

IPC Series

FLAT PANEL DISPLAY

Aluminium-Face Type

(DC12V,6.5"-TFT,LVDS)

FPD-S71VT-DC1

(DC12V,12.1"-TFT,LVDS)

FPD-L71ST-DC1

(DC12V,15.0"-TFT,LVDS)

FPD-H71XT-DC1

User's Manual

CONTEC CO.,LTD.

Check Your Package

Thank you for purchasing the CONTEC product.

The product consists of the items listed below.

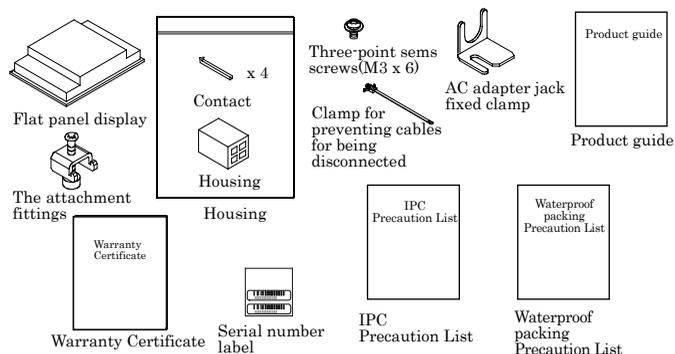
Check, with the following list, that your package is complete. If you discover damaged or missing items, contact your retailer.

Product Configuration List

Name	FPD-S71VT-DC1	FPD-L71ST-DC1	FPD-H71XT-DC1
	Pcs.	Pcs.	Pcs.
Flat panel display	1	1	1
Three-point sems screws (M3 x 6)	1	1	1
Power supply connector complete set (Contact...4, housing...1)	1 set	1 set	1 set
Clamp for preventing cables from being disconnected	2	1	3
The attachment fittings	4	6	8
AC adapter jack fixed clamp	1	1	1
Serial number label	1	1	1
IPC Precaution List	1	1	1
Waterproof packing Precaution List	1	1	1
Product guide	1	1	1

(Note) The manual of this product is being offered as PDF file on the CONTEC's Web site.

Each cable for this product is not bundled. Purchase it separately.



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1. Introduction

About the Products

These products are two inputs (LVDS or DVI-D sign) compatible, panel-mounted, TFT LCD display unit for use with host computers such as the CONTEC IPC series and SBCs (single board computers).

Touch panel is available via RS-232C (Built-in video cable) or USB connection.

Because its panel attachment is compatible with the predecessor IPC-DT60(panel mount type61) series, they are transposable.

Features

- LVDS and DVI-D inputs supported panel mount TFT LCD display

LVDS and DVI-D inputs, that are less affected by the interference of noise, are supported for host computer connection. Because of the digital signal input, up to 5 m of cable length is available. The video signal and touch panel signal can be connected with one cable depending on the host PC to be connected.

Full-bright, wide-angle-of-visibility type of liquid crystals capable of displaying up to 16,777,216 colors on the 15 inches and 262,144 colors on the 12.1/6.5 inches by adopting the lightweight aluminum-made front.

- Touch panel enables keyboard-less operation.

These products have analog touch panel enabling mouse emulation using driver software.

Touch panel is available via USB connection or optional display cable (built-in video signal and touch panel signal).

- The panel attachment size compatible with IPC-DT60(panel mount type61) series

Because its panel attachment is compatible with the predecessor IPC-DT60(panel mount type61) series, they are transposable.

- Front side in IP65-rated dustproof/drip-proof structure

Front side in IP65-rated dustproof/drip-proof structure

- AC adapter, stand and connection cable is available as option.

An optional AC adapter (IPC-ACAP12-02), stand (IPC-SND-03) and connection cable is available to run the display from the AC power supply, to use as a desktop display and for connection to the host computer.

- * For more details on host computer or option of this product, contact your retailer.

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.
- 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, automobiles or crime- or disaster-prevention devices, contact your retailer.
- 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
- Do not use or store the equipment in a dusty or humid place.
- 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.
- 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.
- 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.
- A characteristic of analog touch panels is that the detected position may vary due to changes in the ambient environment (temperature and humidity) and changes in resistance values over time. In such cases, the touch panel should be recalibrated and the calibration data updated.
- Regular maintenance is necessary for the backlight on the touch panel and the display for the longevity parts.
- If you discover damaged or missing items, contact your retailer.

Use environment

This product operates under the following operating systems:

Windows XP/2000/NT 4.0/98SE/95OSR2

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

Life expectancy of consumable 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 these products 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.

