FLAT PANEL DISPLAY
Aluminum-Face Type

FPD-x21xT-AC Series

These products are panel-mounted, analog RGB input type flat panel display for use with host computers such as the CONTEC IPC series and SBCs (single board computers).
These products use a high-intensity LCD with a wide viewing field and touch panel operation via either RS-232C or USB.
They also feature an auto-scaling function and on-screen display setup screen and front face with IP65-compliant ingress protection.
As panel mounting is compatible with the existing IPC-DT/x6x series, users can easily transit the system from the existing system.

* Specifications, color and design of the products are subject to change without notice.

*   For more details on the host computer and option of this product, please contact your retailer.

Model	Screen size	Number of pixels	Number of colors
FPD-H21XT-AC	15 inches	1024 x 768 dots	16,777,216 colors
FPD-L21ST-AC	12.1 inches	800 x 600 dots	262,144 colors
FPD-M21VT-AC	10.4 inches	640 x 480 dots	262,144 colors

Features

- Standard analog RGB input for screen. RS-232C and USB interfaces for touch panel
Supports standard analog RGB input and touch panel operation via either RS-232C or USB.   The LCD is high-intensity with a wide field of view and can display either 16,777,216 colors (15 inch model) or 262,144 colors (10.4 inch and 12.1 inch models). The front on the display is made from lightweight aluminum. The display features an analog touch panel that can emulate mouse operation via the driver software.

- Auto-scaling feature that resizes the input screen to the LCD dot configuration
Auto-scaling feature that resizes the input screen to the LCD dot configuration

- On-screen display setup menu facilitating screen adjustment
The on-screen display setup screen can be used to set parameters such as the brightness, contrast, and display position adjustment.

- Front structure with IP65-compliant ingress protection
Front structure with IP65-compliant ingress protection

- Panel attachment dimensions are compatible with the IPC-DT/x6x series.
The compatibility of the panel attachment fitting with the previous IPC-DT/x6x model facilitates replacement.

- USB multiple 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

- Input connector allows the backlight to be switched on or off externally.
The unit features an input connector that allows the backlight to be switched on or off externally.

Specification

Function Specifications

Item		Specification		
		FPD-M21VT-AC	FPD-L21ST-AC	FPD-H21XT-AC
Screen				
	Assembly type	Panel mounted		
	Screen size	10.4 inches	12.1 inches	15 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
	Screen adjustment	Automatic adjustment (display positioning and scaling) and manual adjustment using the front switches		
	Brightness control	Adjustment using the front switch or software control from the host computer		
	Backlight control	Can be turned ON/OFF by front panel switch, software control from host computer, or rear connector input.		
	Display interface	Analog RGB input HD-SUB 15 pin (Female) connector		
	Cable length which recommends	5mm or less *1		
Incoming signal specification	Image signal	Separate RGB, analog, positive polarity 0.7Vp-p/75Ω		
	Sync signal	Separate V/H, TTL, positive/negative polarity		
	Horizontal scan frequency	31 - 38kHz	31 - 48kHz	31 - 60kHz
	Vertical scan frequency	60 - 72Hz	56 - 72Hz	56 - 75Hz
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 *2 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		
Power supply input part				
	Power supply connector	3-pin terminal for AC power supply		
	Input power supply voltage	85 - 132VAC/170 - 265VAC(47 - 63Hz) Input automatic operation switch		
	Consumption current	32VA(Max.)	35VA(Max.)	40VA(Max.)
	Consumption current (power save mode)	14VA (Max.)		

*1   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.
*2   The touch panel USB interface is only supported on Windows XP/2000/98SE.

General Specifications

Item		Specification		
		FPD-M21VT-AC	FPD-L21ST-AC	FPD-H21XT-AC
Environment				
Operating temperature		0 - 50ºC		
Storage temperature		-10 - 60ºC		
Operating humidity		10 - 90%RH (No condensation)		
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 : When using the IPC-BX700-AC4)		
	Electrostatic withstanding voltages	Contact/4kV (IEC1000-4-2Level2, EN61000-4-2Level2) Airborne/8kV (IEC1000-4-2Level3, EN61000-4-2Level3) (HOST : When using the IPC-BX700-AC4)		
Vibration resistance	Sweep durability	10 - 57 Hz/Single-side amplitude or 0.075mm 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	10G in the X/Y/Z directions for 11 ms; Half-sine wave (Conforming to JIS C0041 and IEC68-2-27)		
Structure				
Major dimension (mm)		305(W) x 51.5(D) x 240(H)	316(W) x 54.5(D) x 256(H)	373(W) x 54(D) x 304(H)
Panel cut dimensions (mm)		292.0(W) x 227.0(H)	303.0(W) x 243.0(H)	358.0(W) x 289.0(H)
Mountable panel thickness		1.6mm - 7mm		
Weight		3.0kg	3.2kg	4.5kg
Ingress protection		Front part conforming to IP65		

