

# 4

## Intelligent HMI and Monitors

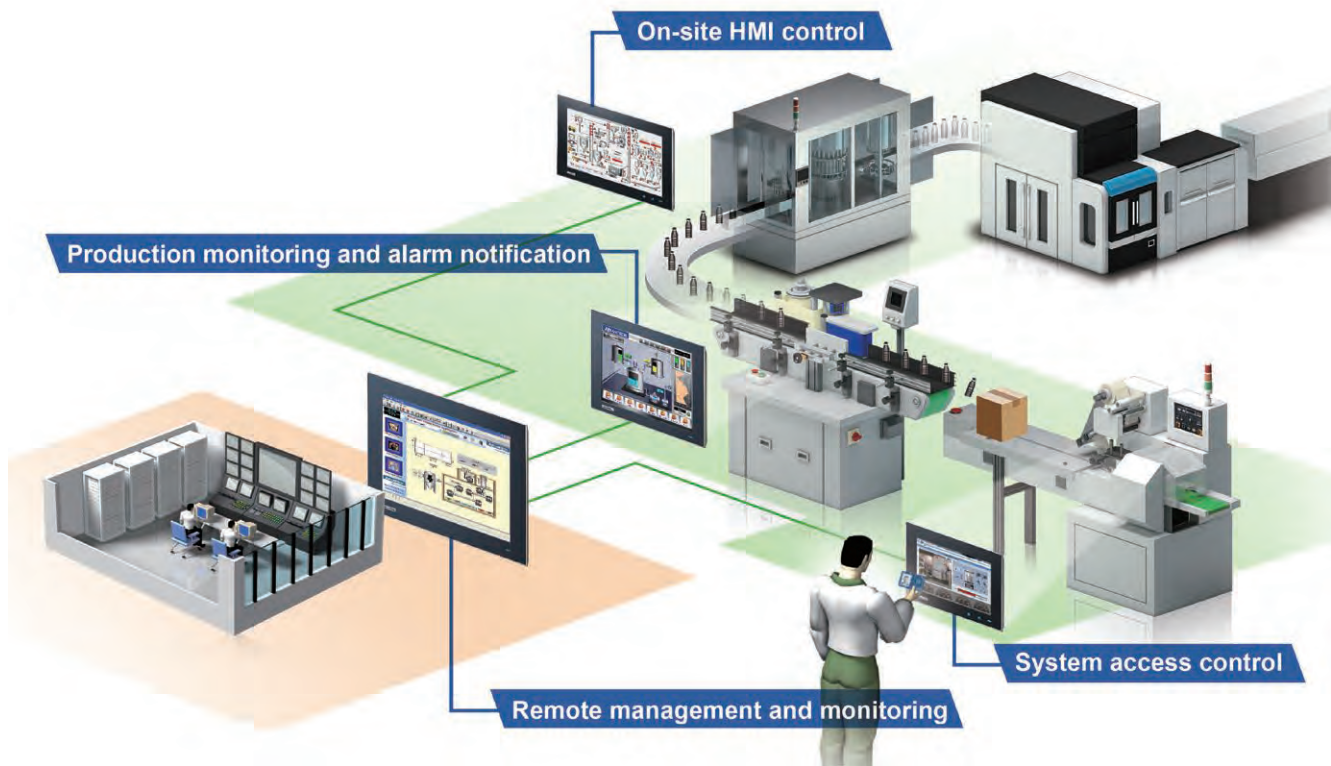
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# Introduction

To facilitate data visualization in Industry 4.0 applications, Advantech offers a diverse range of rugged and reliable HMI products of varying size (from 3.5" to 21.5") and screen ratio (4:3 and 16:9). Our HMI product categories include high-performance control panels that can be embedded into equipment and machines, low-power industrial thin clients for process monitoring, web terminals for next-generation smart factory applications, and standard industrial monitors. In addition to standard products, Advantech also provides customized domain-focused products to satisfy the needs of specific industries.

All Advantech HMI products are equipped with relevant software (WebAccess/HMI, WebAccess/SCADA or WISE-PaaS/RMM) as well as Advantech's iDOOR technology, making them suitable for various applications.



## Product Categories

### Modular Series

In response to ongoing advances in Industry 4.0, Advantech has created its new series of modular panel PC solutions based on three performance-segmented modules — a control panel, industrial thin-client, and industrial monitor. The modular design of our solutions allows the computing box modules to be interchangeably combined with our display modules to provide comprehensive platform solutions for specific field applications. This modularization offers many advantages, including flexible configuration, rapid integration and deployment, reduced system downtime and maintenance costs, and support for future expansion.

