3P/2P 1.8M (K610-00005G)	

**3-2 USB Type (Host (PC) → VFD, Host → Printer)**

Item	VFD- USB	Etc
Set Default		
Board Default		
Power Option	 <p data-bbox="564 757 735 815">24V,2.5A: K404-00007A</p> <p data-bbox="778 757 949 815">24V, 1.5A : K402-00008B</p> <p data-bbox="992 757 1163 815">5V K410-00001A</p>	
Cable Option	 <p data-bbox="879 880 1233 907">USB Cable,1.8M (K604-00033A)</p> <p data-bbox="879 969 1326 996">Power Cable 3P/3P 1.8M (K610-00005B)</p> <p data-bbox="879 1068 1326 1095">Power Cable 3P/2P 1.8M (K610-00005G)</p>	

## 4. Connection Type & Size

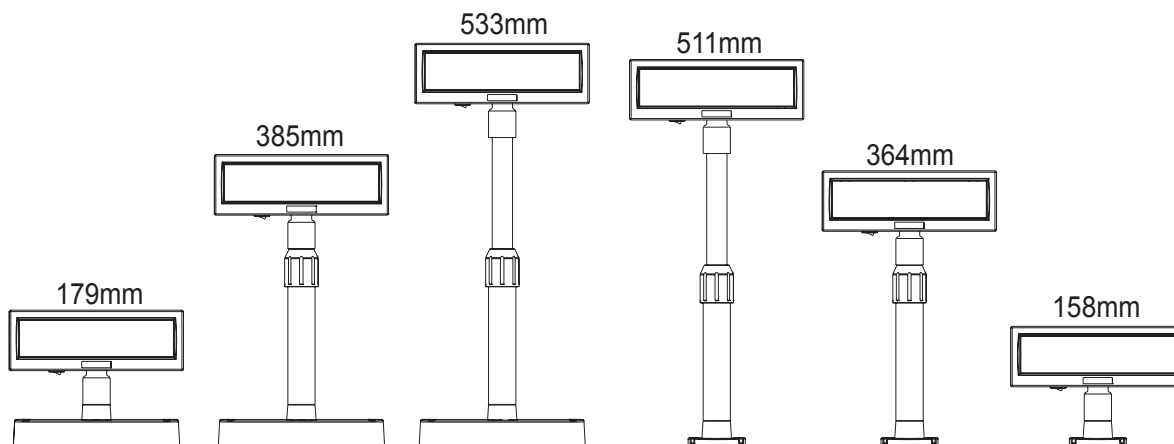
### 4-1 BCD-1000D Type

Basic Units			
Interface			
Power Connection Method 1 VFD Separate Power Supply			
Power Connection Method 2 SMPS → VFD → Printer			
Power Connection Method 3 SMPS → VFD → Printer			
Cable Connection Method 1 Host → VFD → Printer			
Cable Connection Method 2			
Etc	<p>A: Power Supply Connector (Out DC 24V, 3pin)            B: Host Interface Connector (D-SUB 25pin, Female)            C: Power Supply Connector (In DC 5~24V, 2pin)            D: Display Unit Connector            E: Printer Interface Connector (D-SUB 9pin, Male)            F: Power Supply Connector (In DC 24V, 3pin)</p>		

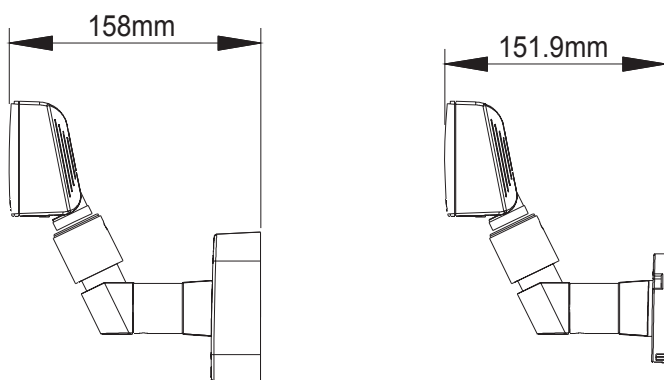
\* The Power Connection Method for the Serial Type including the SMPS → VFD → Printer Connection Method and separate power supply for the VFD is feasible for the USB TYPE as well.

