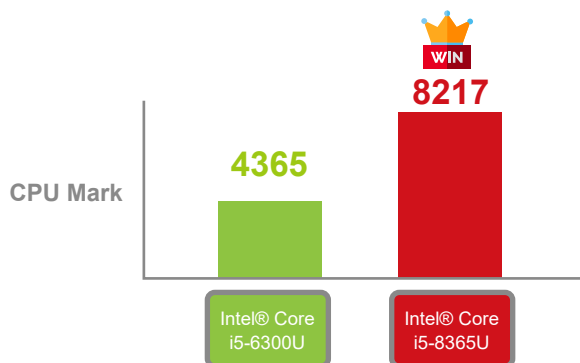


PPC-F-ULT5 Series

» 8th GEN. Intel® Core™ Mobile Processor

Powered by 8th Generation Intel® Whiskey Lake U-Series Processors, PPC-FxxD-ULT5 Series Panel PC not only delivers improved graphics performance but also supports passive cooling design without fans. In addition, it is equipped with HDMI port, allowing users to easily clone or extend screen to a second monitor.



	Intel® Core™ i5-6300U	Intel® Core™ i5-8365U
Cores	2	4
Threads	4	8
Process	14nm	14nm
TDP	15W	15W
Cache	3MB	6MB
Base Clock	2.4GHz	1.6GHz
Boost Clock	3.0GHz	4.1GHz

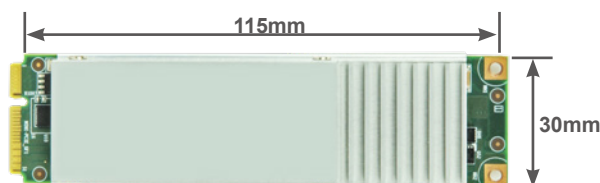
» 802.3bt PoE PD Supported

The PPC-FxxD-ULT5 industrial Power-over-Ethernet (PoE) modular panel PCs use a totally fanless cooling system and energy efficient CPU for optimal performance. The PoE-powered panel PC has been designed for use in Machine-to-Machine (M2M), Industrial Internet of Things (IIoT), and smart building automation.

PoE technology enables a facility to safely transfer electrical power, along with data, to touchscreen PCs over a standard category 5 cable in an Ethernet network. Thus, the panel PCs do not require modification of existing Ethernet cabling infrastructure and do not require a dedicated power source; making deployment fast, simple, and highly cost-effective. For added convenience and versatility, the PPC-FxxD-ULT5 panel PC with PoE function and P-CAP touchscreen can be mounted in panel, on wall or desktop.

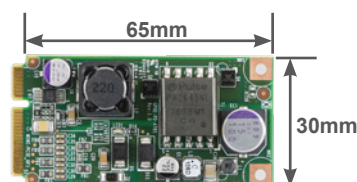
GPOE-PD-BT01-R10

- Support PoE IEEE802.3 af/at/bt
- Support up to 71watt PD
- PCIe Mini form factor (IEI defined pinouts)



GPOE-PD-AT01-R10

- Support PoE IEEE802.3 af/at
- Support up to 25.5watt PD
- PCIe Mini form factor (IEI defined pinouts)



» Modular Architecture



High Flexibility

The panel modules (available in 6 sizes) installed on the box PC can be swapped to provide up to 7 platform solutions for diverse applications



