IPC Series

Flat Panel Display
IPC-DT/65 Series

User's Manual

CONTEC CO.,LTD.

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1. Introduction

This product is a dual-input (analog RGB and DVI-D), embedded, color TFT LCD display unit for use with host computers such as the CONTEC IPC series and SBCs (single board computers).

Features

- Full-bright, wide-angle-of-visibility type of liquid crystals capable of displaying up to 262,144 colors. (16,777,216 colors on the IPC-DT/H65XT-DC1)
- Standard analog RGB input for screen. RS-232C and USB interfaces for touch panel.
- Multiple touch panel configurations containing up to eight touch panels are supported when using the USB touch panel interface.
- Auto-scaling feature that resizes the input screen to the LCD dot configuration.
- On-screen display setup menu facilitating screen adjustment.
- Dual-input function supports analog RGB and DVI-D inputs. The display can be connected to two different computers at once. (Simultaneous display is not supported. Screens are switched using the OSD.)
- Analog touch panel enabling mouse emulation using driver software.
- Optional AC adapter (IPC-ACAP12-01) available for AC power supply.
- A special fitting is provided to prevent the AC adapter cable from being unplugged.

Customer Support

CONTEC provides the following support services for you to use CONTEC products more efficiently and comfortably.

Web Site

Japanese http://www.contec.co.jp/
English http://www.contec.com/
Chinese http://www.contec.com.cn/

Latest product information

CONTEC provides up-to-date information on products.
CONTEC also provides product manuals and various technical documents in the PDF.

Free download

You can download updated driver software and differential files as well as sample programs available in several languages.

Note! For product information

Contact your retailer if you have any technical question about a CONTEC product or need its price, delivery time, or estimate information.

Limited One-Year Warranty

CONTEC Products are warranted by CONTEC CO., LTD. to be free from defects in material and workmanship for up to one year from the date of purchase by the original purchaser.
Repair will be free of charge only when this device is returned freight prepaid with a copy of the original invoice and a Return Merchandise Authorization to the distributor or the CONTEC group office, from which it was purchased.
This warranty is not applicable for scratches or normal wear, but only for the electronic circuitry and original products. The warranty is not applicable if the device has been tampered with or damaged through abuse, mistreatment, neglect, or unreasonable use, or if the original invoice is not included, in which case repairs will be considered beyond the warranty policy.

How to Obtain Service

For replacement or repair, return the device freight prepaid, with a copy of the original invoice. Please obtain a Return Merchandise Authorization Number (RMA) from the CONTEC group office where you purchased before returning any product.
* No product will be accepted by CONTEC group without the RMA number.

Liability

The obligation of the warrantor is solely to repair or replace the product. In no event will the warrantor be liable for any incidental or consequential damages due to such defect or consequences that arise from Safety Precautions. Understand the following definitions and precautions to use the product safely.

Safety Precautions

Understand the following definitions and precautions to use the product safely.

Safety Information

This document provides safety information using the following symbols to prevent accidents resulting in injury or death and the destruction of equipment and resources. Understand the meanings of these labels to operate the equipment safely.

⚠ DANGER	DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.

Handling Precautions

⚠ CAUTION

- As this product contains precision electronic components, do not use or store in environments subject to shock or vibration.
- Do not use or store the product in a location such as extremely high or low temperature, rapid temperature changes, and the place which receives a strong ultraviolet ray.
  Example: - Exposure to direct sun
  - In the vicinity of a heat source
- Some products require configuration settings. Always check these requirements before use. Also, never set switches or jumpers to other than the specified settings as this may cause a fault.
- Do not use or store the equipment in a dusty or humid place.
- If you discover damaged or missing items, contact your retailer.
- Do not perform key operations with the touch panel to implement a process that might endanger life or result in serious damages. Design a system that can cope with incorrect key input operations.
- Do not use a sharp-edged object, such as a mechanical pencil, to operate the touch panel in order to prevent scratching or malfunctions.
- Protect the touch panel against shock to prevent damage.
- CONTEC is not liable for a product that has been modified by the user.
- For this equipment, use the dedicated power supply unit if possible. If you connect any other power supply unit, be sure to select the one that satisfies the voltage and current capacity standards.
- Never supply power to the power supply connector and the AC adapter jack at the same time as it can cause a fault.
- When the surface or frame of the touch panel has become dirty, wipe it with neutral detergent. Do not wipe the touch panel with thinner, alcohol, ammonia, or a strong chlorinated solvent.

- Do not plug or unplug the connector with the equipment powered on. as doing so may result in a malfunction or fault.
- This product is not intended for use in aerospace, space, nuclear power, medical equipment, or other applications that require a very high level of reliability. Do not use the product in such applications.
- If you utilize this product in such usages where high reliability and safety are required as on the trains, vessels, automotives or crime- or disaster-prevention devices, contact your retailer.

Use environment

This product operates under the following operating systems:

Windows XP/2000/NT 4.0/98SE/95OSR2, MS-DOS 6.2

* The touch panel USB interface is only supported on Windows XP/2000/98SE.

Life expectancy of components

(1) Backlight--- Display brightness decreases over time with use. The operating life of the backlight (brightness reduced to 50% of original) is 50,000 hours for all models. (Assuming continuous operation at 25 degrees centigrade.)

(2) Touch panel--- The operating lifetime of the touch panel is at least 1 million touches (as tested by mechanical touching under 300g of force at a rate of two presses per second).

* CONTEC accepts your request for replacing each consumable in the PANECON-PC as a request for repair (at an additional cost). Contact your local retailer or CONTEC sales office.

LCD Display Pixel Drop

LCD display may have some pixels being dropped (bright and black spots) below a certain threshold. Note that this is not a failure or a defect.

Burn-in on TFT Display

"Burn-in" may occur if the same display is retained for a long time. Avoid this by periodically switching the display so that the same display is not maintained for a long time.

* Burn-In: Phenomenon characterized by a TFT display as a result of long-time display of the same screen where a shadow-like trace persists because electric charge remains in the LCD element even after the patterns are changed.

Connecting to a host with an existing touch panel function such as a CONTEC panel computer.

This touch panel cannot be used with a touch panel mounted in the host computer. In this case, the touch panel function will be unavailable but screen display will still work normally.
However, on the following CONTEC panel computers, multiple touch panels can be used together when connected via the USB interface.

- IPC-PT/630 Series: IPC-PT/H630X(PCI)C, IPC-PT/H630X(PCI)CP , IPC-PT/L630S(PCI)C, IPC-PT/L630S(PCI)CP
- IPC-PT/620 Series: IPC-PT/H620X(PCW)C, IPC-PT/H620X(PCW)CP , IPC-PT/L620S(PCW)C, IPC-PT/L620S(PCW)CP
- IPC-PT/600 Series: IPC-PT/H600X(PCW)C, IPC-PT/H600X(PCW)P , IPC-PT/L600S(PCW)C, IPC-PT/L600S(PCW)P

2. Specifications

Function Specifications

Table 2.1. Function Specifications

Item			Specification			
			IPC-DT/S65VT-DC1	IPC-DT/M65VT-DC1	IPC-DT/L65SVT-DC1	IPC-DT/H65XT-DC1
Screen						
	Assembly type		Integration			
	Screen size		6.5 inches	10.4 inches	12.1 inches	15.0 inches
	Number of pixels		640 x 480 dots	640 x 480 dots	800 x 600 dots	1024 x 768 dots
	Display type		TFT Color LCD			
	Number of colors		262,144 colors	262,144 colors	262,144 colors	16,777,216 colors
	Screen adjustment		Automatic adjustment (display positioning and scaling) and manual adjustment using the front switches			
	Brightness control		Can be turned on or off by an OSD switch or via software control from the host computer.			
	Backlight control		Adjustment using the front switch or software control from the host computer			
	Display interface		Analog RGB input HD-SUB 15 pin (Female) connector DVI-D input 24 pin DVI (Female) connector			
	Incoming signal specification	Analog RGB input	Separate RGB, analog, positive polarity 0.7Vp-p/75Ω Separate V/H, TTL, positive/negative polarity Horizontal: 31 to 80kHz, vertical: 56 to 75Hz			
		DVI-D input	Digital RGB (complies with TMDS) *1			
	Cable length which recommends		5mm or less *2			
Touch panel						
	Resolution		4096 x 4096			
	Detection method		Resistive-layer analog method			
	Touch life expectancy		One million repeated touches (silicon rubber load of 3 N)			
	Touch panel interface		Connect to the host computer using either USB*3 or RS-232C. USB: USB1.1-compliant, TypeB Connector RS-232C: 9pin D-SUB (Male) Connector			
	Touch panel driver (option)		For Windows: IPC-SLIB-01 For MS-DOS: IPC-TPB1-DRV			
Power supply input part						
	Power supply connector		4-pin nylon connector for 12 VDC power supply			
	AC adapter jack		AC adapter jack for 12 VDC power supply (An optional AC adapter (IPC-ACAP12-01) can be used for 100 - 240VAC input.)			
	Input power supply voltage		+12VDC±5%			
	Consumption current		1.3A(Max.)	1.4A(Max.)	1.6A(Max.)	2.5A(Max.)
	Consumption current (power save mode)		0.4A(Max.)			