**4-2 Size**

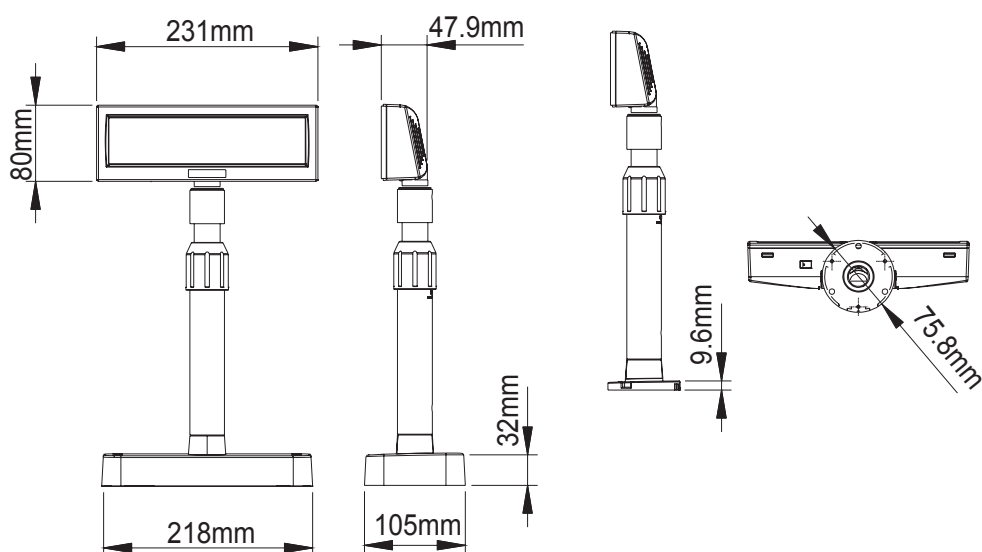
**4-2-1 Desk Top Type**



**4-2-2 Wall Mount Type**



**4-2-3 Etc.**

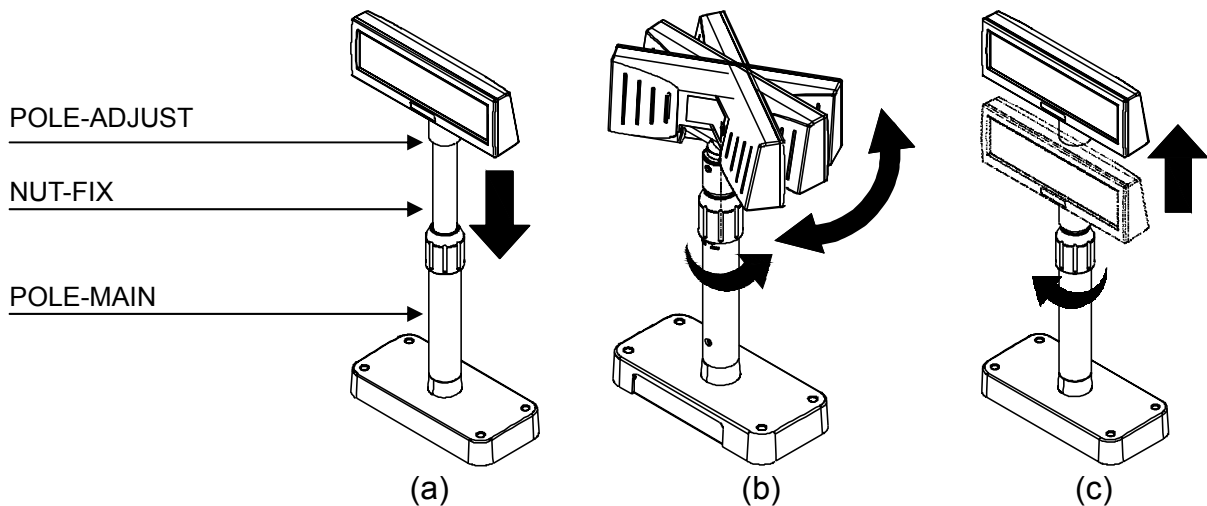


## 5. Function

### 5-1 Rotation

This product allows display rotation to any position or angle desired by the user. Please adhere to the following instructions during installation to prevent possible product damage and/or malfunction.

Following assembly, follow the sequence below to fix the DISPLAY in the desired position.



(a) Lower the DISPLAY UNIT in the direction of the arrow.  
Rotate the NUT-FIX to allow for lowering.  
(Please refer to the product OPEN/CLOSE label.)

(b) Rotate the DISPLAY UNIT to the desired angle.



Do not rotate the DISPLAY UNIT in any direction for more than one full revolution.  
(Beware as the DISPLAY UNIT can be rotated continuously.)

(c) After setting the DISPLAY to the desired position, secure the NUT-FIX. (When raising the DISPLAY UNIT, lateral movement is prevented.) Make sure to tighten the NUT-FIX after raising the DISPLAY UNIT to the desired height.



As excessive tightening of the NUT-FIX can result in product damage and/or malfunction, secure only to the extent that the DISPLAY UNIT is fixed and does not move.