2. Specifications

Function Specifications

Table 2.1. Function Specifications

Item	Specification		
	FPD-S71VT-DC1	FPD-L71ST-DC1	FPD-H71XT-DC1
Screen			
Assembly type	Panel mounted, desktop *1		
Screen size	6.5 inches	12.1 inches	15.0 inches
Number of pixels	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	16,777,216 colors *4
Brightness control	Adjustment using the front switch or software control from the host computer		
Backlight control	Can be turned on or off by a front switch or via software control from the host computer.		
Display interface	LVDS input (26 pin half pitch connector) DVI-D input (24 pin DVI (Female) connector)		
Input signal specification	LVDS input	26 pin half pitch connector *2	
	DVI-D input	Digital RGB (complies with TMDS) *2	
Cable length which recommends	5m or less		
Touch panel			
Resolution	4096 x 4096		
Detection method	Resistive-layer analog method		
Touch life expectancy	One million repeated touches (as tested by mechanical touching under 300g of force at a rate of two presses per second)		
Touch panel interface	Connect to the host computer using either USB *3 or RS-232C. RS-232C : built-in LVDS/DVI Connector USB: USB1.1-compliant, TypeB Connector		
Touch panel driver (option)	For Windows : IPC-SLIB-01		

*1 Optional desk stand IPC-SND-03 allowing desktop installation

*2 Using a cable longer than 5 m may reduce the image quality. The cable should be as short as possible as degradation. the 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.

*4 It is 262,144 when connecting the LVDS.

Table 2.2. Power Supply Specifications

Item	Specification		
	FPD-S71VT-DC1	FPD-L71ST-DC1	FPD-H71XT-DC1
Power supply input part			
Power supply connector	4-pin connector for +12 - 24VDC power supply		
AC adapter jack	Corresponding to +12 (±5%) VDC output AC adapter		
Input power supply voltage	+12V-24VDC±5%		
Consumption current *1	0.6A (Max.)	1.4A (Max.)	1.6A (Max.)
Consumption current (power save mode) *1	0.4A (Max.)		

*1 When +12VDC is input.

General Specifications

Table 2.3. General Specifications

Item	Specification		
	FPD-S71VT-DC1	FPD-L71ST-DC1	FPD-H71XT-DC1
Environment			
Operating temperature *1	0 - 50°C (0 - 40°C when using an AC adapter)		
Storage temperature	-10 - 60°C		
Operating humidity *2	10 - 90%RH (No condensation) 10 - 85%RH (No condensation) (When using the AC adapter)		
Floating dust particles	Not to be excessive		
Corrosive gas	None		
Noise resistance	Line noise	AC line: 2 kV *3, Signal line: 1 kV (IEC1000-4-4Level3, EN61000-4-4Level3)	
	Electrostatic withstanding voltages	Contact : 4 kV (IEC1000-4-2Level2, EN61000-4-2Level2) Airborne : 8 kV (IEC1000-4-2Level3, EN61000-4-2Level3)	
Vibration resistance	10 - 57 Hz/Single-side amplitude or 0.075 mm 57 - 150 Hz/1.0 G in the X/Y/Z directions for 40 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)		
Structure			
Physical dimension (mm)	210(W) x 40(D) x 166(H)	316(W) x 46.5(D) x 256(H)	373(W) x 46(D) x 304(H)
Panel cut dimensions (mm)	199.0(W) x 155.0(H)	303.0(W) x 243.0(H)	358.0(W) x 289.0(H)
Mountable panel thickness	1.6mm - 7mm		
Weight	1.3kg	2.8kg	4.1kg
Waterproofing and dust-proofing	Front part conforming to IP65		

*1 In the installed angle which is recommended.

*2 Wet-bulb temperature 38°C or lower.

*3 When using the optional AC adapter IPC-ACAP12-02.

Optical Display Specifications

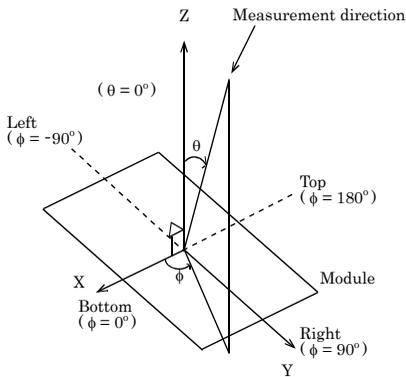
Table 2.4. Optical Display Specifications

Item	Condition		Specifications (25°C Typ. Value)			
			FPD-S71VT-DC1	FPD-L71ST-DC1	FPD-H71XT-DC1	
Visual angle (vertical)	CR≥10	φ=180°	Display in monochrome	50deg	50deg	50deg
		φ=0°		70deg	70deg	60deg
Visual angle (horizontal)		φ=+90°		70deg	70deg	75deg
		φ=90°		70deg	70deg	75deg
Surface brightness (at center)	Display in white		550cd/m ²	350cd/m ²	250cd/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 77% of the above-mentioned numerical value.

*2 CR = Contrast ratio


Figure 2.1. Viewing Range Definition


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.

Physical Dimensions

FPD-S71VT-DC1

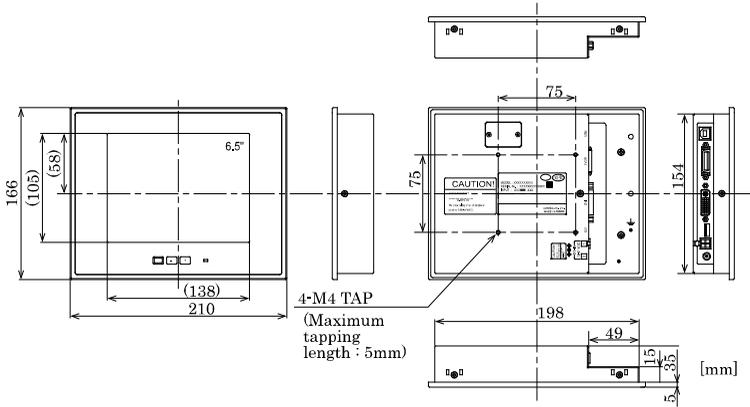


Figure 2.2. Physical Dimensions of Main Unit (FPD-S71VT-DC1)