*1 If the output is from a CONTEC IPC series or SBC series model, an ISA bus type panel link I/F board (ADPLNK(PC)H) is required for some models. Please confirm before purchasing.

*2 Using a cable longer than 5 m may reduce the image quality. The cable should be as short as possible as degradation. in image quality may result even when the cable is 5 m or shorter depending on the type of host computer or cable.

*3 The touch panel USB interface is only supported on Windows XP/2000/98SE.

General Specifications

Table 2.2. General Specifications

Item			Specification
Environment			
	Operating temperature		0 - 50ºC (0 - 40ºC when using an IPC-ACAP12-01 (AC switching adapter))
	Storage temperature		-10 - 60ºC
	Operating humidity		10 - 90% (20 - 80% when using an IPC-ACAP12-01 (AC switching adapter)) (No condensation allowed)
	Floating dust		Normal
	Corrosive gas		None
	Noise resistance	Line noise	AC line: 2 kV, Signal line: 1 kV (IEC1000-4-4Level3, EN61000-4-4Level3) (HOST: IPC-BX/M600(PCW) Power supply: IPC-POA200/12-01)
		Electrostatic withstanding voltages	Contact: 4 kV(IEC1000-4-2Level2, EN61000-4-2Level2) Airborne: 8 kV(IEC1000-4-2Level3, EN61000-4-2Level3) (HOST: IPC-BX/M600(PCW) Power supply: IPC-POA200/12-01)
	Vibration resistance	Sweep durability	10 - 57 Hz/Single-side amplitude or 0.15 mm 57 - 150 Hz/2.0 G in the X/Y/Z directions for 23 minutes each (Conforming to JIS C0040 and IEC68-2-6)
	Shock resistance		10 G in the X/Y/Z directions for 11 ms; Half-sine wave (Conforming to JIS C0041 and IEC68-2-27)

Table 2.3. Structure specification

Item		Specification			
		IPC-DT/S65VT-DC1	IPC-DT/M65VT-DC1	IPC-DT/L65SVT-DC1	IPC-DT/H65XT-DC1
Structure					
	Major dimension (mm) (*Includes attachment fittings)	192(W) x 37.5(D) x 166(H)	292(W) x 43(D) x 234(H)	318(W) x 43(D) x 252(H)	380(W) x 44(D) x 298(H)
	Panel cut dimensions (mm)	138(W) x 105(H) (Requires four surrounding M3 stud holes or round ϕ4 holes)	216(W) x 164(H) (Requires six surrounding M3 stud holes or round ϕ4 holes)	252(W) x 190(H) (Requires eight surrounding M3 stud holes or round ϕ4 holes)	309(W) x 233(H) (Requires eight surrounding M3 stud holes or round ϕ4 holes)
	Weight (*Includes attachment fittings)	1.0kg	2.2kg	2.6kg	3.6kg
	Ingress protection	Front part conforming to IP65 (Use the packing supplied.)			

Optical Display Specifications

Table 2.4. Optical Display Specifications

Item	Condition			Specifications (25ºC Typ. Value)			
				IPC-DT/S65VT-DC1	IPC-DT/M65VT-DC1	IPC-DT/L65SVT-DC1	IPC-DT/H65XT-DC1
Visual angle (vertical)	CR≥10	ϕ=180°	Display in monochrome	45deg	50deg	50deg	45deg
		ϕ=0°		35deg	70deg	70deg	55deg
Visual angle (horizontal)		ϕ=+90°		50deg	70deg	70deg	60deg
		ϕ=90°		50deg	70deg	70deg	60deg
Surface brightness (at center)	Display in white			300cd/m^2	400cd/m^2	350cd/m^2	260cd/m^2

*1 Surface brightness is a numerical value in a display simple substance.
The brightness that let the touch panel pass serves as about 75% of the above-mentioned numerical value.

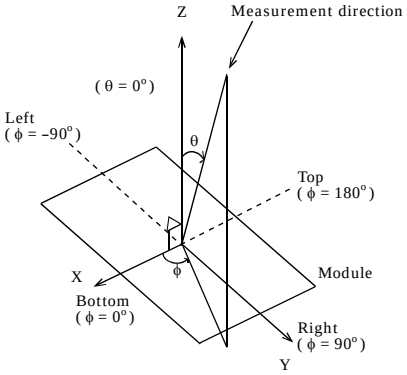


Figure 2.1. Viewing Range Definition

⚠ CAUTION

The above optical specification data shows optical characteristics of the liquid crystal in the display; the data does not represent the actual view on the display or its viewing angles.

3. Outside Dimensions and Part Names

Outside Dimensions

IPC-DT/S65VT-DC1

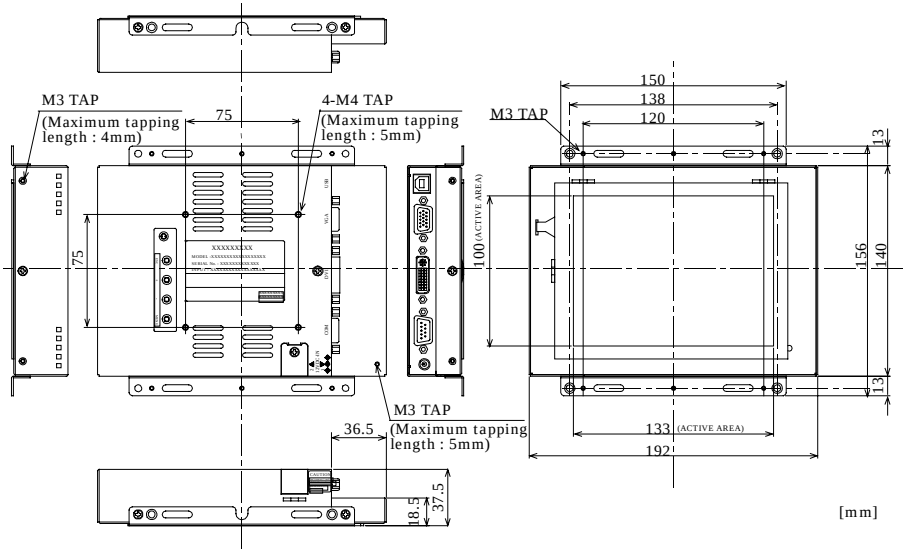


Figure 3.1. Outside Dimensions of Main Unit (IPC-DT/S65VT-DC1)

IPC-DT/M65VT-DC1

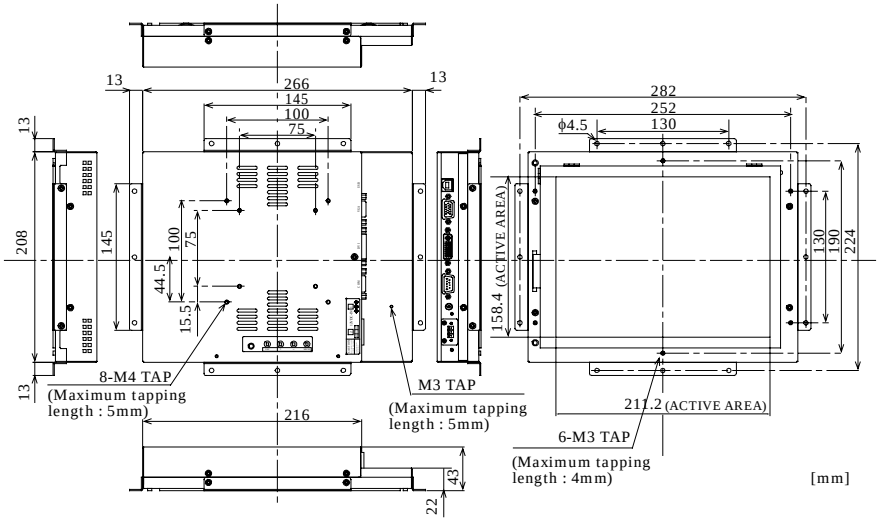


Figure 3.2. Outside Dimensions of Main Unit (IPC-DT/M65VT-DC1)