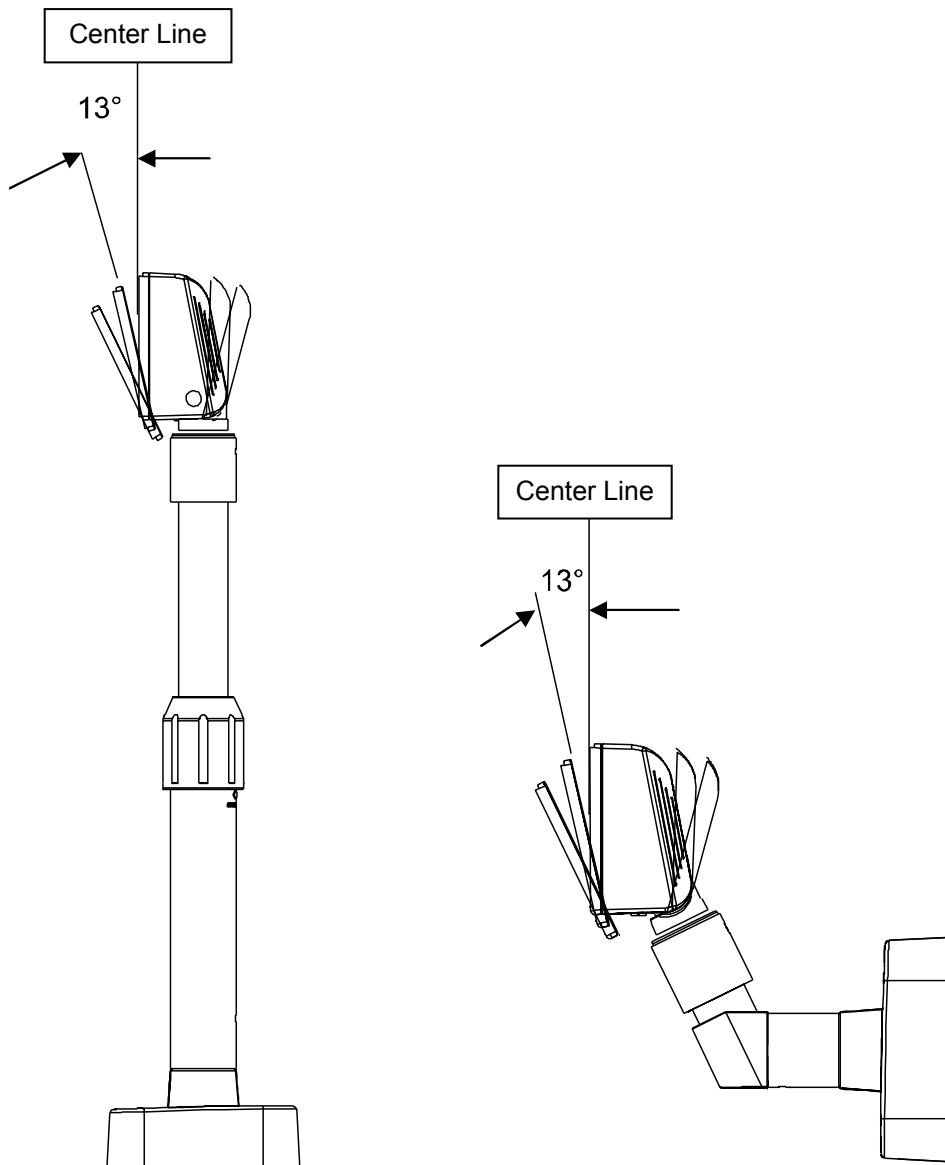


As shown in figure (A), make sure to fully lower the DISPLAY UNIT before rotating. Rotation of the DISPLAY UNIT when it is not fully lowered will produce a clicking sound. This sound does not indicate any product breakage and is a result of the friction between the POLE-MAIN RIB and the rotation section within the POLE-ADJUST. If the DISPLAY UNIT is fully lowered, this sound will not be produced.

**5-2 Angling**

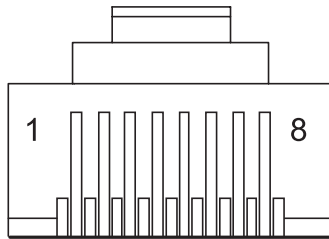
This product allows display tilting to any angle desired by the user. Please adhere to the following instructions during installation to prevent possible product damage and/or malfunction.

**TILT ANGLE :** The display can be angled left and right from the Center Line in 13° angle intervals for a total of 4 steps, 5 positions. (Angling: 52°max.)



## 6. Connection

### 6-1 Direct Type Pin Connection



#### 6-1-1 Interface Specification

Signal specifications	
Data transmission	Serial
Synchronization	Synchronous
Handshaking (*)	DTR/DSR control
Signal levels	MARK = -3 to -15 V logic = "1" OFF SPACE = +3 to +15 V    logic = "0" ON
Baud Rate (*)	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps (bps : bits per second)
Data word length (*)	7 bits, 8 bits
Parity (*)	None, odd, even
Stop bits	1 or more
(*) Selected by the DIP switches.	