FPD-L71ST-DC1

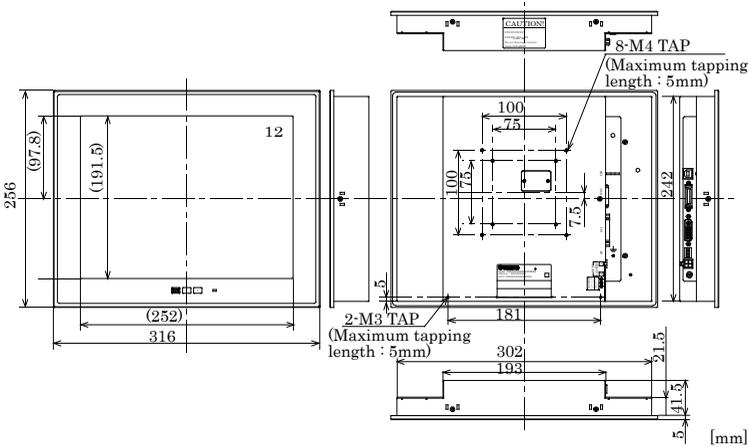


Figure 2.3. Physical Dimensions of Main Unit (FPD-L71ST-DC1)

FPD-H71XT-DC1

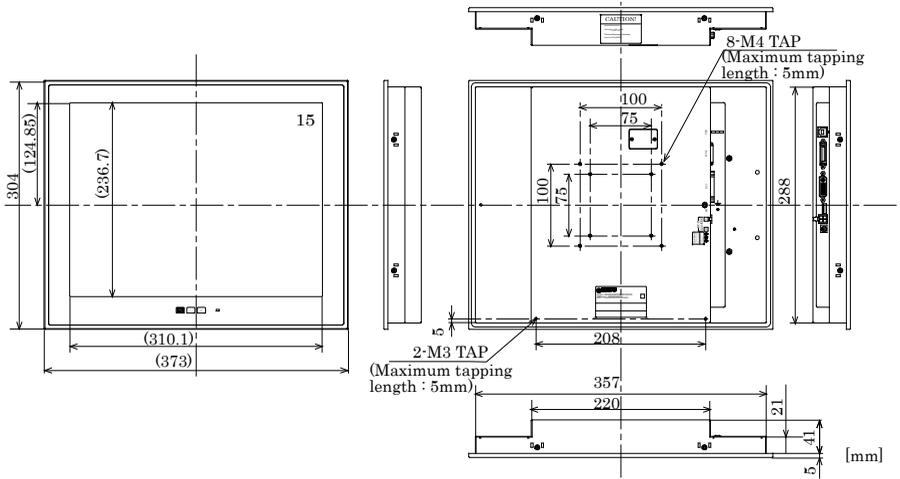


Figure 2.4. Physical Dimensions of Main Unit (FPD-H71XT-DC1)

3. Part Names

Part Names

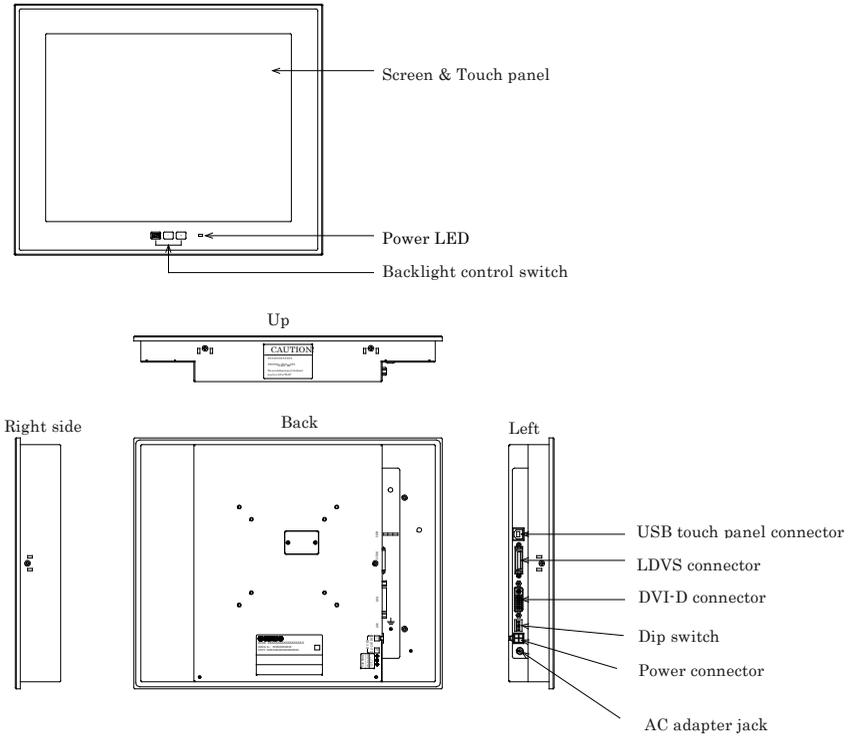


Figure 3.1. Part Names

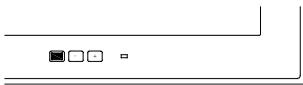
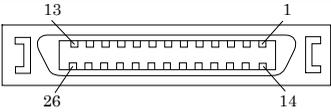


Figure 3.2. Backlight control switch

LVDS Input Interface Connector

It can connect to the host computer which outputs to the LVDS by using the optional LVDS cable. For more details on the connectable host computer or notes in connection, refer to chapter 5, "Connection to the Host Computer".