IPC-DT/L65SVT-DC1

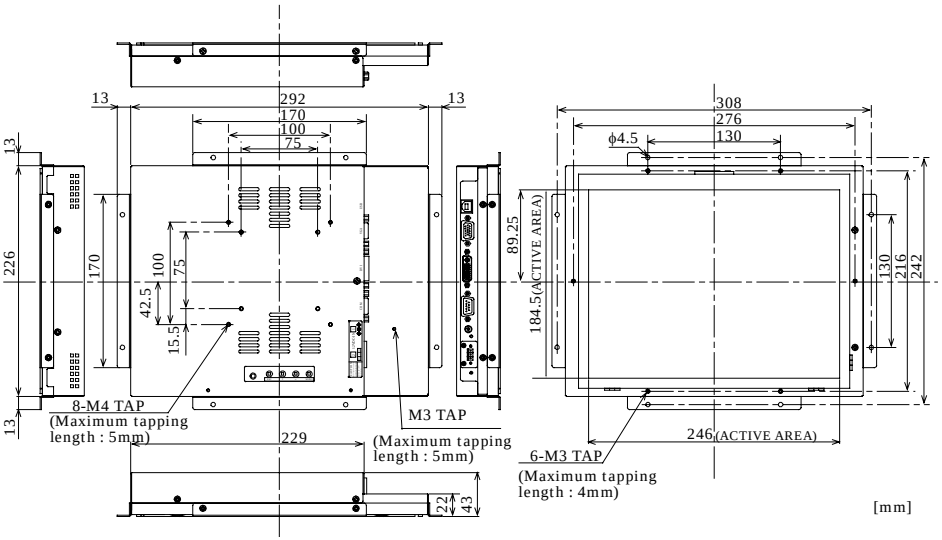


Figure 3.3. Outside Dimensions of Main Unit (IPC-DT/L65SVT-DC1)

IPC-DT/H65XT-DC1

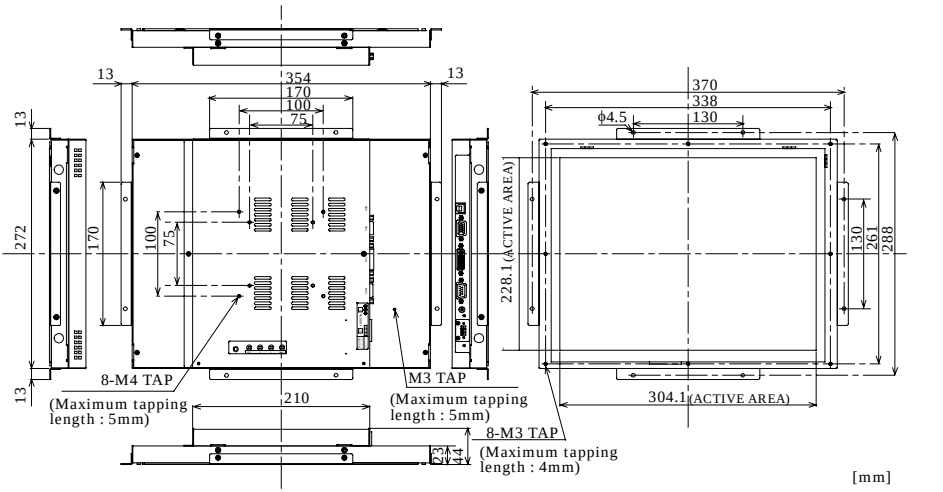


Figure 3.4. Outside Dimensions of Main Unit (IPC-DT/H65XT-DC1)

Part Names

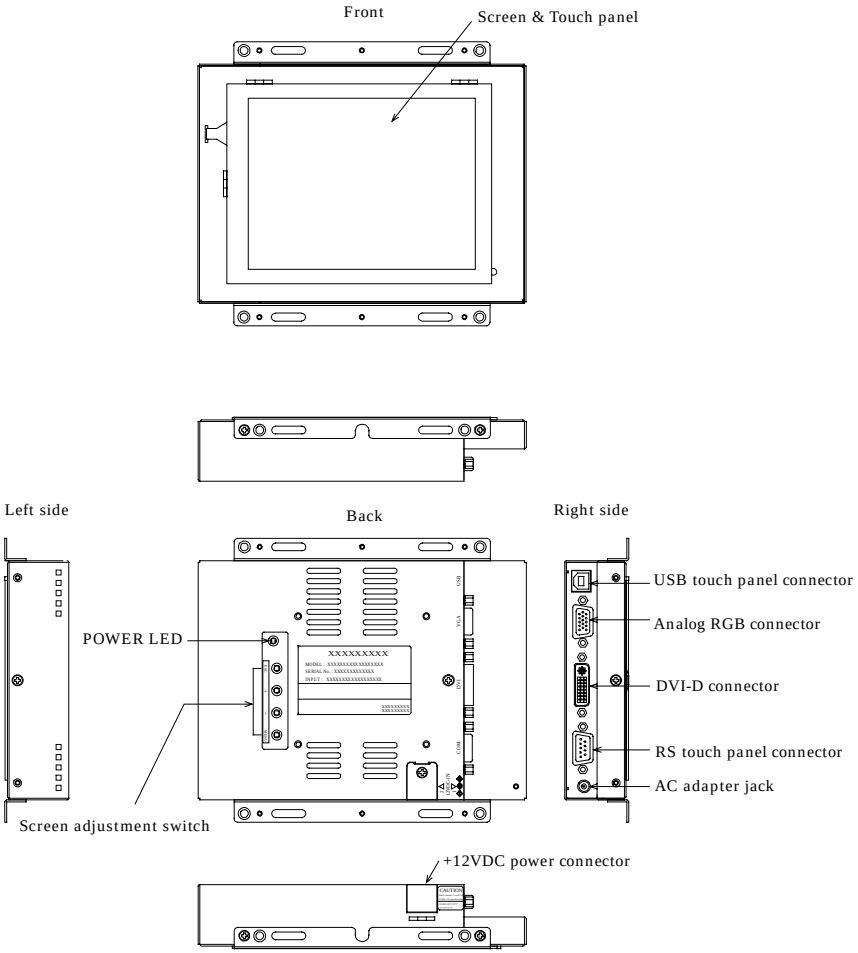


Figure 3.5. Part Names (IPC-DT/S65VT-DC1)

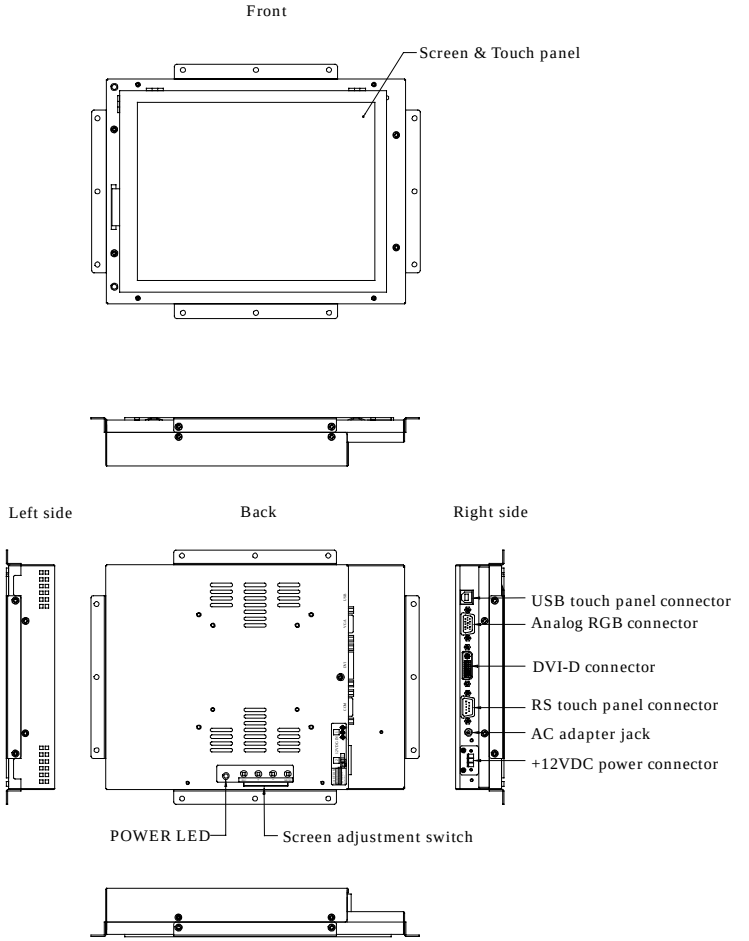
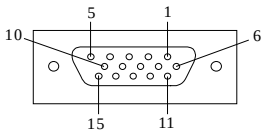


Figure 3.6. Part Names (IPC-DT/M65VT-DC1, IPC-DT/L65SVT-DC1, IPC-DT/H65XT-DC1)

Analog RGB Connector

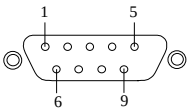
Table 3.1. Analog RGB Connector

Connector type	15-pin HD-SUB (FEMALE)		
			
Pin No.	Signal name	Pin No.	Signal name
1	RED	9	N.C.
2	GREEN	10	GND
3	BLUE	11	N.C.
4	N.C.	12	DDC DATA
5	GND	13	HSYNC
6	R-GND	14	VSYNC
7	G-GND	15	DDC CLK
8	B-GND		

RS Touch Panel Connector

This connector is RS-232C compliant to be used for touch panel data communication with the host computer.