## 6-1-2 Connector Signal Assignments

Pin NO	Signal Name	Signal Direction	Function
1	FG	-	Frame ground
2	TXD	Output	1) When the BDC-1000 is connected with the data pass through(*1) : Transmit data to the printer 2) When the BDC-1000 is connected in a stand-alone : Transmit data to the host
3	RXD	Input	Receive data from the printer
4	DSR	Input	This indicates whether the printer is ready to receive data. 1) When the BDC-1000 is connected with a data pass through(*1) : [MARK] : The printer is not ready to receive data [SPACE] : The printer is ready to receive data 2) When the BDC-1000 is connected in a stand-alone : [MARK] : The host is not ready to receive data [SPACE] : The host is ready to receive data
5	DTR	Output	This indicates whether the display is ready to receive data (*2). [SPACE] The display can receive data. [MARK] The display cannot receive data. [DTR MARK] DTR goes to MARK under the following conditions : ① The period from when the power is turned on to when the display first becomes ready to receive data. ② When the self-test is executed. ③ When the remaining space in the receive buffer becomes 40bytes or less (buffer-full state). ④ When [DSR MARK] is on, if the printer is selected by a peripheral device command. (When the BCD-1000 is connected with the data pass through.)(*1) [DTR SPACE] DTR goes to SPACE under the following conditions : ① When the display first becomes ready to receive data after power-on. ② When the self-test has ended. ③ When the remaining space in the receive buffer becomes 50bytes or more after it became 40bytes or less once.
6	SG	-	Signal GND
7	PS	-	Power supply terminal
8	PG	-	Flyback line for power supply

**※ NOTES**

(\*1) For the data pass through and the stand alone, refer to SVC Manual connection methods for detail.

(\*2) [DTR MARK] can be set by the US v command. This case differs from the above-mentioned.

[DTR MARK] Refer to the US v command in section 4, Command Description.



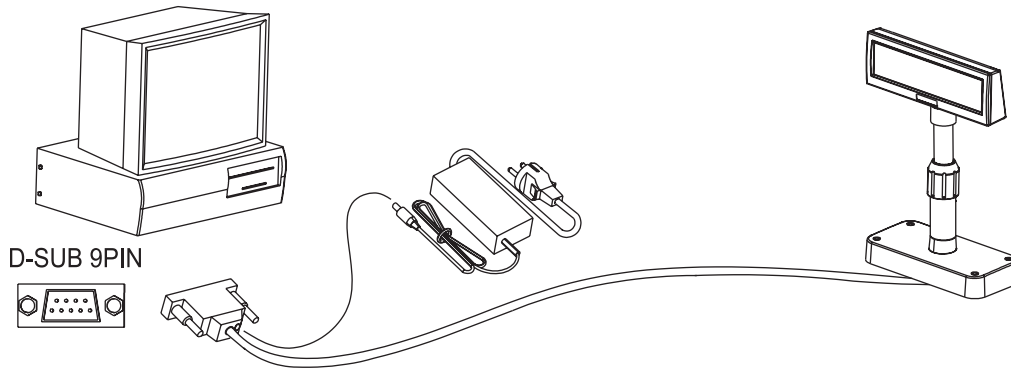
6-1-3 Installation Instructions

STEP1. Turn the computer system power off.

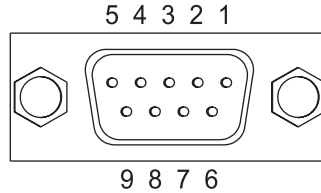
STEP2. Connect the Display Cable to the RS-232 Port of the Computer.

STEP3. Connect the DC Power source by the appropriate DC Power adapter.

STEP4. Turn on the computer and the power supply unit, the display will be on and ready for receiving data.

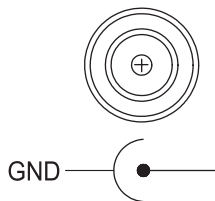


6-1-4 Signal Assignments (Cable-end DSUB)



	1	2	3	4	5	6	7	8	9
pin Name	NC	RXD	TXD	DTR	GND	DSR	RTS	CTS	NC
Short Connection				●		●	●	●	

6-1-5 DC Power Jack

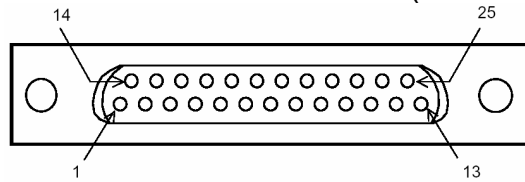


MAX 300 ~ 1350mA. +5VDC ~ +24VDC.

**6-2 Serial pin Connection**

6-2-1 Host interface connector

The option stand provides the host interface connector (D-SUB 25 pin Female type).