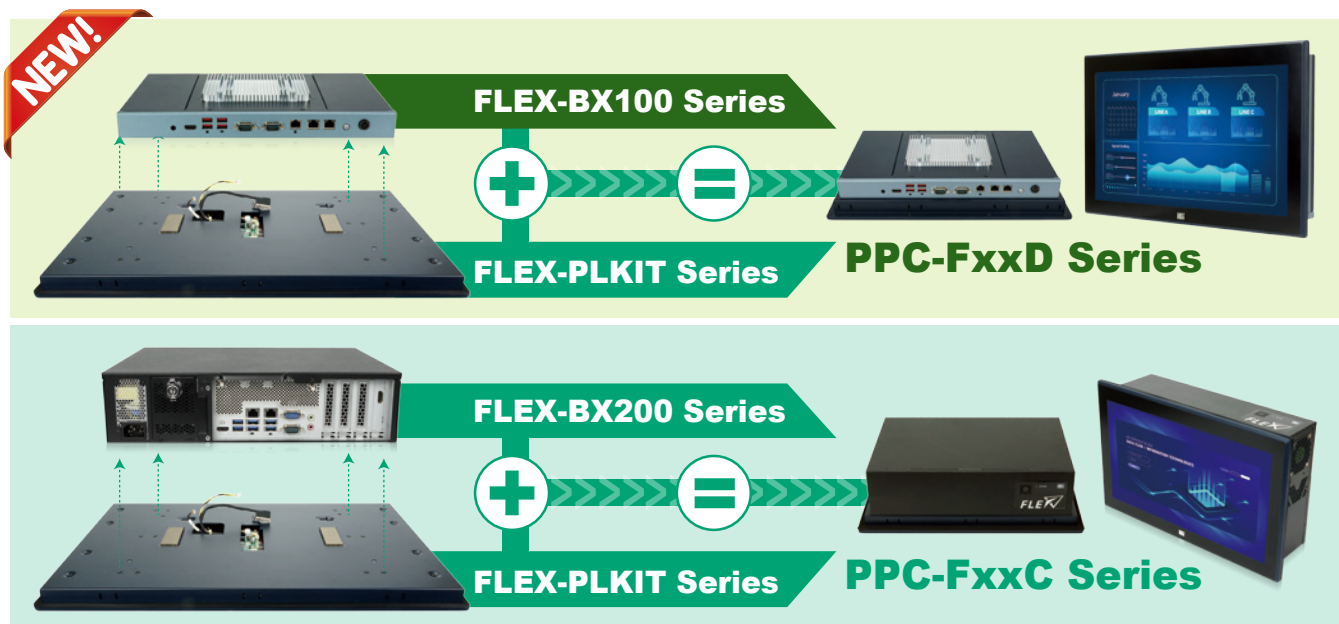
Quick Maintenance

The defective module can be separated and replaced with a new module on site; there is no need to unmount the whole system, guaranteeing minimum downtime.



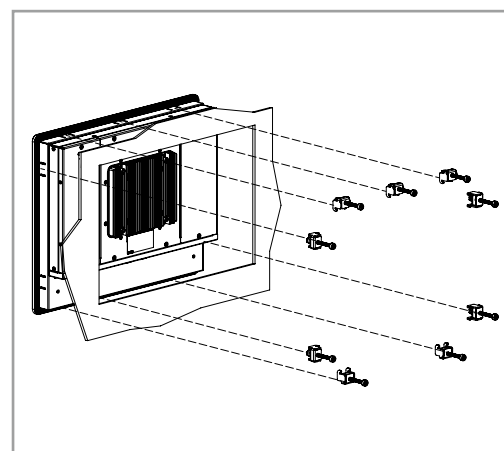
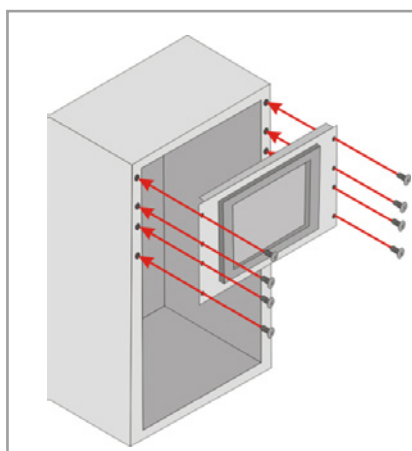
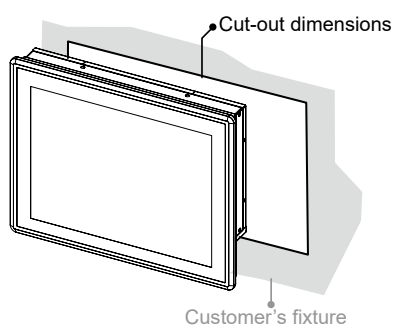
Faster Time to Market

Build the system upon specific hardware (CPU, memory, add-on-card, etc.) requirement with faster time-to-market, reducing total cost of ownership for solution providers.



» Backward-Compatible with PPC-F series

The cutout size of PPC-FxxD series is backward compatible with PPC-F series in panel mounting. There is no need to build a new fixture to integrate the PPC-FxxD series and it is easy to upgrade the performance from 4th Gen Intel® Core™ to 8th Gen Intel® Core™ with existing fixture.