Table 3.1. LVDS Input Interface Connector

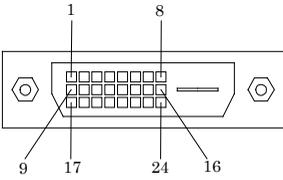
Connector used	Half pitch 26 pin connector (DX10GIM-26SE or equivalence to it)		
 <p style="text-align: center;">↓ Lower side is display part.</p>			
Pin No.	Signal name	Pin No.	Signal name
1	BLK_EN (+3.3V)	14	RESERVED
2	RXD	15	RESERVED
3	TXD	16	RESERVED
4	DDCCLK (+3.3V)	17	DDCDATA (+3.3V)
5	GND	18	GND
6	A_CLK-	19	RESERVED
7	A_CLK+	20	RESERVED
8	GND	21	GND
9	A_TX2-	22	A_TX3-
10	A_TX2+	23	A_TX3+
11	GND	24	GND
12	A_TX0-	25	A_TX1-
13	A_TX0+	26	A_TX1+

* Leave "Reserved" pins unconnected.

DVI-D Input Interface Connector

It can connect to the host computer which outputs to the DVI-D by using the optional DVI cable. For more details on the connectable host computer or notes in connection, refer to chapter 5, "Connection to the Host Computer".

Table 3.2. DVI-D Input Interface Connector

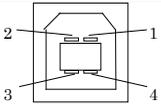
Connector used		24 pin DVI-D	
 <p style="text-align: center;">↓ Lower side is display part.</p>			
Pin No.	Signal name	Pin No.	Signal name
1	TMDS DATA2-	13	N.C.
2	TMDS DATA2+	14	+5V
3	TMDS DATA2 SHIELD	15	GND
4	N.C.	16	HPD
5	N.C.	17	TMDS DATA0-
6	DDC CLK	18	TMDS DATA0+
7	DDC DATA	19	TMDS DATA0 SHIELD
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-

* Host computer corresponding to the dual link cannot be connected.

USB Touch Panel Connector

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

Table 3.3. USB Touch Panel Connector

Connector used		USB Type B(Receptacle)	
 <p>↓ Lower side is display part.</p>			
Pin No.	Signal name	Pin No.	Signal name
1	+5V (INPUT)	3	DATA+
2	DATA-	4	GND

Dip Switch

A DIP switch is located on the left side of the unit.

When using it in a normal way, set it to all OFF (The default factory setting).

CAUTION

Ensure that the power is turned OFF before changing the DIP switch settings.

Table 3.4. Setting a Dip Switch

	No.	Setting description	Factory setting
 <p>↓ Lower side is display part.</p>	1		OFF
	2	Reserved (Leave this at OFF.)	OFF
	3		OFF
	4	Reserved (Leave this at OFF.)	OFF
	5	Reserved (Leave this at OFF.)	OFF
	6	Reserved (Leave this at OFF.)	OFF
	7	Reserved (Leave this at OFF.)	OFF
	8	Reserved (Leave this at OFF.)	OFF

Front SW for Backlight Control

These products have a SW for backlight control on the front side. Backlight ON/OFF and the brightness adjustment can be done with this switch.

The backlight can be controlled by the software control from the host computer side.

	It turns on or off the backlight. If there is no video signal input, backlight does not turn on. All the settings can be reset to the factory defaults by turning on these products while holding down this key.
	It raises the brightness one rank up. Keeping pushing this button raises the brightness up to maximum.
	It lowers the brightness one rank down. Keeping pushing this button lowers the brightness down to minimum.

4. Hardware Setup

Installation Requirements

Distances between this product and Its Vicinity

To maintain the ambient temperature within the installation environment requirement range, provide a gap of 50mm or more between the main unit and any adjacent equipment.

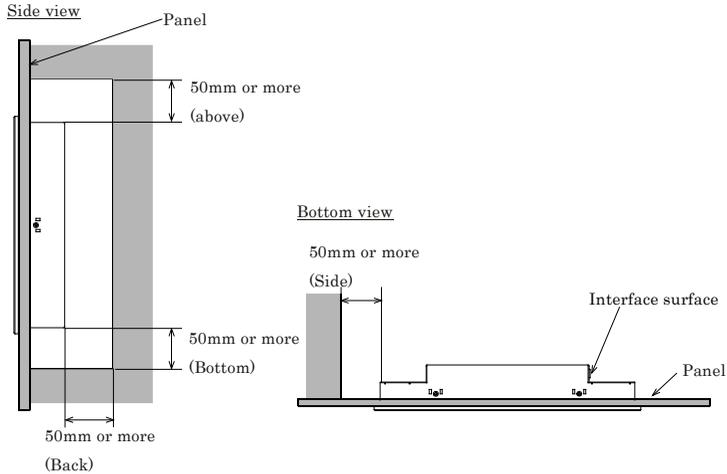


Figure 4.1. Distances Between Computer and Surroundings

Installed angle which is recommended

Installed angle of this product which is recommended is 0 - 45°. Except for that, the temperature specification of this product might not be filled.