Optical Display Specifications

Item	Condition			Specifications (25ºC Typ. Value)		
				FPD-M21VT-AC	FPD-L21ST-AC	FPD-H21XT-AC
Visual angle (vertical)	CR≥10	ϕ=180°	Display in monochrome	88deg	65deg	50deg
		ϕ=0°		880deg	75deg	70deg
Visual angle (horizontal)		ϕ=+90°		88deg	80deg	70deg
		ϕ=-90°		88deg	80deg	70deg
Surface brightness (at center)	Display in white			500cd/m²	450cd/m²	250cd/m²

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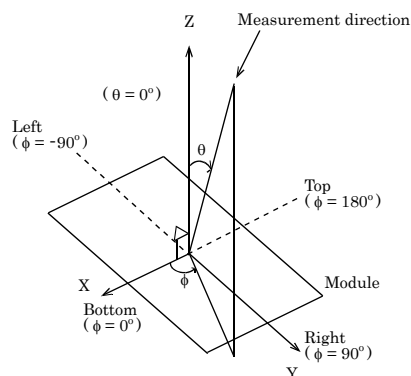
⚠ CAUTION
The above optical specification data shows optical characteristics of the liquid crystal in the display; the data does not represent the actual view on the display or its viewing angles.

Double-sided screen protective sheets
- IPC-CV   : 10-inch [IPC-DT/M20V(PC)T] screen protective sheets (10 sheets)
- IPC-CV12   : 12.1-inch [IPC-DT/L20S(PC)T] screen protective sheets (10 sheets)
- IPC-CV15   : 15-inch [IPC-DT/H21X(PC)T] screen protective sheets (10 sheets)

Optional cables
- IPC-ACCODE3 : AC power cable (For 2m 125VAC)
- IPC-CBL3-2   : RS-232C cable for touch panels (2m)
- IPC-CBL3-5   : RS-232C cable for touch panels (5m)

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

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)

Manual
- FPD-21-HMJ : User's manual (Japanese) for FPD-M21VT-AC, FPD-L21ST-AC, FPD-H21XT-AC series
- FPD-21-HMU : User's manual (English) for FPD-M21VT-AC, FPD-L21ST-AC, FPD-H21XT-AC series

Packing List

Name	FPD-M21VT-AC Pcs.	FPD-L21ST-AC Pcs.	FPD-H21XT-AC Pcs.
Flat panel display	1	1	1
Three-point sems screws (M3 x 6)	1	1	1
Cable fixed clamp	3	3	3
The attachment fittings	6	6	8
Warranty Certificate	1	1	1
EU Declaration of Conformity	None	None	1
IPC Precaution List	1	1	1
Ferrite Core	1	1	3
Ferrite Core fixed clamp	None	None	2
Product guide (this sheet)	1	1	1
SerialNumberLabel	1	1	None

*1 Purchase user's manual and individual connection cables as they are not bundled with this equipment.
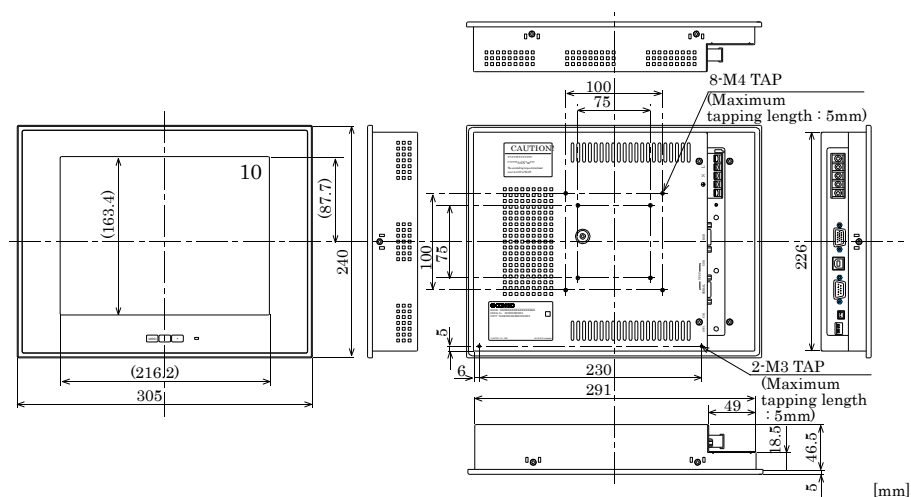For more details on the latest information of user's manual, refer to the CONTEC's Web site.

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).