PPC-F-ULT5 Series Selection Guide

New**New****New**

LCD Size		15"	15.6"	17"
Model		PPC-F15D-ULT5	PPC-FW15D-ULT5	PPC-F17D-ULT5
TFT LCD	LCD Size	15"	15.6"	17"
	Max. Resolution	1024 x 768	1366x768	1280x1024
	Brightness (cd/m²)	450	400	350
	Contrast Ratio	800:1	500:1	1000:1
	LCD Color	16.2M	16.2M	16.7M
	Pixel Pitch (mm)	0.29 x 0.29	0.252 x 0.252	0.26 x 0.26
	Viewing Angle (H/V)	160°/150°	170°/160°	170°/160°
	Backlight MTBF (Hrs)	70,000	50,000	50,000
Touch Screen	Touchscreen Type	Projected capacitive type with 10-point multitouch and anti-glare coating		
	Touch Controller	EETI EXC3000		
System	CPU	8th Generation Intel® Core™ i5-8365U 4.10GHz 8th Generation Intel® Celeron® 4205U 2.00GHz		
	Memory	2 x 260-pin 2400 MHz dual-channel DDR4 unbuffered SO-DIMM supporting up to 32GB		
	Graphics Engine	Intel® HD Graphics Gen 9 Engines with 16 low-power execution units, 4K codec decode		
	Ethernet	2 x Intel® I211, 1 x Intel® I219		
Storage		2.5" HDD/SSD SATA 6Gb/s bay		
I/O Ports and Switches		4 x USB 3.2 Gen 2 (10Gbps) 1 x HDMI output 1 x RS-232/422/485 1 x RS-232 3 x GbE LAN (2 for PoE PD GbE LAN)	1 x 12V DC jack 1 x Power switch with LED indicator (blue) 1 x AT/ATX switch 1 x Line-out 1 x Reset button	
Expansion Slots		1 x NGFF M.2 2230 A Key (PCIe x1, USB signal) 1 x NGFF M.2 2280 M Key (support PCIe 3.0 x4 NVMe) 2 x PoE PD module socket (by IEL pin definition)		
Thermal Solution		Fanless		
Watchdog Timer		Software Programmable support 1~255 sec. system reset		
Construction	Dimensions (mm) (W x H x D)	378.5 x 303 x 75	400.1 x 253.3 x 77.1	408.4 x 341.4 x 75.6
	Cutout Dimensions (W x H) (mm)	361.1 x 285.6	379.1 x 232.3	391 x 324
	Net Weight (kg)	6.1	7.1	7.2
	Color	PANTONE 296 C		
	Front Frame	Aluminum die-casting		
	Rear Cover	Sheet metal		
	Mounting	Wall mount, Panel mount, Rack mount		
Environmental	Operating Temp.	-10°C ~ 50°C (with air flow)		
	Storage Temp.	-20°C ~ 60°C		
	Humidity	10% ~ 95% (non-condensing)		
	Vibration	5~17Hz, 0.1 double amplitude displacement 17~640Hz 1.5G acceleration peak to peak		
	Shock	10G acceleration part to part (11ms)		
Power Input		12V DC input		

PPC-F-ULT5 Series Selection Guide



LCD Size		18.5”	21.5”	23.8”
Model		PPC-FW19D-ULT5	PPC-FW22D-ULT5	PPC-FW24D-ULT5
TFT LCD	LCD Size	18.5”	21.5”	23.8”
	Max. Resolution	1366 x 768	1920 x 1080	1920 x 1080
	Brightness (cd/m²)	400	250	250
	Contrast Ratio	1000:1	1000:1	3000:1
	LCD Color	16.7M	16.7M	16.7M
	Pixel Pitch (mm)	0.3 x 0.3	0.25 x 0.25	0.274 x 0.274
	Viewing Angle (H/V)	170°/160°	170°/160°	178°/178°
	Backlight MTBF (Hrs)	50,000	30,000	30,000
Touch Screen	Touchscreen Type	Projected capacitive type with 10-point multitouch and anti-glare coating		
	Touch Controller	EETI EXC3000		
System	CPU	8th Genertion Intel® Core™ i5-8365U 4.10GHz 8th Genertion Intel® Celeron® 4205U 2.00GHz		
	Memory	2 x 260-pin 2400 MHz dual-channel DDR4 unbuffered SO-DIMM supporting up to 32GB		
	Graphics Engine	Intel® HD Graphics Gen 9 Engines with 16 low-power execution units, 4K codec decode		
	Ethernet	2 x Intel® I211, 1 x Intel® I219		
Storage		2.5" HDD/SSD SATA 6Gb/s bay		
I/O Ports and Switches		4 x USB 3.2 Gen 2 (10Gbps) 1 x HDMI output 1 x RS-232/422/485 1 x RS-232 3 x GbE LAN (2 for PoE PD GbE LAN)	1 x 12V DC jack 1 x Power switch with LED indicator (blue) 1 x AT/ATX switch 1 x Line-out 1 x Reset button	
Expansion Slots		NGFF M.2 (2230/2280) A/E Key, M Key sockets (support NVMe SSD)		
Thermal Solution		Fanless		
Watchdog Timer		Software Programmable support 1~255 sec. system reset		
Construction	Dimensions (mm) (W x H x D)	469.8 x 289.2 x 76.9	550.4 x 358.4 x 74.4	600 x 382 x 75.56
	Cutout Dimensions (mm)	447.8 x 257.2	340 x 532	358.6 x 576.6
	Net Weight (kgs)	7.3	9.4	10.8
	Color	PANTONE 296 C		
	Front Frame	Aluminum die-casting		
	Rear Cover	Sheet metal		
	Mounting	Wall mount, Panel mount, Rack mount	Wall mount, Panel mount	
Environmental	Operating Temp.	-10°C ~ 50°C (with air flow)		
	Storage Temp.	-20°C ~ 60°C		
	Humidity	10% ~ 95% (non-condensing)		
	Vibration	5~17Hz, 0.1 double amplitude displacement 17~640Hz 1.5G acceleration peak to peak		
	Shock	10G acceleration part to part (11ms)		
Power Supply		12V DC input		