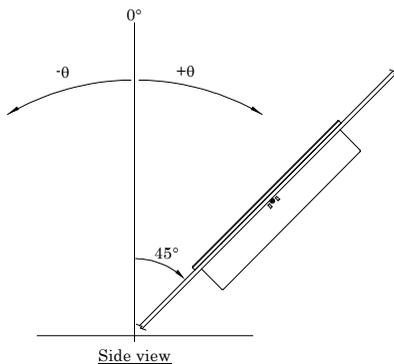


Figure 4.2. Installed angle which is recommended

Panel Cut

Cut the display mount panel in the following dimensions. The four corners of the solid-line rectangle define the panel cut dimensions.

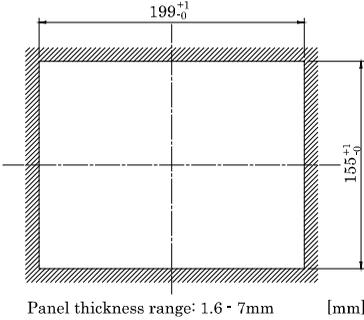


Figure 4.3. FPD-S71VT-DC1 [6.5 inches] Panel Cut Dimensions and hole position for stud

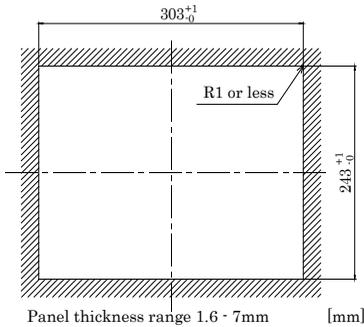


Figure 4.4. FPD-L71ST-DC1 [12.1 inches] Panel Cut Dimensions and hole position for stud

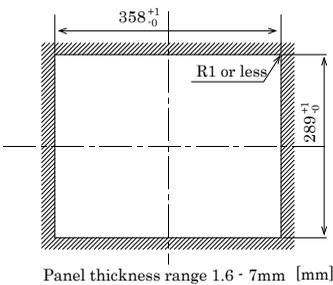


Figure 4.5. FPD-H71XT-DC1 [15 inches] Panel Cut Dimensions and hole position for stud

Attaching the attachment fittings to the Main Unit

- (1) Hold the main unit from the outside of the panel.

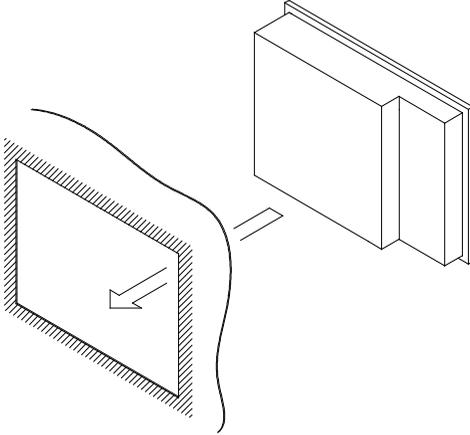


Figure 4.6. Attaching the attachment fittings to the Main Unit < 1 / 2 >

- (2) Hold the attachment fittings from the inside of the panel.

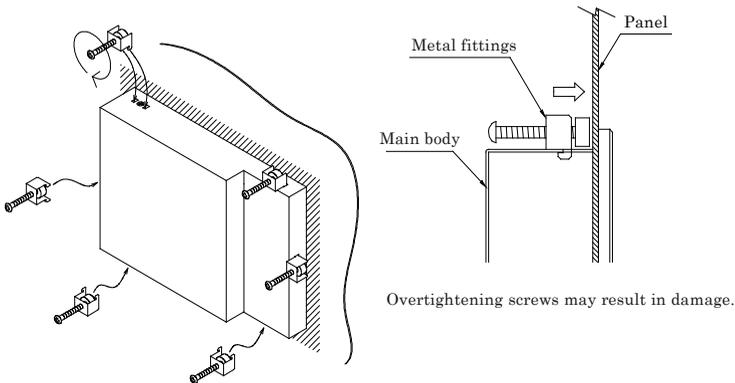


Figure 4.6. Attaching the attachment fittings to the Main Unit < 2 / 2 >

5. Connection to the Host Computer

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

LVDS Interface Connection

These products can be connected to CONTEC host computer (IPC Series and single board computer (SBC)) that have LVDS display output. Connect the LVDS connector of supported host computer with these products using the dedicated LVDS connecting cable.

As for the specific IPC Series or SBC, you need to change the BIOS setting to display it appropriately by the LVDS input. For more details on this, refer to the manual for each HOST computer.

When connecting to a SBC

LVDS conversion bracket and LVDS cable are required (separately available).

Be sure to connect a conversion bracket that supports each LVDS output pin header connector, and then connect the LVDS connector of the bracket with these products using a LVDS cable.