6-2-2 Host interface connector signal assignments

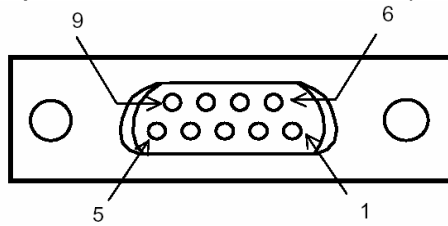
Pin NO	Signal Name	Signal Direction	Function
1	FG	-	Frame ground
2	TXD	Output	1) When the BDC-1000 is connected when a passthrough connection : Transmit data to the host from the printer 2) When the BDC-1000 is connected as a stand-alone : Transmit data to the host from the DM
3	RXD	Input	Receive data from the host (host → DM)
4(*1)	RTS	Output	Same as DTR
6(*2)	DSR	Input	Indicates whether the host is ready to receive data. [SPACE] The host is ready to receive data. [MARK] The host is not ready to receive data.
7	GND	-	Signal ground
20(*1)	DTR	Output	This indicates whether the display is ready to receive data. [SPACE] The display can receive data. [MARK] The display cannot receive data. [DTR MARK] DTR goes to MARK under the following conditions : ① The period from when the power is turned on to when the display first becomes ready to receive data. ② When the self-test is executed. ③ When the remaining space in the receive buffer becomes 40bytes or less (buffer-full state). ④ When [DSR MARK] is on, if the printer is selected by a peripheral device command. [DTR SPACE] DTR goes to SPACE under the following conditions : ① When the display first becomes ready to receive data after power-on. ② When the self-test has ended. ③ when the remaining space in the receive buffer becomes 50bytes or more after it became 40bytes or less once.

**※ NOTES**

(\*1) Make sure to use either one of the RTS or the DTR terminal. Otherwise, the built-in RS-232 driver IC may be broken.

**6-2-3 Printer interface connector**

The option stand provides the printer interface connector (D-SUB 9 pin Male type).

**6-2-4 Printer interface connector signal assignments**

Pin NO	Signal Name	Signal Direction	Function
2	RXD	Input	Receive data from the printer (printer → host)
3	TXD	Output	Transmit data to the printer (DM → Printer)
4	DTR	Output	Indicates whether the host is ready to receive data. [SPACE] The host is ready to receive data. [MARK] The host is not ready to receive data.
5	GND	-	Signal
6	DSR	Input	This indicates whether the display is ready to receive data from the printer. [SPACE] The printer can receive data. When the printer becomes ready to receive data the SPACE is output. [MARK] The printer cannot receive data. Even if the printer becomes ready to receive data, the MARK is not output.
9	RESET	Output	Reset signal to the printer (host → printer)

## 7. Switches

### 7-1 Display Switch

7-1-1 Feature : A Display Switch is located on the bottom of the display panel.

7-1-2 Function : Turns the power supply on/off.

### 7-2 DIP switches

7-2-1 Feature : Two DIP switches are located on the back of the display panel.

7-2-2 Functions : The DIP switch settings are read only when the power is turned on.  
Therefore, changing the settings while the power is on has no effect.

7-2-3 DIP S/W #1 Function (RS-232 Serial Input Setting)

No.	Function	Switch OFF	Switch ON
1	Default Setting	DIP Switch Values	EEP-ROM Data Leading
2	N.C (No Connection)	Reserved for Future Using	Reserved for Future Using
3	Display Viewing Side	Customer Side	Operator Side
4	Self-test Execution	Does not execute	Executes
5~8	Command Emulation	5 6 7 8	Command Emulation
		0 0 0 0	Samsung VFD
		0 0 0 1	Epson ESC/POS
		0 0 1 0	ADM787/788
		0 0 1 1	DSP800
		0 1 0 0	AEDEX
		0 1 0 1	UTC Standard
		0 1 1 0	UTC Enhance
		0 1 1 1	CD5220

7-2-4 DIP S/W #2 Function (Command Emulation Mode and Self Test Setting)

No.	Function	Switch OFF	Switch ON
1	Data Length	8 bits	7 bits
2	Parity using	Non parity	Parity
3	Parity Selection	Odd	Even
4~6	Baud-rate Selection	4 5 6	Baud-rate
		0 0 0	9,600 bps
		0 0 1	4,800 bps
		0 1 1	2,400 bps
		0 1 0	1,200 bps
		("0" : S/W OFF, "1" : S/W ON)	
7~8	N.C (No Connection)	Reserved for Future Using	Reserved for Future Using

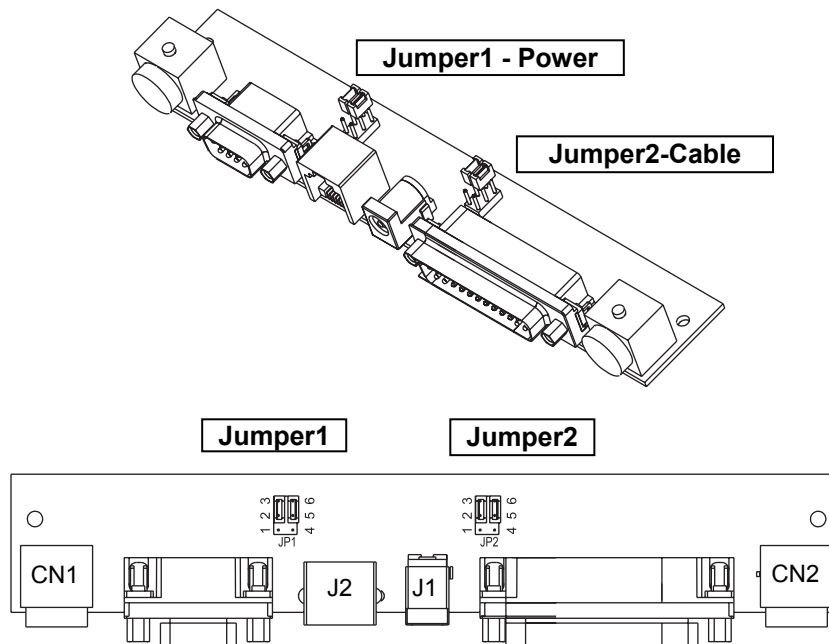
**7-3 Memory Switches**

The following settings other than the DIP switch can be changed by software. These settings become effective after the power is turned on or initialization is executed by a command.