PPC-F-ULT5

NEW

15"~17" Panel PC Based on Intel® Whiskey Lake ULT Processor

Features

- 15"~17" Panel PC with Intel® Whiskey Lake Core™ i5-8365U, Intel® Celeron® 4205U
- Low power consumption and fanless design
- IP66-rated front panel for water and dust resistance
- Modular architecture
- VESA 100 mm standard mounting holes for varied mounting demands
- Support PoE PD power
- Support NVMe SSD



Specifications

Model		PPC-F15D-ULT5	PPC-FW15D-ULT5	PPC-F17D-ULT5
TFT LCD	LCD Size	15"	15.6"	17"
	Max. Resolution	1024 x768	1366x768	1280x1024
	Brightness (cd/m ²)	450	400	350
	Contrast Ratio	800:1	500:1	1000:1
	LCD Color	16.2M	16.2M	16.7M
	Pixel Pitch (mm)	0.29 x 0.29	0.252 x 0.252	0.26 x 0.26
	Viewing Angle (H/V)	160°/150°	170°/160°	170°/160°
	Backlight MTBF (Hrs)	70,000	50,000	50,000
Touch Screen	Touchscreen Type	Projected capacitive type with 10-point multitouch and anti-glare coating		
	Touch Controller	EETI EXC3000		
System	CPU	8th Generation Intel® Core™ i5-8365U 4.10GHz 8th Generation Intel® Celeron® 4205U 2.00GHz		
	Memory	2 x 260-pin 2400 MHz dual-channel DDR4 unbuffered SO-DIMM supporting up to 32GB		
	Graphics Engine	Intel® HD Graphics Gen 9 Engines with 16 low-power execution units, 4K codec decode		
	Ethernet	2 x Intel® I211, 1 x Intel® I219		
Storage		2.5" HDD/SSD SATA 6Gb/s bay		
I/O Ports and Switches		4 x USB 3.2 Gen 2 (10Gbps)	1 x 12V DC jack	
		1 x HDMI output	1 x Power switch with LED indicator (blue)	
		1 x RS-232/422/485	1 x AT/ATX switch	
		1 x RS-232	1 x Line-out	
		3 x GbE LAN (2 for PoE PD GbE LAN)	1 x Reset button	
Expansion Slots		1 x NGFF M.2 2230 A Key (PCIe x1, USB signal)		
		1 x NGFF M.2 2280 M Key (support PCIe 3.0 x4 NVMe)		
		2 x PoE PD module socket (by IEL pin definition)		
Thermal Solution		Fanless		
Watchdog Timer		Software Programmable support 1~255 sec. system reset		
Construction	Dimensions (mm) (W x H x D)	378.5 x 303 x 75	400.1 x 253.3 x 77.1	408.4 x 341.4 x 75.6
	Cutout Dimensions (W x H) (mm)	361.1 x 285.6	379.1 x 232.3	391 x 324
	Net Weight (kg)	6.1	7.1	7.2
	Color	PANTONE 296 C		
	Front Frame	Aluminum die-casting		
	Rear Cover	Sheet metal		
	Mounting	Wall mount, Panel mount, Rack mount		
Environmental	Operating Temp.	-10°C ~ 50°C (with air flow)		
	Storage Temp.	-20°C ~ 60°C		
	Humidity	10% ~ 95% (non-condensing)		
	Vibration	5~17Hz, 0.1 double amplitude displacement 17~640Hz 1.5G acceleration peak to peak		
	Shock	10G acceleration part to part (11ms)		
Power Input		12V DC input		

PPC-F-ULT5

NEW

18.5"~23.8" Panel PC Based on Intel® Whiskey Lake ULT Processor

Features

- 18.5"~ 23.8" Panel PC with Intel® Whiskey Lake Core™ i5-8365U, Intel® Celeron® 4205U
- Low power consumption and fanless design
- IP66-rated front panel for water and dust resistance
- Modular architecture
- VESA 100 mm standard mounting holes for varied mounting demands
- Support PoE PD power
- Support NVMe SSD