Depending on the SBC, two or more LVDS output pin headers are equipped. Be sure to check the connector reference No. of conversion cable and each SBC in the table below. Then connect it to the appropriate connector.

Conversion bracket	SBC	Reference
FPD-30F26F	SEH-9450-LAS	LVDS1
	SPC-9450-LA	LVDS1
	SPC-852x-LA	CNK1
	SLC-85xx-LxA	CN15
FPD-20F26F	SPI-855x-LLVAS	CN18
	SPI-8550-LA	CN18
	SPI-845x-LLVA	CN12

WARNING

When using the SLC-85xx-LxA, SPC-9450-LAS or SEH-9450-LAS. Be sure to connect FPD-30F26F to the 30 pin LVDS output pin header connector before use.

These SBC which have 20pin LVDS output pin header, be sure to use not the FPD-20F26F but the FPD-30F26F.

When connecting to a SPI-855x/IPC-BX8x0 series

The LVDS output is set to Disabled by default. It is required to change the LVDS output to Enabled via BIOS menu.

1. Select “Video Features” from “Advanced” menu.

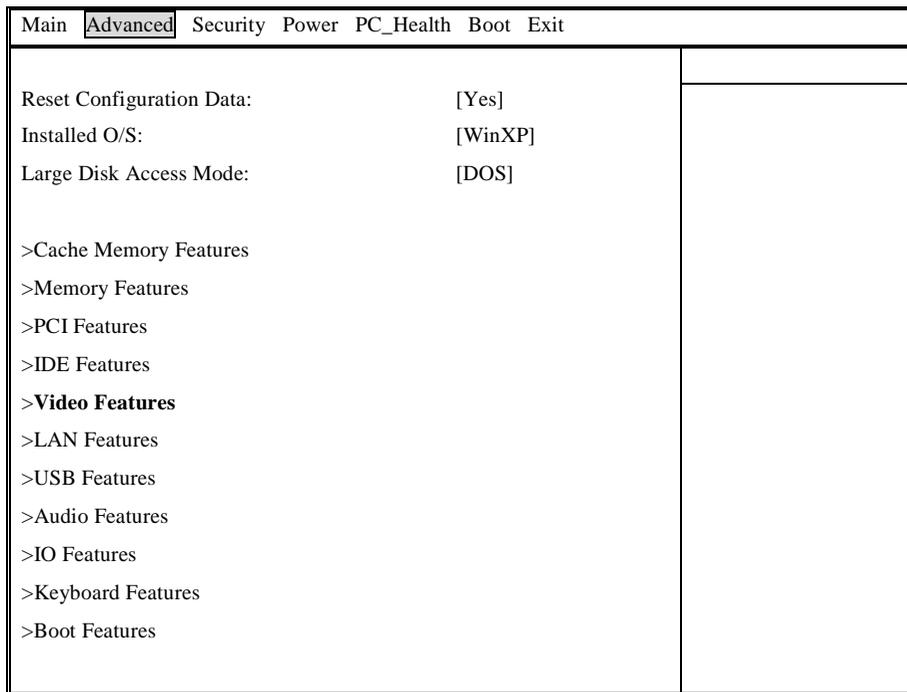


Figure 5.1. Advanced Menu Screen

2. Change “Boot Type” to “CRT+LCD”.

Main Advanced Security Power PC_Health Boot Exit	
Video Features	
IGD - Device 2:	[Enabled]
IGD - Device 2, Function 1:	[Enabled]
IGD - Memory Size:	[UMA = 8MB]
IGD - Boot Type	[VBIOS Default]
IGD - LCD Panel Type	[1024x768 LVDS]
Video device select :	[Internal]
Internal DDC ROM	[Enabled]
Splash Screen Size	[1024x768]

Figure 5.2. Video Features Screen

When connecting to a SEH-9450-LAS/SPC-9450-LV/SPI-845x-LLVA/SLC-85xx-LxA/SPC-852x-LA/IPC-BX701/IPC-BX900/IPC-BX950 series

It is required to set the output resolution to a right one via BIOS according to the supported resolution of the connected flat panel display.

1. Select the “Advanced Chipset Features”.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features

		Item Help
DRAM Timing Selectable	[By SPD]	
x CAS Latency Time	Auto	
x DRAM RAS# to CAS# Delay	Auto	
x DRAM RAS# Precharge	Auto	
x Precharge delay (tRAS)	Auto	
x System Memory Frequency	Auto	
SLP_S4# Assertion Width	[1 to 2 Sec.]	
System BIOS Cacheable	[Enabled]	
Video BIOS Cacheable	[Disabled]	
Memory Hole At 15-16M	[Disabled]	
▶ PCI Express Root Port Func	[Press Enter]	
** VGA Setting **		
PEG/Onchip VGA Control	[Auto]	
On-Chip Frame Buffer Size	[8MB]	
DVMT Mode	[DVMT]	
DVMT/FIXED Memory Size	[128MB]	
Boot Display	[CRT+LFP]	
Panel Number	[1024 x 768]	

↑↓↔ :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
 F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Figure 5.3. Advanced Chipset Features Setup

2. Specify the output resolution corresponding to the connected display from the “Panel Number”.

Panel Number	
640 x 480 []
800 x 600 []
1024 x 768 [█]
↑↓:Move ENTER:Accept ESC:Abort	

Figure 5.4. Panel Number Setup

⚠ CAUTION

- Do not connect it with the DVI-D at the same time. Doing so may provide abnormal screen display.
- DOS prompt may fail to display the full screen depending on the PC for connection. In such a case, you can display it by changing the display driver setting to the one of the followings.
 1. Select the "Intel(R) Dual Display Clone" and change the primary device to the notebook.
 2. Select the "twin" on the multiple display setting.
 3. Select the "Notebook" on the single display setting.