(3) Power supply --- Expected life is six years for continuous operation at 40°C (when mounted horizontally).   However, this life may be reduced depending on the operating temperature (in the case of higher temperatures).
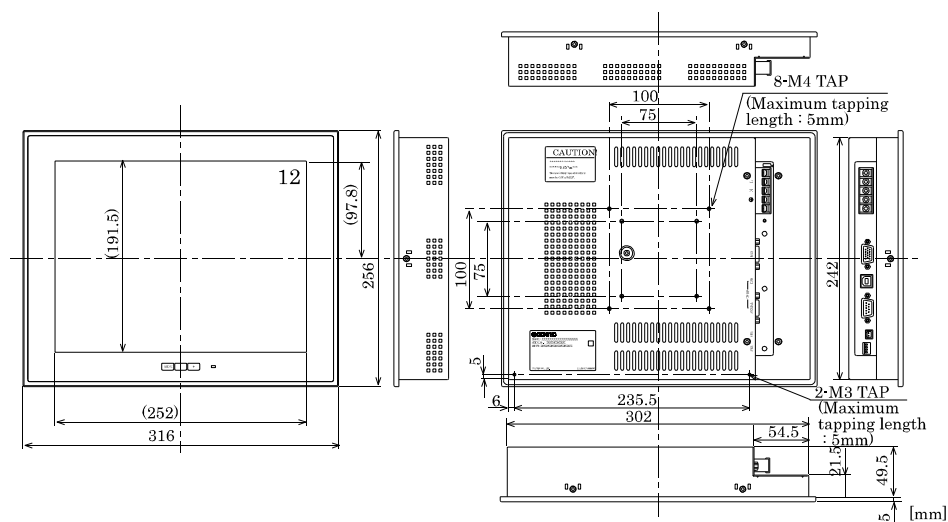
* CONTEC accepts your request for replacing each consumable in the PANECON-PC as a request for repair (at an additional cost).   Contact your local retailer or CONTEC sales office.
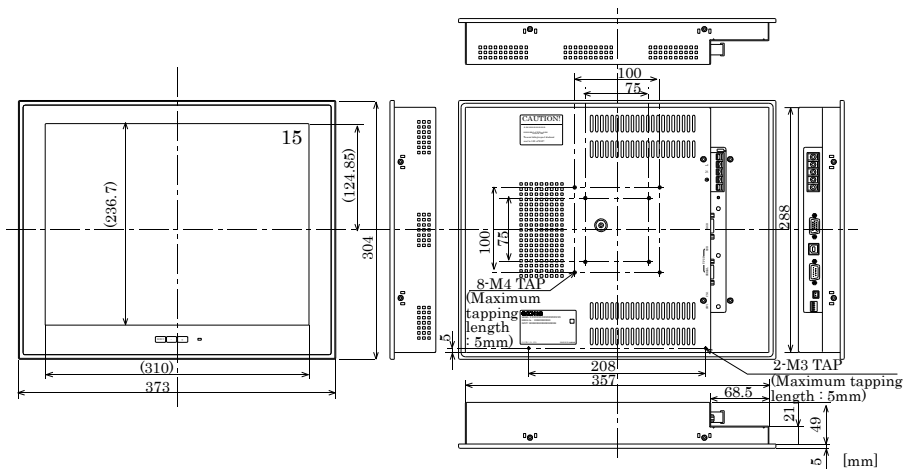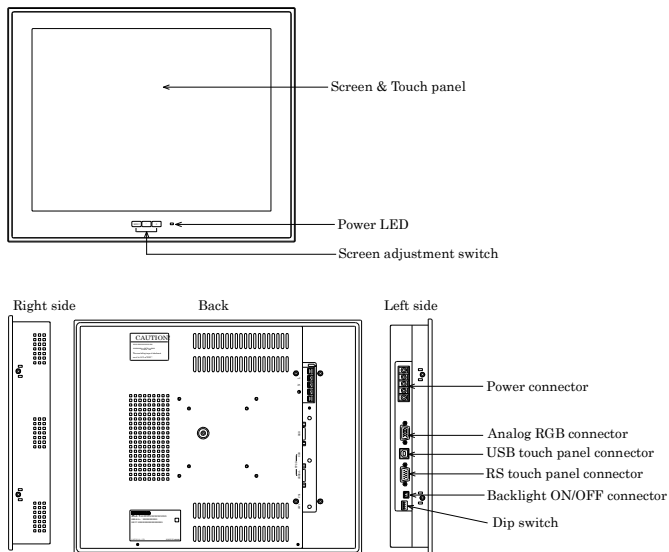
Outside Dimensions