Specifications

Model		PPC-FW19D-ULT5	PPC-FW22D-ULT5	PPC-FW24D-ULT5
TFT LCD	LCD Size	18.5"	21.5"	23.8"
	Max. Resolution	1366x768	1920x1080	1920x1080
	Brightness (cd/m²)	400	250	250
	Contrast Ratio	1000:1	1000:1	3000:1
	LCD Color	16.7M	16.7M	16.7M
	Pixel Pitch (mm)	0.3 x 0.3	0.25 x 0.25	0.274 x 0.274
	Viewing Angle (H/V)	170°/160°	170°/160°	178°/178°
	Backlight MTBF (Hrs)	50,000	30,000	30,000
Touch Screen	Touchscreen Type	Projected capacitive type with 10-point multitouch and anti-glare coating		
	Touch Controller	EETI EXC3000		
System	CPU	8th Genertion Intel® Core™ i5-8365U 4.10GHz 8th Genertion Intel® Celeron® 4205U 2.00GHz		
	Memory	2 x 260-pin 2400 MHz dual-channel DDR4 unbuffered SO-DIMM supporting up to 32GB		
	Graphics Engine	Intel® HD Graphics Gen 9 Engines with 16 low-power execution units, 4K codec decode		
	Ethernet	2 x Intel® I211, 1 x Intel® I219		
Storage		2.5" HDD/SSD SATA 6Gb/s bay		
I/O Ports and Switches		4 x USB 3.2 Gen 2 (10Gbps)	1 x 12V DC jack	
		1 x HDMI output	1 x Power switch with LED indicator (blue)	
		1 x RS-232/422/485	1 x AT/ATX switch	
		1 x RS-232	1 x Line-out	
		3 x GbE LAN (2 for PoE PD GbE LAN)	1 x Reset button	
Expansion Slots		NGFF M.2(2230/2280) A/E Key, M Key sockets (support NVMe SSD)		
Thermal Solution		Fanless		
Watchdog Timer		Software Programmable support 1~255 sec. system reset		
Construction	Dimensions (mm) (W x H x D)	469.8 x 289.2 x 76.9	550.4 x 358.4 x 74.4	600 x 382 x 75.56
	Cutout Dimensions (mm)	447.8 x 257.2	340 x 532	358.6 x 576.6
	Net Weight (kgs)	7.3	9.4	10.8
	Color	PANTONE 296 C		
	Front Frame	Aluminum die-casting		
	Rear Cover	Sheet metal		
	Mounting	Wall mount, Panel mount, Rack mount	Wall mount, Panel mount	
Environmental	Operating Temp.	-10°C ~ 50°C (with air flow)		
	Storage Temp.	-20°C ~ 60°C		
	Humidity	10% ~ 95% (non-condensing)		
	Vibration	5~17Hz, 0.1 double amplitude displacement 17~640Hz 1.5G acceleration peak to peak		
	Shock	10G acceleration part to part (11ms)		
Power Supply		12V DC input		