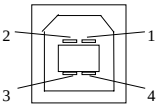
Table 3.2. RS Touch Panel Connector

Connector type	9-pin D-SUB (MALE)		
			
Pin No.	Signal name	Pin No.	Signal name
1	10K pull down	6	10K pull down
2	TxD	7	N.C.
3	RxD	8	10K pull down
4	N.C.	9	10K pull down
5	GND		

USB Touch Panel Connector

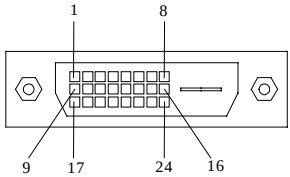
The USB connector for communication between the host computer and touch panel.

Table 3.3. USB Touch Panel Connector

Connector type	USB Type B (Receptacle)		
			
Pin No.	Signal name	Pin No.	Signal name
1	+5V	3	DATA+
2	DATA-	4	GND

DVI-D Connector

Table 3.4. DVI-D Connector

Connector	DVI-D 24pin		
			
Pin No.	Signal name	Pin No.	Signal name
1	TMDS DATA2-	13	N.C.
2	TMDS DATA2+	14	+5V
3	TMDS DATA2 SHIELD	15	GND
4	N.C.	16	HPD
5	N.C.	17	TMDS DATA0-
6	DDC CLK	18	TMDS DATA0+
7	DDC DATA	19	TMDS DATA0 SHIELD
8	N.C.	20	TXD
9	TMDS DATA1-	21	RXD
10	TMDS DATA1+	22	TMDS DATA0 SHIELD
11	TMDS DATA1 SHIELD	23	TMDS CLK+
12	N.C.	24	TMDS CLK-

4. Hardware Setup

Installation Requirements

To maintain the ambient temperature within the installation environment requirement range, provide a gap of 30mm or more between the main unit and any adjacent equipment.

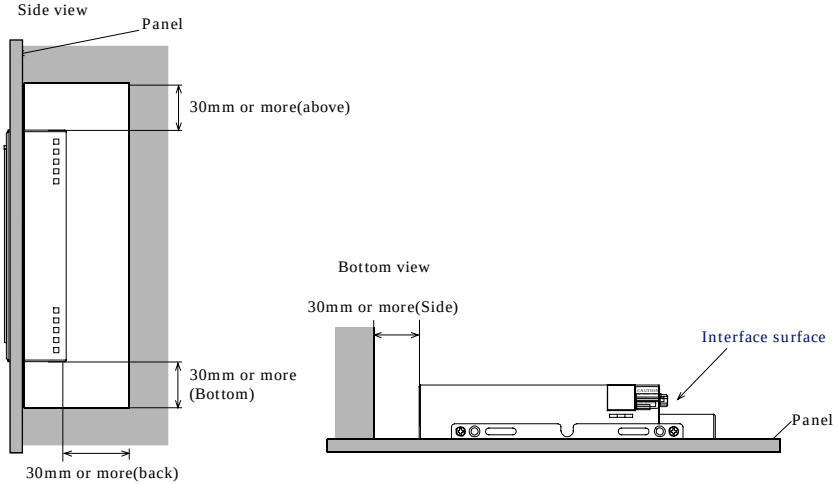


Figure 4.1. Distances Between Computer and Surroundings

Panel Cut

Cut the display mount panel in the following dimensions. The four corners of the solid-line rectangle define the panel cut dimensions.
IPC-DT/S65VT-DC1 requires four surrounding M3 stud holes or round ϕ4 holes.