### Control Panel

Advantech's control panel series of PC-based open control platforms feature a high-performance, fanless design and can be integrated with a wide variety of machines in diverse environments to support complex machine control tasks and data visualization applications. The optimized design includes three Gigabit LANs that support multiple fieldbus communication protocols, an IP66-rated front panel that protects against dust and water ingress, and support for flexible iDOOR and PCIe expansion, making these platforms particularly ideal for industrial automation control operations.

### Thin Client Terminals

Advantech's thin client modules feature a compact, fanless, and low-power design that supports multiple aspect ratios (4:3 and 16:9) and allows the modules to be equipped with a range of display sizes (5.7" to 21.5"). These thin client modules are primarily deployed as manufacturing execution systems (MESs) or for work flow monitoring and production process visualization. Under the Industry 4.0 trend, thin clients are widely utilized in distributed control architectures because of their easy deployment and suitability for the centralized management of devices and information. This architecture allows the OS to be quickly dispatched from server to client following a hardware replacement while still ensuring data security.

### Operator Panel

With SCADA software moving toward cloud-based applications, simple web-based terminals with HTML5 browser support have become an economical option for process monitoring. Advantech's WebOP series of operator panels feature a range of display sizes (7" to 12") and support multiple communication interfaces (e.g., RS-232/422/485, Ethernet, and USB). Bundled with WebAccess/HMI software, Advantech's WebOP series supports over 450 PLC communication protocols, ensuring convenient integration with equipment made by a comprehensive range of manufacturers.

### Domain Focused

In addition to standard products, Advantech provides domain-focused systems with customizable features designed to satisfy specific requirements across various vertical markets. Verified with ATEX Class 1 Division 2/EN 50155 certification, Advantech's domain-focused rugged HMIs are sufficiently robust for operation in extreme environments typical of the locomotive, food and beverage, oil and gas, and machine tool manufacturing industries. Ensuring system flexibility and compatibility are also major focus points for Advantech when designing domain-focused HMI products.

### Industrial Monitors

Independent controllers and industrial PCs embedded in machines require an interface for data processing and visualization, for which Advantech produces industrial monitors in a range of sizes (6", 12.1", 15", 17", 18.5", to 21.5"). Featuring an industrial-grade LED LCD with a backlight lifetime of 50,000 hours, high IP-rated bezel, and wide temperature support, our industrial monitors are equipped to withstand operation in harsh environments. Versatile mounting options (panel, wall, desktop, rack, and VESA arm) are also supported to ensure easy installation for various usage scenarios.

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# Modular Panel PCs

## Panel Module



P/N	FPM-D12T-AE	FPM-D15T-AE	FPM-D17T-AE	FPM-D18W-AE	FPM-D21W-AE
Panel Size	12"	15"	17"	18.5"	21.5"
Resolution	1024 x 768	1024 x 768	1280 x 1024	1366 x 768	1920 x 1080
Touch	5-wire resistive touch	Projected capacitive touch	Projected capacitive touch	Projected capacitive touch	Projected capacitive touch
Wi-Fi Antenna	-	✓	✓	✓	✓
NFC Reader	-	△	△	△	△
IP Rating	IP66-rated front panel	IP66-rated front panel	IP66-rated front panel	IP66-rated front panel	IP66-rated front panel