No.	Function	Default	Content to be set	Range to be set
Msw 10	Character code table section	n=0	Page 0 is selected	0-5, 16-19, 254, 255
Msw 11	International character set selection	n=0	U.S.A is selected	0-13
Msw 12	Brightness adjustment	n=4	100%	1-4
Msw 13	Selection of the peripheral devices	n=2	Display is selected	1-3
Msw 14	Cursor display	Selected	Selected	0, 1, 48, 49

## 8. Power Control

### 8-1 Serial Board



#### 8-1-1 Jumper1

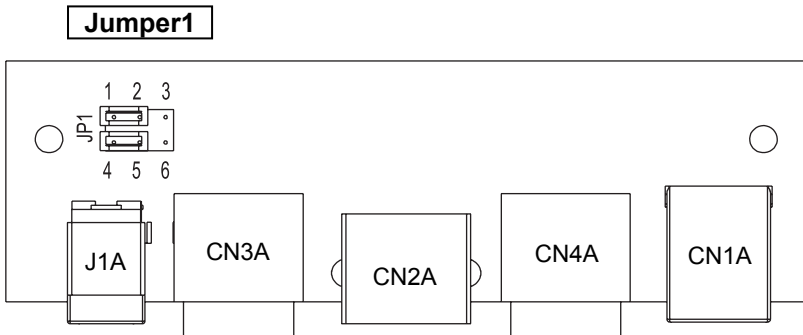
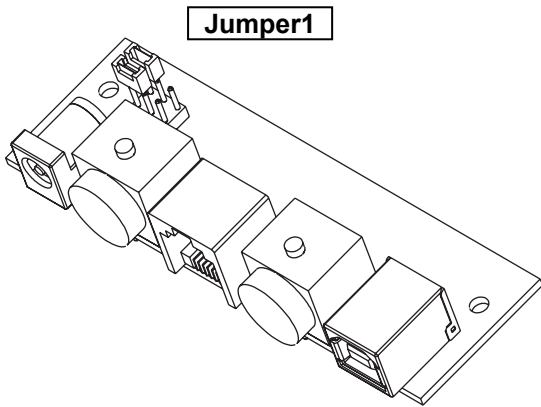
Connection type	JP1	Jack Type
Input Power (5~24VDC)	1-2	Location J1
Input Power (24VDC)	2-3	Location CN1
N/C	4-5	
Out power to print(24VDC) (Pass through Type)	5-6	Location CN2




#### 8-1-2 Jumper2

Some functions depend on the device's connection to the BCD-1000, such as whether a printer is connected or not with a data pass through connection, or stand alone connection.

Connection type	JP2	JP2	Function
Data pass though (default setting)	1-2	4-5	Can connect a printer which does not support the ESC = command.
Only SERIAL	2-3	5-6	No printer is connected.

**8-2 USB Board**



Connection type	JP1	Jack Type
Input Power (5~24VDC)	1-2	 Location J1A
Input Power (24VDC)	2-3	 Location CN3A
N/C	4-5	
Out power to print (24VDC) (Pass through Type)	5-6	 Location CN4A



As for USB board, power cannot be supplied to PC by USB jack.  
-> You must use SMPS for power supply.