IPC-DT/S65VT-DC1

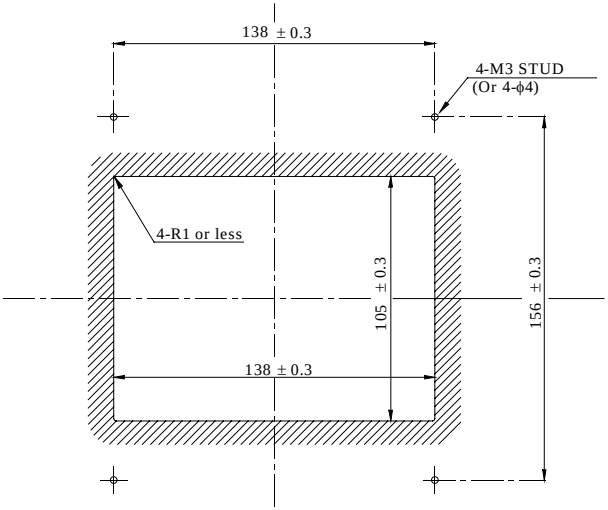


Figure 4.2. IPC-DT/S65VT-DC1 Panel Cut Dimensions

IPC-DT/M65VT-DC1

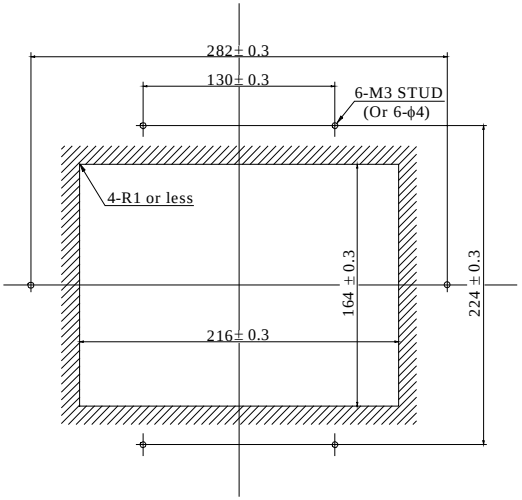


Figure 4.3. IPC-DT/M65VT-DC1 Panel Cut Dimensions

IPC-DT/L65SVT-DC1

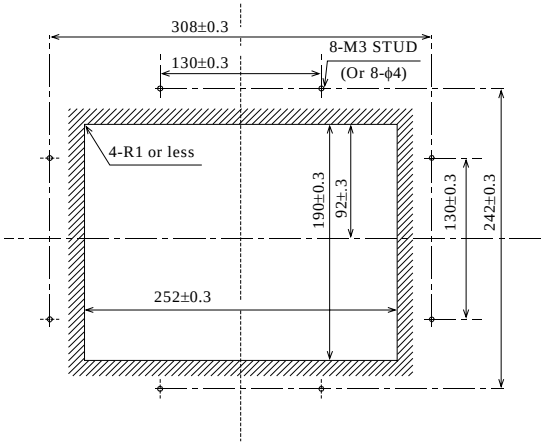


Figure 4.4. IPC-DT/L65SVT-DC1 Panel Cut Dimensions

IPC-DT/H65XT-DC1

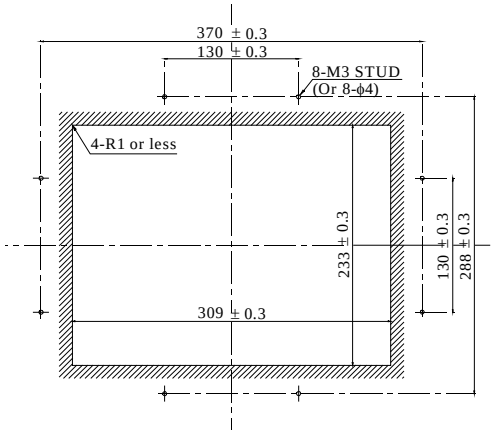


Figure 4.5. IPC-DT/H65XT-DC1 Panel Cut Dimensions

Attaching the Fitting Used to Attach to the Main Unit

When installing on a STUD installation panel

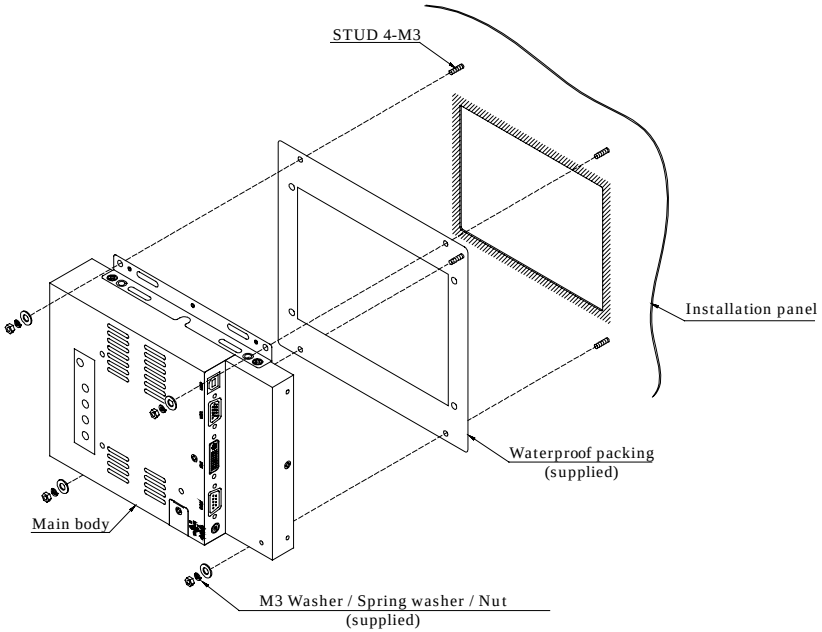


Figure 4.6. Example attachment (for the IPC-DT/S65VT-DC1) < 1/2 >

When using installation panel with screw holes

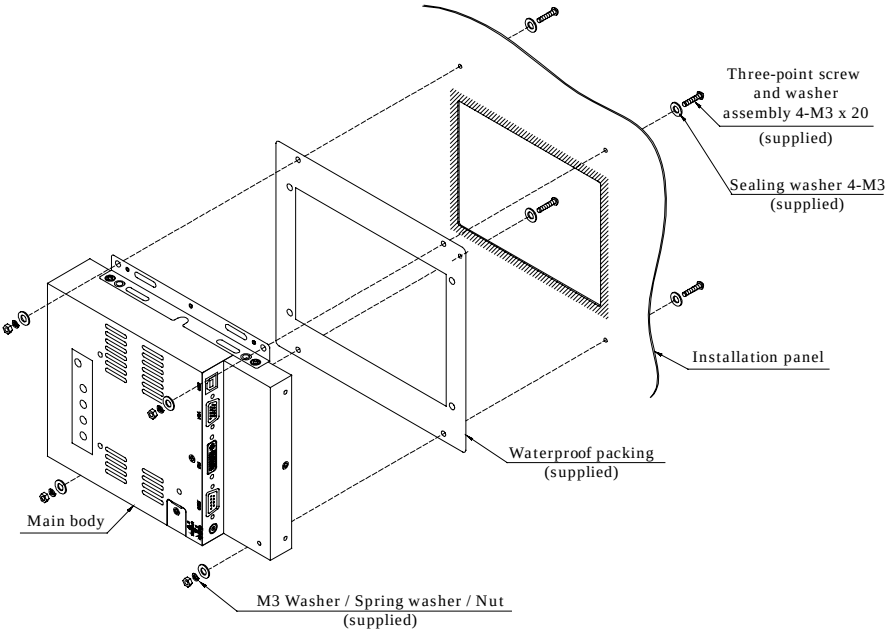


Figure 4.6. Example attachment (for the IPC-DT/S65VT-DC1) < 2/2 >

Other Panel Attachment Examples

As the IPC-DT/65 series are suitable for a wide range of embedded applications, the units can be attached using methods other than the attachment brackets.

Note that the front part no longer complies with IP65 waterproofing if attached using the following method.

To make the front part compliant with the IP65 waterproofing standards, attach the units using the hole positions shown in the panel cut described above.

If using any method other than those described above to attach the unit, please investigate carefully and attach the unit at your own risk.

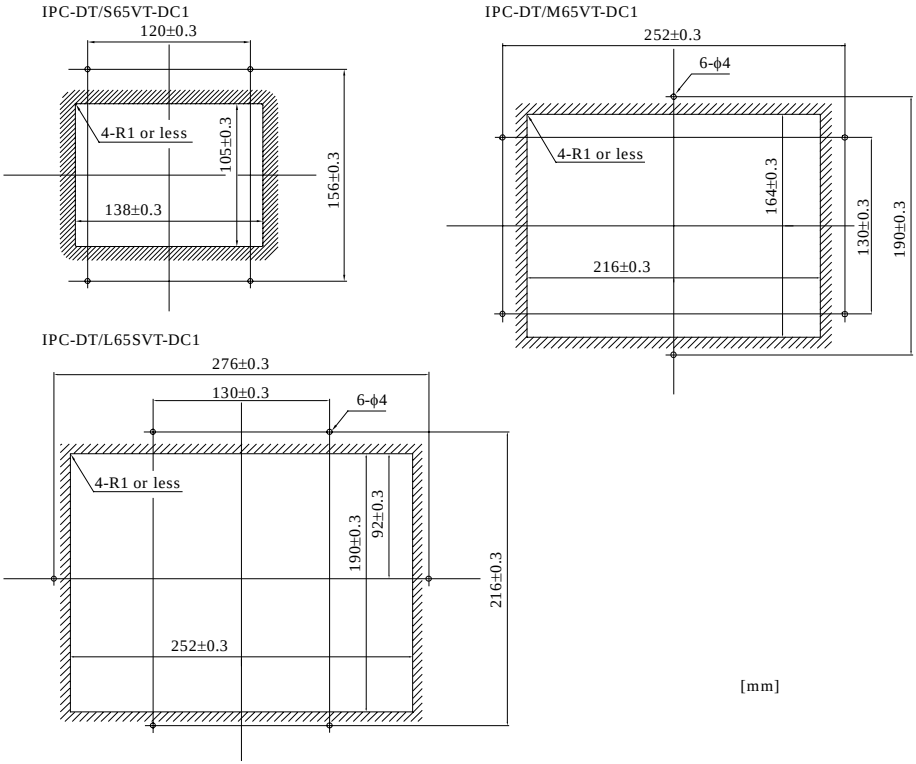


Figure 4.7. Panel Opening Dimensions < 1/2 >

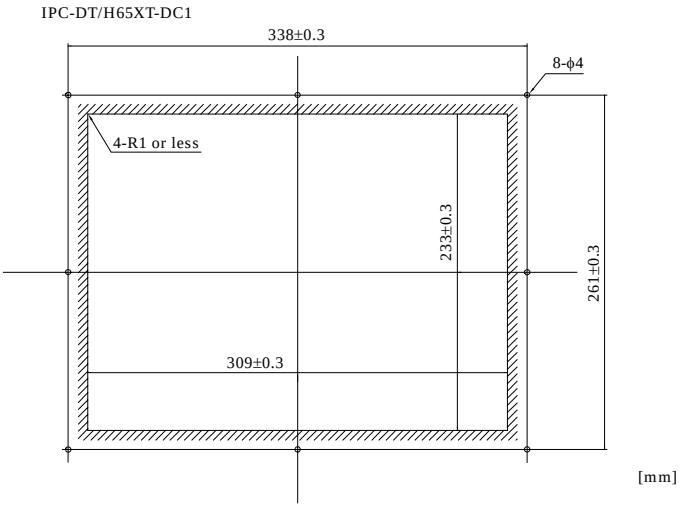


Figure 4.7. Panel Opening Dimensions < 2/2 >

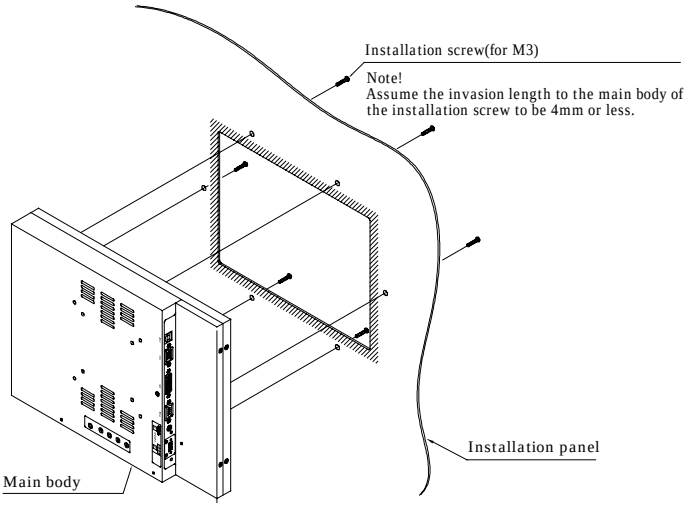


Figure 4.8. Example attachment (for the IPC-DT/L65VT-DC1)

5. Connection to the Host Computer

Purchase individual connection cables as they are not bundled with this equipment.

Analog RGB Connection

Connect the analog RGB input on this unit to the analog RGB connectors on the host computer.

Table 5.1. Recommendation Display Cable

Model	Maker	Cable length
KC-V2	SANWA SUPPLY INC.	2m
KC-V5	SANWA SUPPLY INC.	5m

If you use any other cable, select a shielded cable the wire carrying the RGB and H/Vsync signals and the grounded wire in a twisted pair. Note that a non-twisted-pair cable may degrade image quality, in particular, which is longer than 2 m.

Any loss of image quality due to use of a cable other than the recommended cable or its equivalent is not covered by warranty.

DVI-D Connection

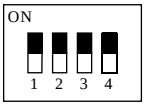
Connect the DVI-D input on this unit to the DVI-D connector on the host computer or the PanelLink connector. You can use a CONTEC IPC series or SBC (single board computer) as the host computer. In this case, settings are required on each host computer.