FPD-M21VT-AC

FPD-L21ST-AC

FPD-H21XT-AC

Part Names

Part Names

Screen & Touch panel

Power LED
Screen adjustment switch

Right side   Back   Left side

Power connector
Analog RGB connector
USB touch panel connector
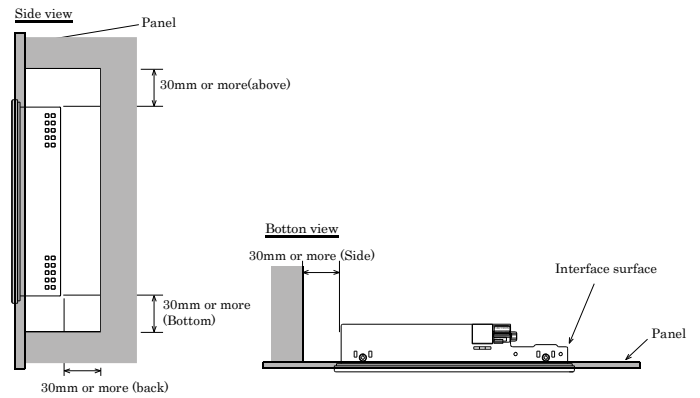RS touch panel connector
Backlight ON/OFF connector
Dip switch

Screen Adjustment Switch

Setting the Display

Installation Requirements

Please mount the display with an upright orientation.
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.
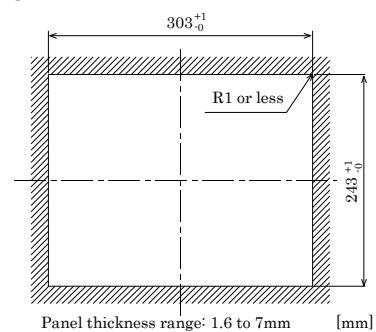
Side view
Panel
30mm or more(above)

Bottom view
30mm or more (Side)
Interface surface
Panel

30mm or more (Bottom)

30mm or more (back)

Panel Cut

Cut the display mount panel in the following dimensions. The four corners of the solid-line rectangle define the panel cut dimensions.
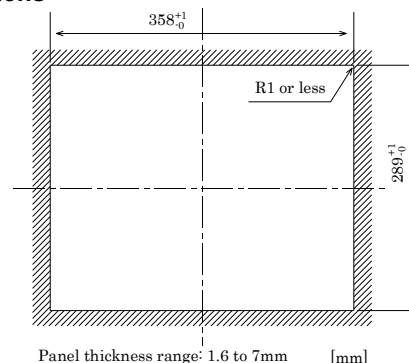
FPD-M21VT-AC [10.4inch] Panel Cut Dimensions

292^{+1}_{-0}

R1 or less

227^{+1}_{-0}

Panel thickness range: 1.6 to 7mm   [mm]
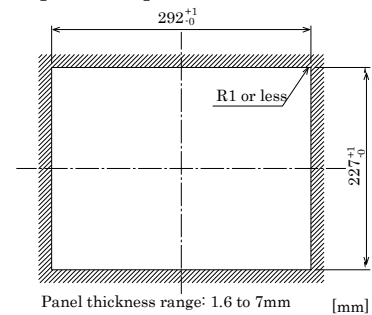
FPD-L21ST-AC [12.1inch] Panel Cut Dimensions and Stud Hole Positions

303^{+1}_{-0}

R1 or less

243^{+1}_{-0}

Panel thickness range: 1.6 to 7mm   [mm]

FPD-H21XT-AC [15inch] Panel Cut Dimensions and Stud Hole Positions

358^{+1}_{-0}

R1 or less

289^{+1}_{-0}

Panel thickness range: 1.6 to 7mm   [mm]

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.
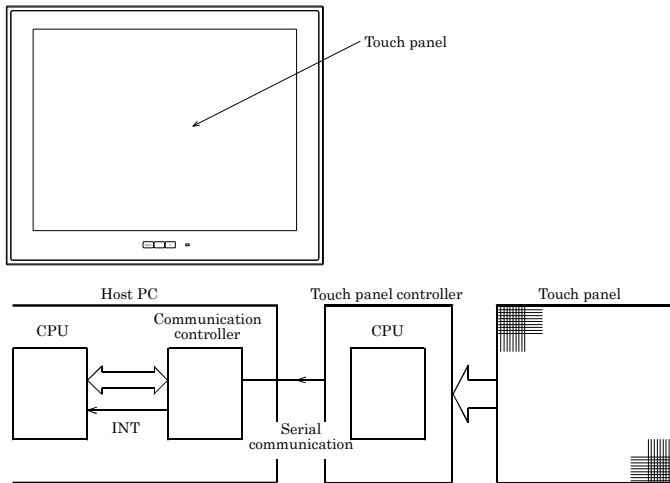
Touch panel

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

⚠ CAUTION
- The USB touch panel driver software requires V1.20 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.