Note that the above setting is used when the "Intel Extreme Graphics2" is used. The setting item may be quite different and depend on the other driver and version.

- Depending on the following IPC Series or SBC, you may fail to set the VGA (640 x 480) in the resolution. In such a case, it is required to update the BIOS, so please contact your retailer.
IPC Series : IPC-BX701 Series, IPC-BX900 Series
SBC : SEH-9450-LAS, SPC-9450-LA, SPI-845x-LLVA, SLC-85xx-LxA
-

DVI-D Interface 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 IPC-BX/M360(PCI)C Series

Set the size of the connecting display by selecting “Advanced Chipset Features Setup” – “Panel Type” in the BIOS setting section.

Example) For FPD-L7xST-DC1 : “800 x 600”

CAUTION

- If connecting this display to a product with the “AUTO Select” function such as IPC-BX/M360(PCI)C etc., 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.

- Do not connect these products with the LVDS at the same time. When doing so may cause an abnormal display in the screen.
-

Touch Panel Data Communications

These connections are used to send touch panel data to the host computer via the USB or RS-232C.

If you use the touch panel via the RS-232C connection, you do not have to use the RS-232C cable because both LVDS and DVD-D interface includes the RS-232C signal line.

If you use the touch panel via the USB connection, you have to use the USB cable to connect this product to the USB port on the host computer.

Table 5.1. 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

Note that some types of BOX-PC/SBC require certain care in making a touch panel connection via RS-232C: followings should be referred to for connecting them with some configuration changes.

- When connecting to SBC

For some SBCs, the DVI/LVDS connector touch panel signals and the pin header output COM ports are mutually exclusive.

When this product is connected with one of the SBCs listed in the table below, note that the SBC's corresponding COM port is unavailable irrespective of the use of touch panel.

SBC	I/F	Unavailable SBC Serial Connector
SPC-852x-LA	LVDS	Serial 1 (CNG1)
SPC-8450-LVA	DVI-D	Serial 1 (CN1)
SPI-855x-LLVAS	DVI-D	Serial 1 (CN13)
SPI-845x-LLVA	DVI-D	Serial 1 (CN6)
SPI-815x-LLVA	DVI-D	Serial 1 (CN9)
SLC-8550-LVA	LVDS	Serial 6 (CN5)
SEH-9450-LAS	LVDS	Serial 1 (COM1)

Note that the SBC series products connected by using the conversion bracket FPD-20F26F do not have the RS-232C in the LVDS interface so the touch panel must be connected via USB.

- When connecting to BOX-PC

Note that the following IPC series products do not have the RS-232C in the DVI-D interface so the touch panel must be connected via USB.

- IPC-BX950TxD series (DVI-D interface)

For more details on the allocation to RS-232C port No. in the LVDS/DVI-D connector, refer to the manual for each PC.

CAUTION

- 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 Windows] or download one from the CONTEC's web site.
 - The USB touch panel driver software requires Ver1.52 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

These products can connect the DC power or AC adapter for the power supply.

⚠ CAUTION

- Input the power supply to the DC power supply connector only or the AC adapter jack only. 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 optional AC adapter, 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.
- When power cycling, wait for more than ten seconds before use.

DC Power Supply Input Connector : DC-IN

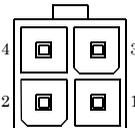
When connecting the power supply, ensure that the supply satisfies the specifications below.

Power supply voltage : 12 - 24VDC \pm 5%

Power supply capacity : 12V 3A or more, 24V 1.5A or more

Please process it as shown in the table below by using an attached housing and contact. Then connect it.

Table 6.1. DC power supply connector

Connector type	9360-04P (mfd. by ALEX)	
	Pin No.	Signal name
	1	GND
	2	GND
	3	12 - 24V
	4	12 - 24V

Applicable connector of cable side

Housing : 9357-04 (mfd. by ALEX) or 5557-04R (mfd. by MOLEX)

Contact : 4256T2-LF (mfd. by ALEX) or 5556 (mfd. by MOLEX)

Cable : AWG#18 - 24

Crimp tool : 57026-5000 (UL1007) (mfd. by MOLEX), 57027-5000(UL1015) (mfd. by MOLEX)

Rise time of power supply

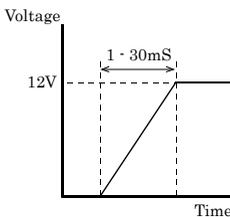


Figure 6.1. Graph of Rise Time of Power Supply

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.

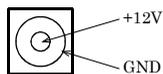


Figure 6.2. AC Adapter Jack

AC adapter code removal prevention fitting

- (1) Insert the plug of AC Adapter.
- (2) Tighten the screws on the attachment fitting.