Set the LCD type as follows depending on the host computer to be used.

When connecting to a SPI-6940-LLVA

To use this SBC board with the display, set the on-board switch (SW1) as shown below.

Table 5.2. SW1 Switch Settings

IPC-DT/S65VT-DC1	IPC-DT/M65VT-DC1	IPC-DT/L65SVT-DC1	IPC-DT/H65XT-DC1
			

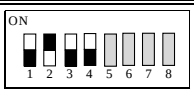
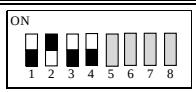
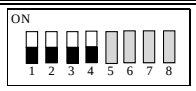
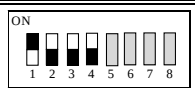
⚠ CAUTION

Use this board along with the LCD signal conversion board [ADP-6940].

When connecting to a PC-686BX(PC)-LV

To use this SBC board with the display, set the on-board switch (U2) as shown below.

Table 5.3. U2 Switch Settings

IPC-DT/S65VT-DC1	IPC-DT/M65VT-DC1	IPC-DT/L65SVT-DC1	IPC-DT/H65XT-DC1
			

⚠ CAUTION

When using this board, also use an ISA bus type panel link I/F board (ADPLNK(PC)H).

When connecting to a PC-686E(PC)H-LV

To use this SBC board with the display, set the on-board rotary switch as shown below.

Table 5.4. Rotary Switch Setting Number

IPC-DT/S65VT-DC1	IPC-DT/M65VT-DC1	IPC-DT/L65SVT-DC1	IPC-DT/H65XT-DC1
2	2	0	1

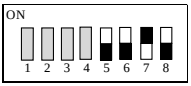
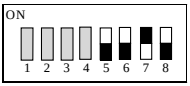
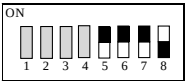
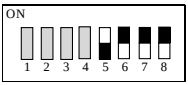
⚠ CAUTION

When using this board, also use an ISA bus type panel link I/F board (ADPLNK(PC)H).

When connecting to a IPC-BX/M600(PCW)

If using this box computer, set the "Embedded" - "CRT/FPD" BIOS setting to "AUTO Select" or "SW Select". If you select "SW Select", set the switch (S1) on the box computer board as shown below.

Table 5.5. S1 Switch Settings

IPC-DT/S65VT-DC1	IPC-DT/M65VT-DC1	IPC-DT/L65SVT-DC1	IPC-DT/H65XT-DC1
			

When connecting to a IPC-BX/M630(PCI)

No specific host settings are required if using this box computer. However, if using the Windows XP operating system, only connect the analog RGB cable during installation. Change to the DVI connection after installation completes.

When connecting to a IPC-BX/M360(PCI)C Series

When using this box computer, set the size of the connecting display by selecting “Advanced Chipset Features Setup” – “Panel Type” in the BIOS setting section.

Example) For IPC-DT/L6xSVT-xx : “800 x 600”

⚠ CAUTION

If connecting this display to a product with the “AUTO Select” function such as IPC-BX/M600(PCW) and IPC-BX/M360(PCI)C, or to a product with the “plug and play” function such as the IPC-BX/M630(PCI) series, first connect cables, then turn on the display, always before turning on the host computer. If the host computer is started before the display, it may not be able to read the information on the display, and as a result, no screen image may come up.

In this case (e.g. when the display is turned on afterward, when a cable is connected afterward), specify the display size in the BIOS settings on the host computer.

Touch Panel Data Communications

These connections are used to send touch panel data to the host computer via the USB or RS-232C serial port. Connect to the USB port or serial port (COM port) on the host computer.

Table 5.6. Example of a USB connection cable (USB Type A(Host) ⇔ Type B(Display)cable)

Model	Maker	Cable length
KU20-2H	SANWA SUPPLY INC.	2m
KU20-5H	SANWA SUPPLY INC.	5m

Table 5.7. Option Cable (RS-232C Straight Cable)

Model	Maker	Cable length
IPC-CBL3-2	CONTEC	2m
IPC-CBL3-5	CONTEC	5m

⚠ CAUTION

- The RS-232C cable is not required if using the DVI-D input with a CONTEC host computer because the DVI-D interface includes the RS-232C signal lines. Note that connecting the RS-232C cable causes the touch panel to stop working.
- Touch panel driver software is required to use the touch panel. Purchase optional driver software [IPC-SLIB-01 for windows or IPC-TPB1-DRV for MS-DOS] or download one from the CONTEC's web site.
- The USB touch panel driver software requires V1.40 or later of IPC-SLIB-01.
- The USB connection can only be used on Windows XP, 2000, or 98SE. Connect via the RS-232C interface if using a different OS.
- Use either USB or RS-232C for connecting the touch panel. The touch panel cannot be connected via both interfaces at the same time.
- When using the USB connection, the screen image may disappear momentarily when the USB cable is connected or disconnected and when the computer power is turned ON or OFF.
- When using the USB connection via a hub, the unit may not operate correctly in some cases depending on the other USB devices connected to the hub. Please check the operation before using in practice.

6. Power Supply Connection

This equipment requires power supply at +12 VDC to operate. For power supply, it has the power connector and the AC adapter jack.

⚠ CAUTION

- Connect a power supply to either of the power connector and AC adapter jack. Never supply power to both of them at the same time as it can cause a fault.
- If you connect a power supply other than the option, be sure to take safety measures for the power supply, such as overvoltage protection. Use meticulous care not to mistake the connection polarity or voltage of the power supply as it may break the equipment, the power supply, or both.

Power Supply Connector

You connect a power supply other than the option, be sure to use the one that satisfies the following requirements:

- Power supply voltage: +12VDC 5%
- Power supply capacity: 2.5A or more

The table below lists the pin specifications of the power connector on the back of the equipment.

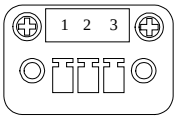
Table 6.1. Power Supply Connector (IPC-DT/S65VT-DC1)

Connector type	+12 VDC input connector
Model	B4PS-VH(manufactured by JST)
	
Pin No.	Signal name
1	GND
2	GND
3	+12V
4	+12V

Applicable power cable connector
Housing: VHR-4N (manufactured by JST)
Contact: SVH-21T-1.1(AWG22-18)
(manufactured by JST)

* Please obtain your own connector for the cable.

Table 6.2. Power Supply Connector (IPC-DT/M65VT-DC1, IPC-DT/L65SVT-DC1, IPC-DT/H65XT-DC1)

Connector type	+12VDC input connector
Model	DFK-MC1,5/3-GF-3,81 (PHOENIX CONTACT)
	
Pin No.	Signal name
1	FG(Frame Gnd)
2	GND
3	+12V

* Use the supplied MC1,5/3-STF-3,81 for the cable connector.

AC Adapter Jack

The AC adapter jack is used to connect the AC adapter [IPC-ACAP12-01] available as an option. Do not connect any AC adapter other than the option.

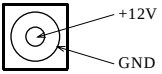


Figure 6.1. AC Adapter Jack

AC adapter code removal prevention fitting

(1) Insert the plug of AC Adapter.

(2) Tighten the screws on the attachment fitting.

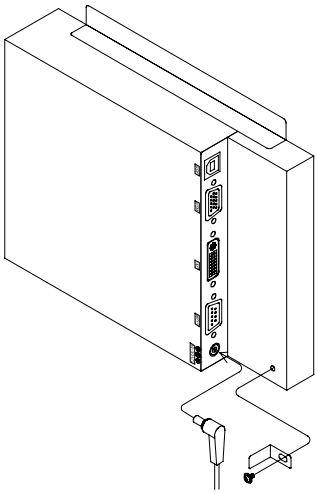


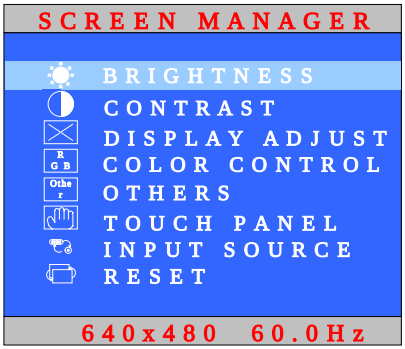
Figure 6.2. Code Removal Prevention Fitting

7. Screen Adjustment and a Setup

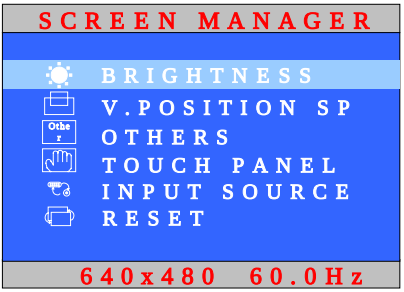
The equipment has screen adjustment switches [MENU], [+], and [-]. Use these switches to adjust the screen. (For the locations of the switches, see “Part Names” in Chapter 3.) When using the equipment for the first time or after changing the output screen mode of the host computer, execute AUTO ADJUST first on the menu screen. Use these switches also to adjust the screen brightness and contrast and to make settings for the touch panel.