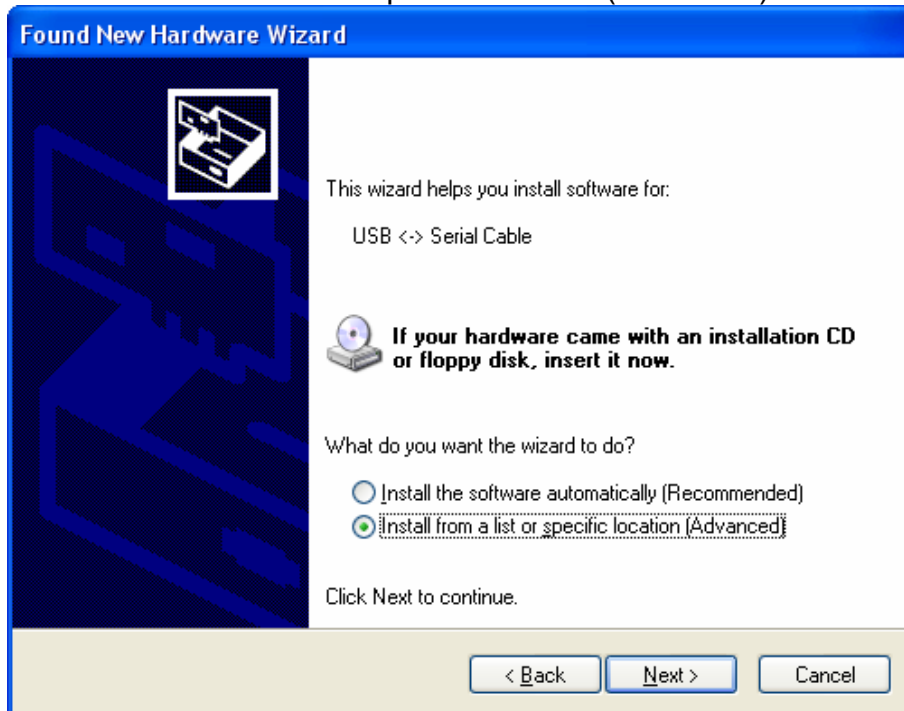
## **9. USB Installation**

### **9-1 Virtual COM driver installation (Only BCD-1000DU/WU)**

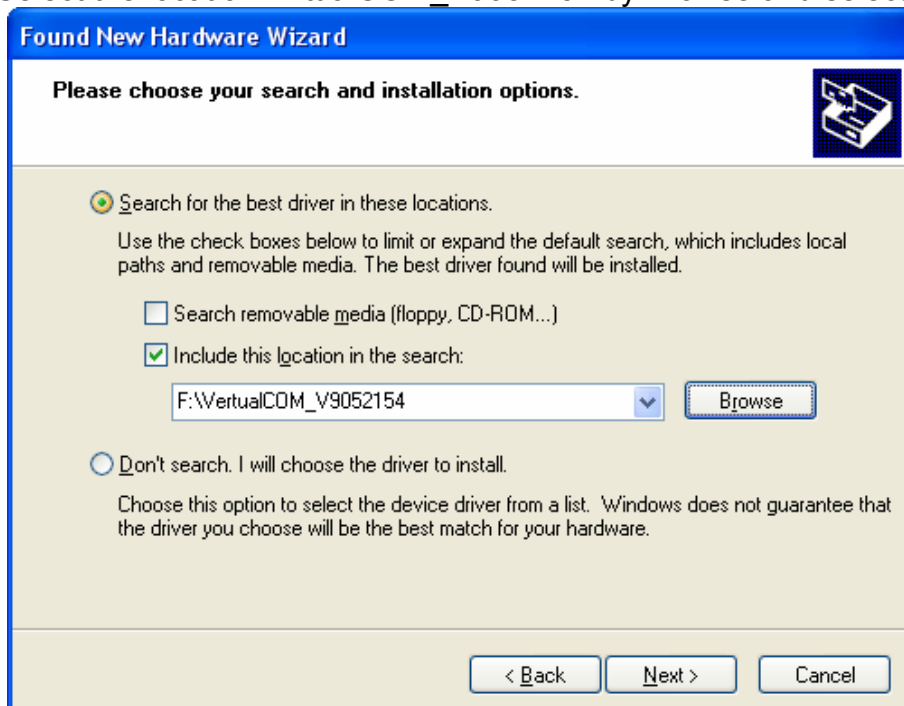
PC requires software installation when it detects new hardware connected to USB Port. First, connect BCD-1000DU/WU (USB) to PC USB Port and install software and set the conditions as below.

9-1-1 Connect BCD-1000DU/WU (USB) to PC USB Port. Message will pop up Found New Hardware.

9-1-2 Select Install from a list or specific location (Advanced).



9-1-3 Select the location VirtualCOM\_V9052154 by Browse and select Next.