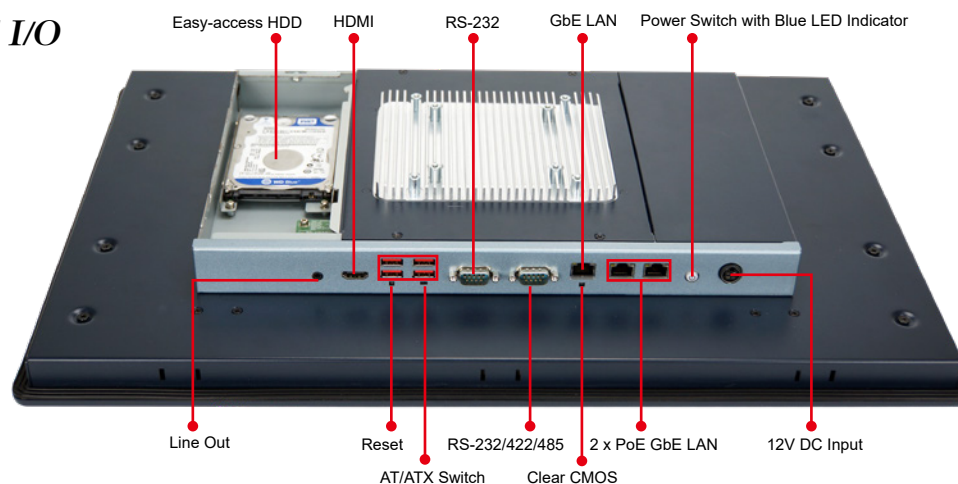
Ordering Information

	Part No.	Description
BOX PC	FLEX-BX100-ULT5-i5/4G-R10	Fanless embedded system with 14nm 8th gen. Intel® Whiskey Lake Core™ i5-8365UE TDP 15W on-board Processor (ULT), one 4GB DDR4 RAM, 12VDC input, R10
	FLEX-BX100-ULT5-C/4G-R10	Fanless embedded system with 14nm 8th gen. Intel® Whiskey Lake Celeron® 4205UE TDP 15W on-board Processor (ULT), one 4GB DDR4 RAM, 12VDC input, R10
15"	PPC-F15D-ULT5-i5/4G/PC-R10	15" 450 cd/m² 1024 x 768 Panel PC with 14nm 8th gen. Intel® Whiskey Lake Core™ i5-8365UE TDP 15W on-board Processor (ULT), 4GB DDR4 RAM x1, 12VDC input, PCAP touch with AG, R10
	PPC-F15D-ULT5-C/4G/PC-R10	15" 450 cd/m² 1024 x 768 Panel PC with 14nm 8th gen. Intel® Whiskey Lake Celeron® 4205UE TDP 15W on-board Processor (ULT), 4GB DDR4 RAM x1, 12VDC input, PCAP touch with AG, R10
15.6"	PPC-FW15D-ULT5-i5/4G/PC-R10	15.6" 400 cd/m² 1366 x 768 Panel PC with 14nm 8th gen. Intel® Whiskey Lake Core™ i5-8365UE TDP 15W on-board Processor (ULT), 4GB DDR4 RAM x1, 12VDC input, PCAP touch with AG, R10
	PPC-FW15D-ULT5-C/4G/PC-R10	15.6" 400 cd/m² 1366 x 768 Panel PC with 14nm 8th gen. Intel® Whiskey Lake Celeron® 4205UE TDP 15W on-board Processor (ULT), 4GB DDR4 RAM x1, 12VDC input, PCAP touch with AG, R10
17"	PPC-F17D-ULT5-i5/4G/PC-R10	17" 350 cd/m² 1280 x 1024 Panel PC with 14nm 8th gen. Intel® Whiskey Lake Core™ i5-8365UE TDP 15W on-board Processor (ULT), 4GB DDR4 RAM x1, 12VDC input, PCAP touch with AG, R10
	PPC-F17D-ULT5-C/4G/PC-R10	17" 350 cd/m² 1280 x 1024 Panel PC with 14nm 8th gen. Intel® Whiskey Lake Celeron® 4205UE TDP 15W on-board Processor (ULT), 4GB DDR4 RAM x1, 12VDC input, PCAP touch with AG, R10
18.5"	PPC-FW19D-ULT5-i5/4G/PC-R10	18.5" 400 cd/m² 1366 x 768 Panel PC with 14nm 8th gen. Intel® Whiskey Lake Core™ i5-8365UE TDP 15W on-board Processor (ULT), 4GB DDR4 RAM x1, 12VDC input, PCAP touch with AG, R10
	PPC-FW19D-ULT5-C/4G/PC-R10	18.5" 400 cd/m² 1366 x 768 Panel PC with 14nm 8th gen. Intel® Whiskey Lake Celeron® 4205UE TDP 15W on-board Processor (ULT), 4GB DDR4 RAM x1, 12VDC input, PCAP touch with AG, R10
21.5"	PPC-FW22D-ULT5-i5/4G/PC-R10	21.5" 250 cd/m² 1920 x 1080 Panel PC with 14nm 8th gen. Intel® Whiskey Lake Core™ i5-8365UE TDP 15W on-board Processor (ULT), 4GB DDR4 RAM x1, 12VDC input, PCAP touch with AG, R10
	PPC-FW22D-ULT5-C/4G/PC-R10	21.5" 250 cd/m² 1920 x 1080 Panel PC with 14nm 8th gen. Intel® Whiskey Lake Celeron® 4205UE TDP 15W on-board Processor (ULT), 4GB DDR4 RAM x1, 12VDC input, PCAP touch with AG, R10
23.8"	PPC-FW24D-ULT5-i5/4G/PC-R10	23.8" 250 cd/m² 1920 x 1080 Panel PC with 14nm 8th gen. Intel® Whiskey Lake Core™ i5-8365UE TDP 15W on-board Processor (ULT), 4GB DDR4 RAM x1, 12VDC input, PCAP touch with AG, R10
	PPC-FW24D-ULT5-C/4G/PC-R10	23.8" 250 cd/m² 1920 x 1080 Panel PC with 14nm 8th gen. Intel® Whiskey Lake Celeron® 4205UE TDP 15W on-board Processor (ULT), 4GB DDR4 RAM x1, 12VDC input, PCAP touch with AG, R10