Menu Screen

Pressing the [MENU] switch displays the main menu screen. Use the [+] and [-] switches to select individual items, adjust them, then press the [MENU] to save the settings.



Analog RGB input



DVI-D input

Figure 7.1. Main Menu Screen

BRIGHTNESS: Select this item to adjust the brightness of the backlight. Press [+] or [-] to optimize the item. The brightness can also be adjusted by pressing the [+] and [-] keys without the MENU screen displayed, as the direct brightness control keys.

CONTRAST: Select this item to adjust the contrast of the screen. Press [+] or [-] to optimize the item.

DISPLAY ADJUST: Adjusts the display position. Selecting this item displays a sub-menu. Use [+] and [-] to move between items and [MENU] to select.

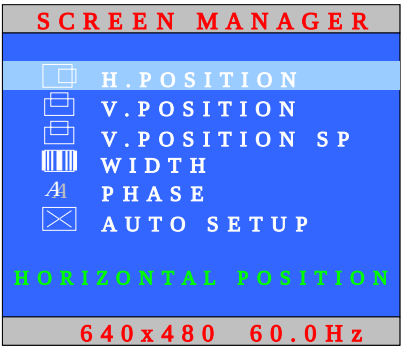


Figure 7.2. DISPLAY ADJUST Sub-Menu Screen

H.POSITION: Select this item to adjust the horizontal position of the screen. Press [+] or [-] while checking the screen to optimize the item.

V.POSITION: Select this item to adjust the vertical position of the screen. Press [+] or [-] while checking the screen to optimize the item.

V.POSITION SP: Adjusts the position vertically. Use this item if the screen is offset or flickers after using "AUTO SETUP" despite adjusting with "V.POSITION". Press [+] or [-] while checking the screen to optimize the position.

WIDTH: Select this item to adjust the horizontal display size of the screen. Press [+] or [-] to optimize the item.

PHASE: Adjust this item when the screen is partlyb lurred or flickering. Press [+] or [-] while checking the screen to optimize the item.

AUTO SETUP: Select AUTO ADJUST when using the equipment for the first time or when the screen cannot be displayed normally due to a change made to the display mode. Select this item and press [MENU] to accept your selection, and the equipment starts performing automatic adjustment.

⚠ CAUTION

AUTO ADJUST may fail to adjust the screen correctly depending on the host computer or the display screen (mostly black screen such as in the DOS text mode). In such a case, adjust POSITION and WIDTH to manually optimize the screen.

COLOR CONTROL: Adjusts the color temperature. Selecting this item displays a sub-menu. Use [+] and [-] to move between items and [MENU] to select. You can select USER COLOR MODE to adjust RED, GREEN, and BLUE manually.

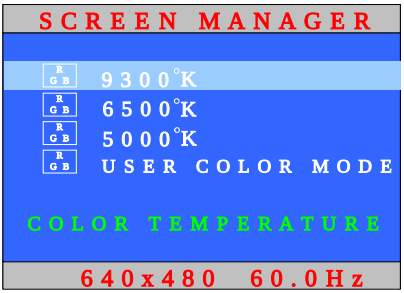


Figure 7.3. COLOR CONTROL Sub-Menu Screen

OTHERS: The display position and time etc. of the OSD screen can be adjusted. Selecting this item displays a sub-menu. Use [+] and [-] to move between items and [MENU] to select.

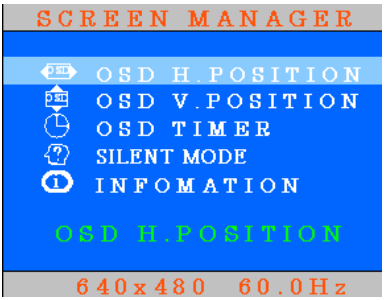


Figure 7.4. OTHERS Sub-Menu Screen

OSD H.POSITION: Adjusts the horizontal position of the OSD. Press the [+] or [-] while viewing the screen to adjust the position.

OSD V.POSITION: Adjusts the vertical position of the OSD. Press the [+] or [-] while viewing the screen to adjust the position.

OSD TIMER: Adjusts the display time for the OSD. Use [+] and [-] to adjust the time.

SILENT MODE: SILENT MODE controls display message “No Input Signal" and “Power Saving" of DISPLAY when it is effective.

INFORMATION: Information on the input signal and version information on OSD are displayed.

TOUCHPANEL: Select this item to adjust the status of the touch panel. Select this item to invoke the submenu, select a desired item using [+] or [-], then press [MENU] to accept the setting made.

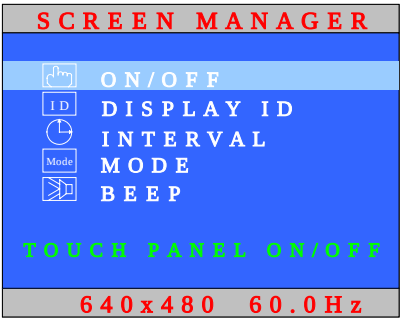


Figure 7.5. TOUCH PANEL sub menu

ON/OFF: Select this item to turn ON (enable) or OFF (disable) the touch panel operation. (The equipment is started always with this item set to OFF.) Usually, this item does not have to be set as the touch panel is turned ON (enabled) automatically upon startup of the touch panel driver. Note, however, that the touch panel does not work when the equipment is connected to the host with the touch panel driver already up and running or when the power to the equipment is recycled. In suchcases, set this item to ON (enabled).

DISPLAY ID: Set the ID to use for USB multi-touch panel operation. See Chapter 9 for details of USB multi-touch panel operation. (Factory setting: 6)

INTERVAL: Select this item to adjust the scan timing of the touch panel. Press [+] or [-] to increase or decrease the response of the touch panel. (Factory setting: 5)

MODE: Select the touch panel mode (WINDOWS or DOS) depending on the host OS. For use in the MS-DOS environment (using the MS-DOS touch panel driver), be sure to set this item to “DOS”. (Factory setting: WINDOWS)

BEEP: Select this item to turn on or off the click tone of the touch panel. (Factory setting: OFF)

When using the touch panel driver for Windows, the settings specified in the touch panel driver are used instead.

INPUT SOURCE: Selects the input signal. Selecting this item displays a sub-menu. Use [+] and [-] to move between items and [MENU] to select.

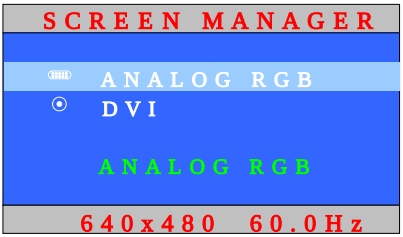


Figure 7.6. INPUT SOURCE Sub-Menu Screen

ANALOG RGB: Displays the input from the ANALOG RGB connector.

DVI: Displays the input from the DVI connector.

RESET: Restores all settings to their factory defaults. Use this option to initialize the settings if the screen display is lost or does not work correctly. You can also reset the settings by holding down the [MENU] direct key when tuning on the power.

Direct Key

CONTRAST	:	Pressing the [+] key when the menu is not displayed opens the contrast adjustment screen.
BRIGHTNESS	:	The brightness of the backlight can be adjusted by pressing the [+] and [-] keys without the menu screen displayed.
RESET	:	All the settings can be reset to the factory defaults by turning on the equipment while holding down the [MENU] key.
Power save mode	:	You can place the equipment in the power save mode by depressing both of the [+] and [-] keys at the same time without the menu screen displayed. This can force the screen display and backlight to be turned off. Release the buttons when "POWER SAVE MODE…" appears on the screen. You can recover the screen from the power save mode by pressing any of the front switches. The power consumption of the equipment in the power save mode is about 1/5 of that during normal operation. Turning off the backlight when not required the backlight to extend its life.

* Recycling the power to the equipment in the power save mode recovers it to the normal display state.

* The POWER LED on the front face remains blinking in green in the power save mode.

Memory of a Setting Value

The equipment retains its settings even when the power is turned off. Note, however, that the following settings are reset to their defaults without being retained.

- The power save mode setting made by the direct key is reset to the normal state when the power is turned on.
- The TOUCH PANEL ON/OFF setting is set to OFF when the power is turned on.

8. LED Indicators

The POWER LED on the front face indicates each state of the display as follows:

Table 8.1. LED Indicators

LED status	Description
OFF	The power supply off or the equipment not started normally
Green(ON)	Normal operation
Green (Flashing)	Power save mode
Orange (ON)	Unsupported signal input *1
Orange (Flashing)	No signal input *2

*1 The LED looks like this when the equipment cannot process the input signal to provide normal display, for example, when the horizontal/vertical sync signal frequency is exceeding the supported frequency. See Chapter 9 "Display mode" for the display modes supported by this equipment.