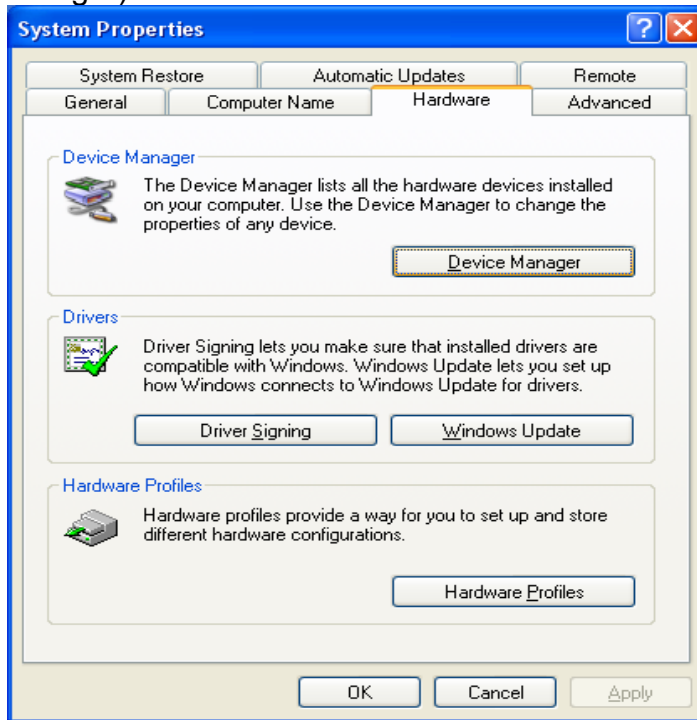




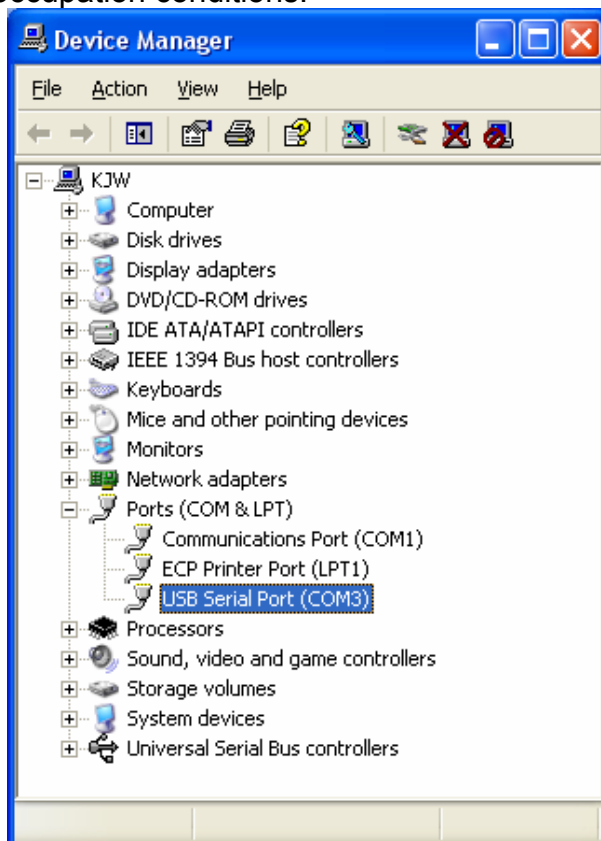
9-1-4 Message pops up again at right bottom of PC Found New Hardware (USB Serial Port) when it completes.

9-1-5 Repeat step 1 thru 3 again at Found New Hardware Wizard. It installs twice.

9-1-6 Open Device Manager (Start > Control Panel > System > Hardware > Device Manager)



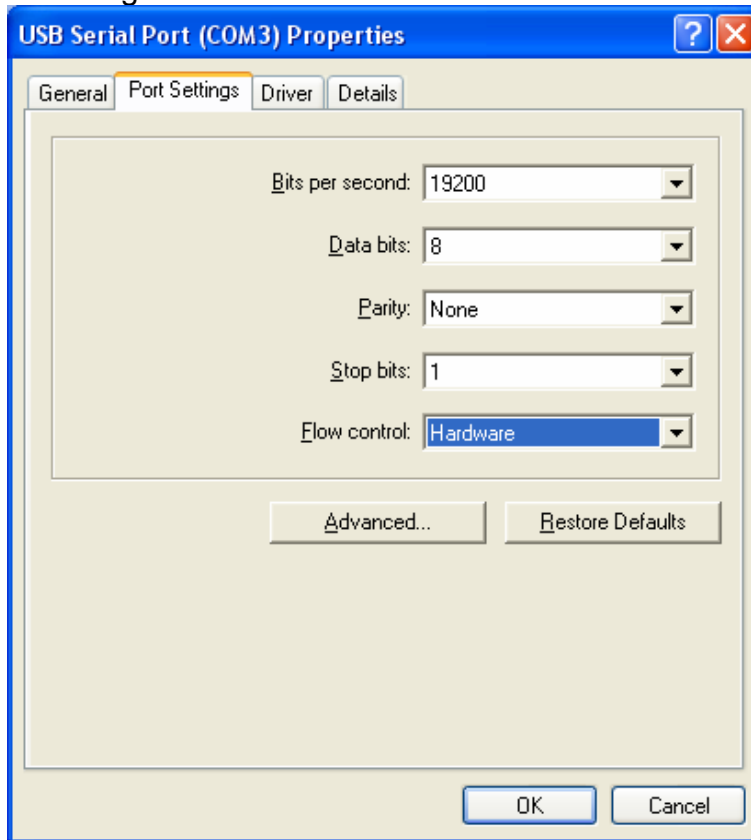
9-1-7 Select USB Serial Port(COM x) and click on the right button of mouse. Then select Properties. COM port is automatically numbered and it varies from PC port occupation conditions.



9-1-8 Set Serial communication conditions and select Advanced.

9-1-8-1 Preset Serial conditions are 19200 bps, 8 data bit, none parity, hardware flow control.

9-1-8-2 They must be the same with Master setting and application program Serial setting.



9-1-9 Check in the boxes of Serial Enumerator and Serial printer. Then select OK. Now Virtual COM driver has been installed Successfully.

(Windows 98 does not have the boxes of Serial enumerator and Serial printer)