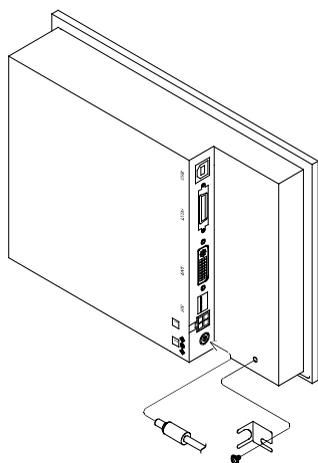


Figure 6.3. Code Removal Prevention Fitting

7. LED Indicators

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

Table 7.1. LED Indicators

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

*1 These products enter the power save mode automatically when no signal has been inputs.

8. 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.

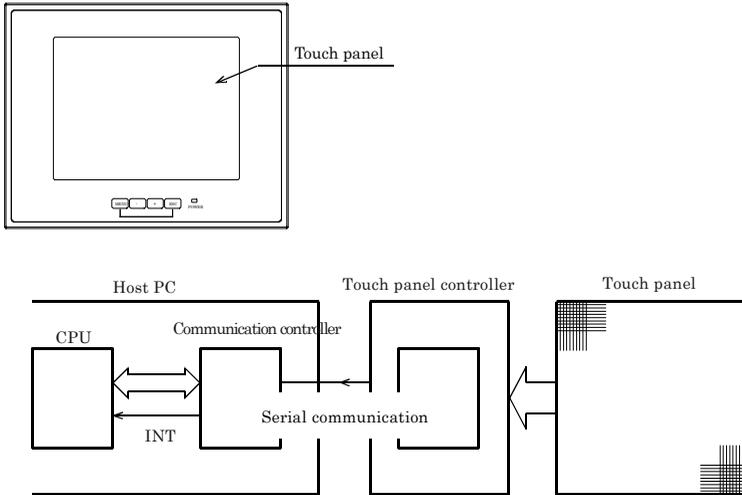


Figure 8.1. Touch Panel and Block Diagram

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

9. Display Mode

This equipment supports the following display modes:

Video mode	Number of pixels (dot)	Dot clock (MHz)	Horizontal frequency (kHz)	Vertical frequency (Hz)	Display		
					FPD-S71VT-DC1	FPD-L71ST-DC1	FPD-H71XT-DC1
VGA	640 x 480	25.18	31.47	60	⊙	○	○
VESA	800 x 600	40.00	37.88	60	x	⊙	○
VESA	1024 x 768	65.00	48.36	60	x	x	⊙

x: Display is unavailable

○: Display available (Depending on the scaling function of host PC)

⊙: Recommended resolution (mode)

CAUTION

- The number of display pixels in the LCD is 640 x 480 dots on FPD-S71VT-DC1 model, 800 x 600 dots on FPD-L71ST-DC1 model and 1024 x 768 dots on the FPD-H71XT-DC1 model.
When the input has a resolution lower than the number of display pixels of each model whether or not an auto scaling function from the host PC exists, etc.,. Note, in this case, that the display quality is therefore degraded in clearness compared to the screen displayed at the resolution that matches the number of display pixels of the LCD and the display area is not displayed in the full screen because it exists in the center of screen.
- The screen will not possible to be likely to display correctly if the resolution and frequency do not match one of the supported display modes.

10.Options

Screen protective sheets

- IPC-CV6 : 6.5-inch [FPD-S71VT-DC1] screen protective sheets (10 sheets)
- IPC-CV12 : 12.1-inch [FPD-L71ST-DC1] screen protective sheets (10 sheets)
- IPC-CV15 : 15-inch [FPD-H71XT-DC1] screen protective sheets (10 sheets)

Display cable only for DVI-D

- IPC-DVI/D-020 : DVI-D cable (2m)
- IPC-DVI/D-050 : DVI-D cable (5m)

Display cable only for LVDS

- FPD-26M26M-005 : LVDS cable (0.5m)
- FPD-26M26M-020 : LVDS cable (2m)
- FPD-26M26M-050 : LVDS cable (5m)

Conversion cable for SBC *1

- FPD-20F26F : LVDS connector conversion cable (20-pin header connector)
- FPD-30F26F : LVDS connector conversion cable (30-pin header connector)

*1 LVDS cable FPD-26M26M-005, FPD-26M26M-020 or FPD-26M26M-050 is required separately.

Driver

- IPC-SLIB-01 : Driver & Utility Soft Set (CD-ROM version) *2

*2 You can download the driver from the CONTEC Web site (free of charge)

Others

- IPC-ACAP12-02 : AC ADAPTER (DC12V)
 Input : Voltage is 90 - 264VAC, current is 1.3A or less
 (when the input voltage is 100VAC)
 Output : Voltage is 12VDC, current is 4A.
- IPC-SND-03 : Desk stand

Recommendation Cable (Maker: SANWA SUPPLY INC.)

- KU20-2H : USB cable for touch panel (2m)
- KU20-5H : USB cable for touch panel (5m)

FPD-S71VT-DC1
FPD-L71ST-DC1
FPD-H71XT-DC1
User's Manual

CONTEC CO.,LTD.

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