*2 The LED looks like this also when the horizontal or vertical sync signal is turned off by the power management function of the host computer. The equipment enters the power save mode automatically when no signal has been input for about two seconds.

9. Touch Panel

This equipment has a touch panel that enables keyboard-less, mouse-less operations by communication with the host computer using the RS-232C cable.

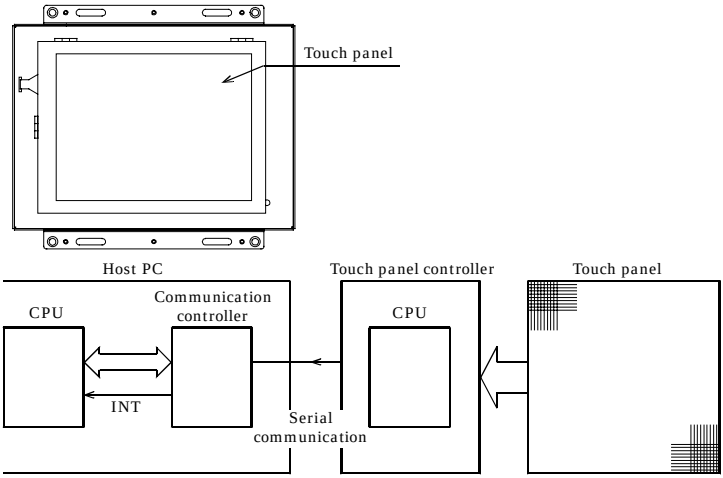


Figure 9.1. Touch Panel and Block Diagram

Data input at the touch panel is processed by the touch panel controller and passed to the host PC via the serial port on the CPU in the controller.

Before the touch panel can be used, touch panel driver software must be installed. Note that the driver software is not bundled with this product. Purchase the one separately or download it from the CONTEC's web site.

For further details, refer to the READ_ME file for each driver.

<Option touch panel driver>

Windows XP/2000/NT 4.0/98SE/95OSR2 : IPC-SLIB-01

MS-DOS 6.2 : IPC-TPB1-DRV

⚠ CAUTION

- The USB touch panel driver software requires V1.40 or later of IPC-SLIB-01.
- The USB connection can only be used on Windows XP, 2000, or 98SE. Connect via the RS-232C interface if using a different OS.
- Use either USB or RS-232C for connecting the touch panel. The touch panel cannot be connected via both interfaces at the same time.
- When using the USB connection, the screen image may disappear momentarily when the USB cable is connected or disconnected and when the computer power is turned ON or OFF.

USB Multi-Touch Panel

This function can be used in the case when the RGB signal from the host computer is split for connecting to multiple displays via a splitter. The function permits touch panel operation to be used at all the displays. A maximum of eight touch panel displays can be connected.

Note that all touch panels must be connected via USB and, to allow the touch panel driver software on the host computer to identify each device, a different USB ID must be set on the DIP switch located on the side of each display unit

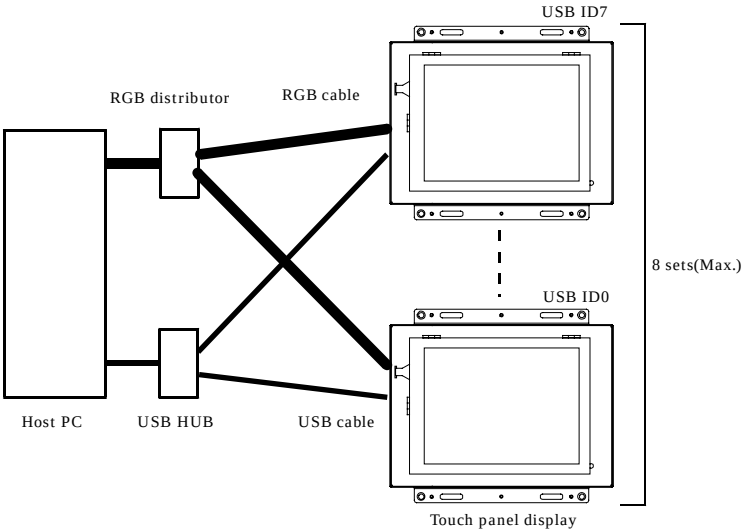


Figure 9.2. Example of connection of a USB multi-touch panel

You can use a CONTEC IPC-PT/600 series panel computer as the host PC. In this case, the ID of the touch panel in the panel computer is fixed at ID7. Set the IDs of the external displays in the range USB ID0 to USB ID6 (a maximum of seven external displays can be connected).

⚠ CAUTION

You cannot use multiple touch panels via the RS-232C interface.

10. Display Mode

This equipment supports the following display modes:

Table 10.1. Analog RGB Input - Display Modes

Video mode	Number of pixels (dot)	Dot clock (MHz)	Horizontal frequency (kHz)	Vertical frequency (Hz)	Display			
					IPC-DT/S65VT-DC1	IPC-DT/M65VT-DC1	IPC-DT/L65SVT-DC1	IPC-DT/H65XT-DC1
VGA	640 x 350	25.18	31.47	70	O	O	O	O
VGA	720 x 400	28.32	31.47	70	O	O	Δ	O
VGA	640 x 480	25.18	31.47	60	◎	◎	O	O
VESA	640 x 480	31.50	37.86	72	O	O	O	O
VESA	640 x 480	31.50	37.50	75	O	O	O	O
VESA	800 x 600	36.00	35.16	56	O	O	O	O
VESA	800 x 600	40.00	37.88	60	O	O	◎	O
VESA	800 x 600	50.00	48.08	72	O	O	O	O
VESA	800 x 600	49.50	46.88	75	O	O	O	O
VESA	1024 x 768	65.00	48.36	60	O	O	O	◎
VESA	1024 x 768	75.00	56.48	70	O	O	O	O
VESA	1024 x 768	78.75	60.02	75	O	O	O	O
VESA	1280 x 1024	108.00	63.98	60	O	O	O	O
VESA	1280 x 1024	135.00	79.98	75	O	O	O	O

Δ: Display available but quality is reduced

O: Display available

◎: Recommended resolution (mode)

Table 10.2. DVI-D Input - Display Modes

Video mode	Number of pixels (dot)	Dot clock (MHz)	Horizontal frequency (kHz)	Vertical frequency (Hz)	Display			
					IPC-DT/S65VT-DC1	IPC-DT/M65VT-DC1	IPC-DT/L65SVT-DC1	IPC-DT/H65XT-DC1
VGA	640 x 480	25.18	31.47	60	◎	◎	O	O
VESA	800 x 600	40.00	37.88	60	x	x	◎	O
VESA	1024 x 768	65.00	48.36	60	x	x	x	◎

x: Display unavailable

O: Display available

◎: Display available Recommended resolution (mode)

⚠ CAUTION

- The number of display pixels in the LCD is 640 x 480 dots on the IPC-DT/S65VT-DC1, IPC-DT/M65VT-DC1 and 800 x 600 dots on the IPC-DT/L65SVT-DC1 and 1024 x 768 dots on the IPC-DT/H65XT-DC1. The display is automatically enlarged if the input resolution is less than the LCD size and reduced if larger than the LCD size. Note that, as a result of enlarging or reducing the display size, the displayed image will not be as clear as when the resolution matches the LCD display size.
- The screen will not display correctly if the resolution and frequency do not match one of the supported display modes.

11. Options

Screen protective sheets

- IPC-CV6 : 6.4-inch screen protective sheets (10 sheets)
- IPC-CV : 10-inch screen protective sheets (10 sheets)
- IPC-CV12 : 12.1-inch screen protective sheets (10 sheets)
- IPC-CV15 : 15-inch screen protective sheets (10 sheets)

Cable

- IPC-DVI/D-020 : DVI-D cable (2m)
- IPC-DVI/D-050 : DVI-D cable (5m)
- IPC-PLDVI-020 : Panel link - DVI-D conversion cable (2m)
- IPC-PLDVI-050 : Panel link - DVI-D conversion cable (5m)
- IPC-CBL3-2 : Tpuch panel, COM cable (2m)
- IPC-CBL3-5 : Touch panel, COM cable (5m)

Driver

- IPC-SLIB-01 : Driver & Utility Soft Set (CD-ROM version)

Others

- IPC-ACAP12-01 : +12 VDC output AC adapter
  Input: Voltage = 90 - 264V AC, Current =1.3A (Typ.)
  (for input voltage = 100V AC)
  Output: Voltage = 12V DC, Current = 3.5A

Recommendation Cable (Maker: SANWA SUPPLY INC.)

- KC-V2 : RGB display cable (2m)
- KC-V5 : RGB display cable (5m)
- KU20-2H : USB cable for touch panel (2m)
- KU20-5H : USB cable for touch panel (5m)

IPC-DT/65 Series

User's Manual

IPC-DT/65-HME

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