Options

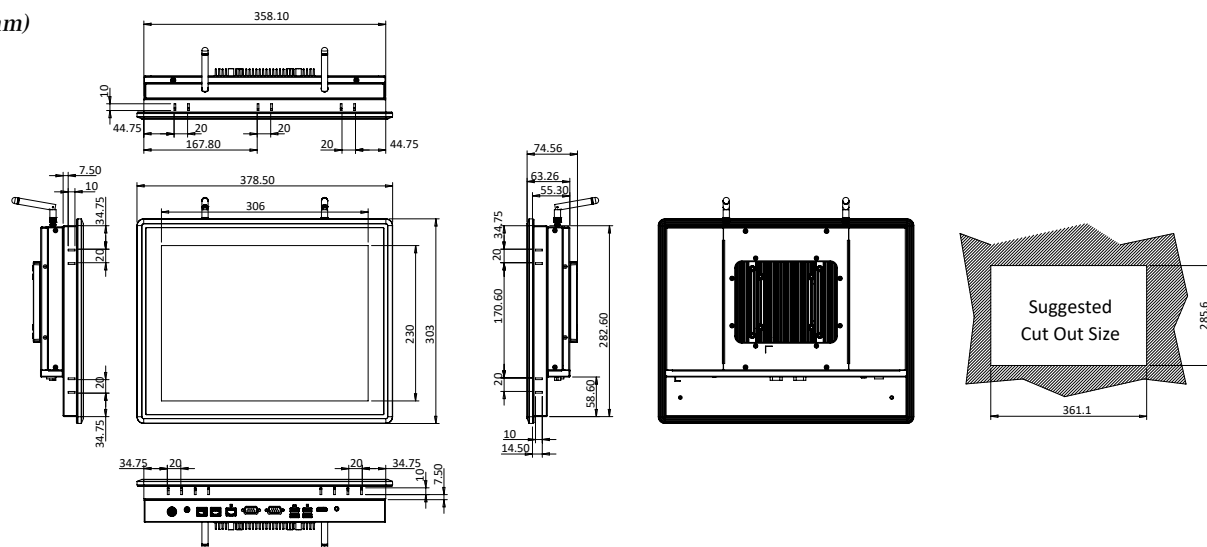
Item	PPC-F15D	PPC-FW15D	PPC-F17D	PPC-FW19D	PPC-FW22D	PPC-FW24D
Arm	ARM-31-RS					
Stand	SAND-A21-R10 STAND-C19-R10					
Wall Mount Kit	WK-190MS-R10					
Panel Mount Kit	FPK-12-R10	FPK-14-R10	FPK-13-R10	FPK-13-R10	FPK-13-R10	FPK-14-R10
Rack Mount Kit	FRK15C-R10	FRKW15C-R10	FRK17C-R10	FRKW19C-R10	N.A.	N.A.
PoE PD Kit	GPOE-PD-AT01-R10 (PoE IEEE802.3 af/at, 25.5W) GPOE-PD-BT01-R10 (PoE IEEE802.3 af/at/bt, 71W)					
WiFi Kit	EMB-WIFI-KIT03E-R10 (2T2R, 802.11 ac/a/b/g/n and BT V4.1, NGFF 2230 Type A-E)					

Fully Integrated I/O



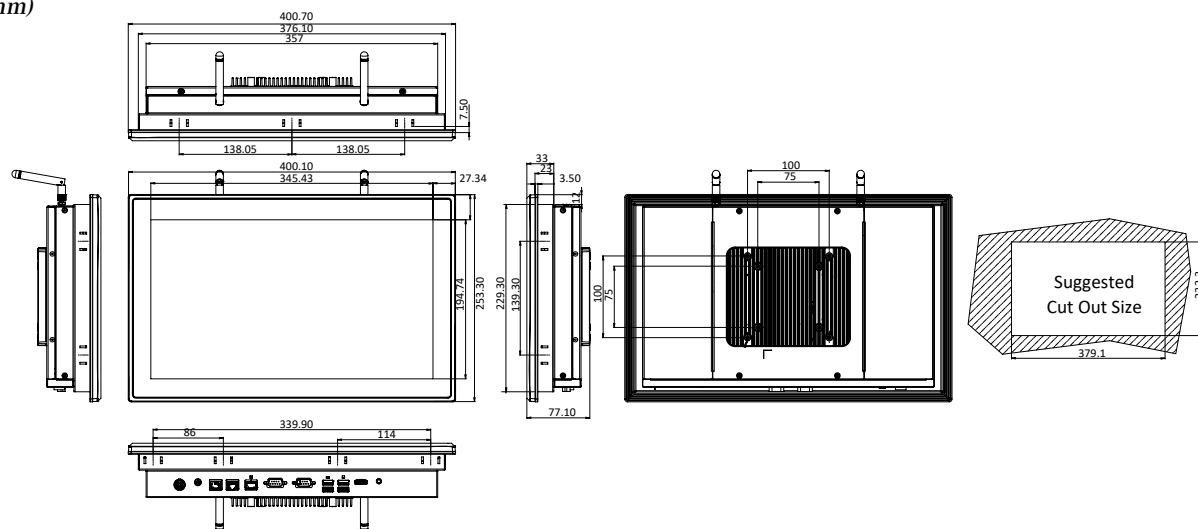
PPC-F15D-ULT5 Dimensions

(Unit: mm)



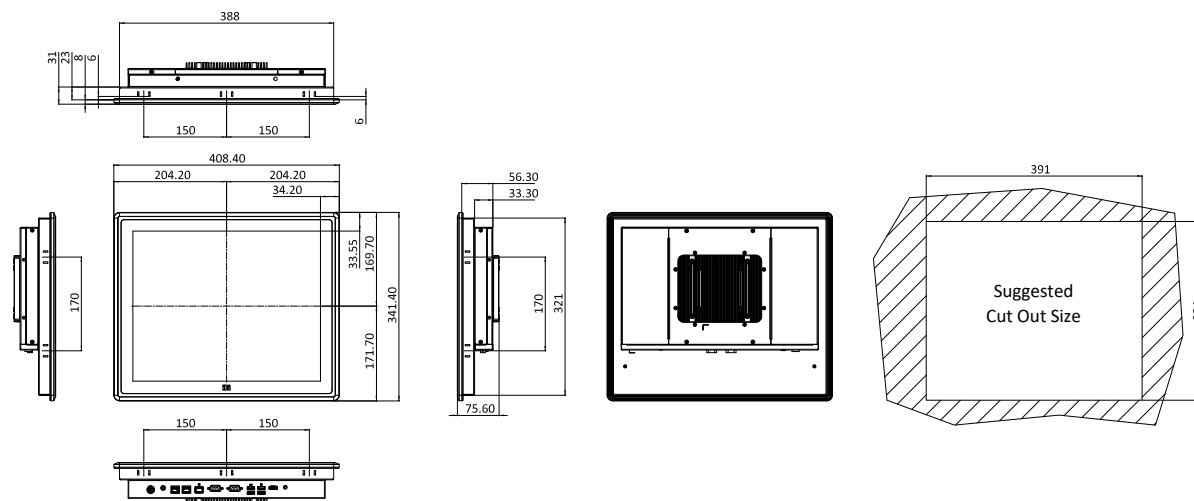
PPC-FW15D-ULT5 Dimensions

(Unit: mm)



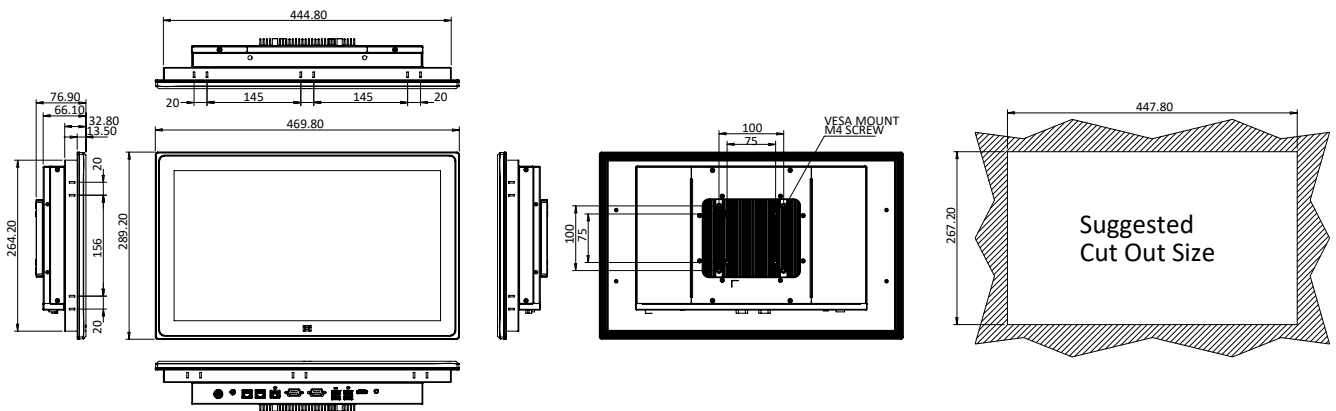
PPC-F17D-ULT5 Dimensions

(Unit: mm)



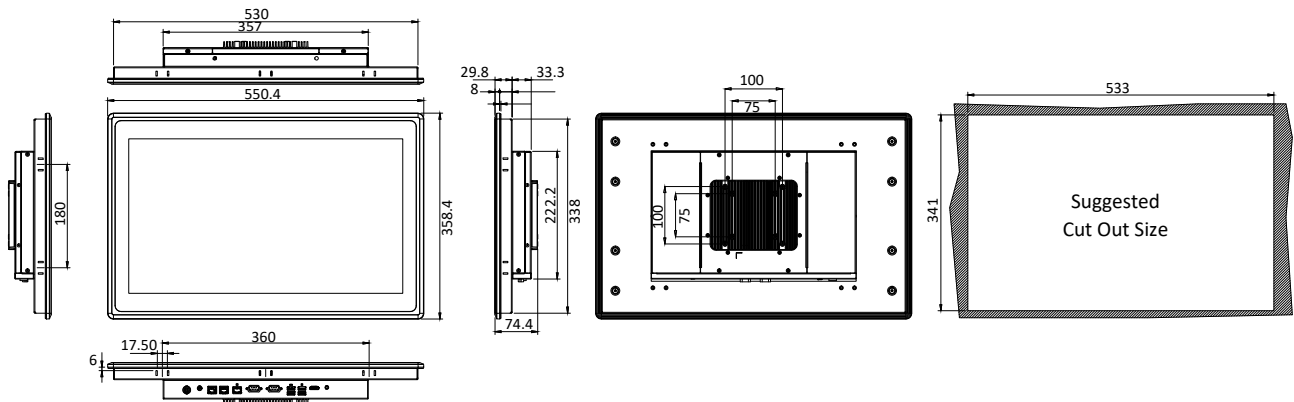
PPC-FW19D-ULT5 Dimensions

(Unit: mm)



PPC-FW22D-ULT5 Dimensions

(Unit: mm)



PPC-FW24D-ULT5 Dimensions

(Unit: mm)