## Box Module

Coming Soon



P/N	TPC-B200-E12AE	TPC-B200-J12AE	TPC-B500-633AE	TPC-B500-653AE	TPC-B500-6C2AE	TPC-B500-673AE
CPU	Intel® Atom® E3940 Processor	Intel® Celeron® J3455 Processor	Intel® Core™ i3-6100U	Intel® Core™ i5-6300U	Intel® Celeron 3955U	Intel® Core™ i7-6600U
Memory	4 GB DDR3L 1600 MHz SO-DIMM	4 GB DDR3L 1600 MHz SO-DIMM	8 GB DDR4 2133 MHz SO-DIMM	8 GB DDR4 2133 MHz SO-DIMM	4 GB DDR4 2133 MHz SO-DIMM	8 GB DDR4 2133 MHz SO-DIMM
I/O	2 x RS-232/422/485, 2 x USB 3.0, 2 x USB 2.0, 2 x GbE, 1 x Line Out, 1 x DP	2 x RS-232/422/485, 2 x USB 3.0, 2 x USB 2.0, 2 x GbE, 1 x Line Out, 1 x DP	1 x RS-232, 1 x RS-232/422/485, 2 x USB 3.0, 2 x USB 2.0, 3 x GbE, 1 x Line Out, 1 x DP	1 x RS-232, 1 x RS-232/422/485, 2 x USB 3.0, 2 x USB 2.0, 3 x GbE, 1 x Line Out, 1 x DP	1 x RS-232, 1 x RS-232/422/485, 2 x USB 3.0, 2 x USB 2.0, 3 x GbE, 1 x Line Out, 1 x DP	1 x RS-232, 1 x RS-232/422/485, 2 x USB 3.0, 2 x USB 2.0, 3 x GbE, 1 x Line Out, 1 x DP
Expansion	1 x Full-size mini PCIe	1 x Full-size mini PCIe	1 x Half-size PCIe, 2 x full-size mini PCIe	1 x Half-size PCIe, 2 x full-size mini PCIe	1 x Half-size PCIe, 2 x full-size mini PCIe	1 x Half-size PCIe, 2 x full-size mini PCIe
Power Input	24 V <sub>DC</sub> ± 20%	24 V <sub>DC</sub> ± 20%	24 V <sub>DC</sub> ± 20%	24 V <sub>DC</sub> ± 20%	24 V <sub>DC</sub> ± 20%	24 V <sub>DC</sub> ± 20%
Operating System	Microsoft® Windows 10 IoT Enterprise LTSB	Microsoft® Windows 10 IoT Enterprise LTSB	Microsoft® Windows WES7 (32/64-bit), Windows 7 (32/64-bit), Ubuntu 16.04, Windows 10 IoT Enterprise LTSB	Microsoft® Windows WES7 (32/64-bit), Windows 7 (32/64-bit), Ubuntu 16.04, Windows 10 IoT Enterprise LTSB	Microsoft® Windows WES7 (32/64-bit), Windows 7 (32/64-bit), Ubuntu 16.04, Windows 10 IoT Enterprise LTSB	Microsoft® Windows WES7 (32/64-bit), Windows 7 (32/64-bit), Ubuntu 16.04, Windows 10 IoT Enterprise LTSB
Mount Options	Panel, stand, and VESA mount (with optional mounting kit)	Panel, stand, and VESA mount (with optional mounting kit)	Panel, stand, and VESA mount (with optional mounting kit)	Panel, stand, and VESA mount (with optional mounting kit)	Panel, stand, and VESA mount (with optional mounting kit)	Panel, stand, and VESA mount (with optional mounting kit)

## Monitor Box Modules



P/N	FPM-B700-AE
Video Interface Available	HDMI, DP, DVI, VGA, iLink
Power Input	24 V <sub>DC</sub> ± 20%
Mount Options	Panel, stand, and VESA mount
iLINK Technology	Supported

# High-Performance Control Panels



Model		TPC-1881 WP	TPC-1581 WP
CPU		4th Gen. Intel® Core™ i7/i3 Processor	4th Gen. Intel® Core™ i3 Processor
Memory		4 GB DDR3L	4 GB DDR3L
		1600 MHz SO-DIMM	1600 MHz SO-DIMM
		SDRAM	SDRAM
Display	Display Type	TFT LED LCD	TFT LED LCD
	Display Size	18.5"	15.6"
	Max. Resolution	1366 x 768	1366 x 768
	Max. Colors	16.7M	16.7M
	Luminance cd/m <sup>2</sup>	300 nits	300 nits
	VieWING Angle (H/V°)	170/160	170/160
	Backlight MTBF	50,000 hr	50,000 hr
	Touchscreen	Projected capacitive touch	Projected capacitive touch
Network (LAN)		10/100/1000BASE-T x 2	10/100/1000BASE-T x 2
I/O Ports		RS-232/422/485 x 1 USB 3.0 x 2, HDMI 1.4 x 1 Audio line out x 1, USB 2.0 x 1 (Δ) Audio MIC x 1 (Δ)	RS-232/422/485 x 1 USB 3.0 x 2, HDMI 1.4 x 1 Audio line out x 1, USB 2.0 x 1 (Δ) Audio MIC x 1 (Δ)
HDD (Optional)		2.5" SATA HDD	2.5" SATA HDD
Intelligent Keys		Quick access through built-in front bezel function and home key button	Quick access through built-in front bezel function and home key button
CompactFlash Slots		CFast slot x 1	CFast slot x 1
Expansion Slots		Full-size mini PCIe	Full-size mini PCIe
Digital Input/Output		-	-
Ingress Protection		Front panel: IP66	Front panel: IP66
DC Power Input (Voltage)		24 V <sub>DC</sub> ± 20%	24 V <sub>DC</sub> ± 20%
Enclosure		Front bezel: Die cast aluminum alloy Back housing: PC/ABS resin	Front bezel: Die cast aluminum alloy Back housing: PC/ABS resin
Mounting		Panel mount	Panel mount
Weight		6 kg (13.22 lb)	7 kg (15.44 lb)
Operating Temperature		0 ~ 55°C (32 ~ 131°F)	0 ~ 55°C (32 ~ 131°F)
Dimensions		488.1 x 309.1 x 56.7 mm (19.2" x 12.2" x 2.2")	419.7 x 269 x 56.7 mm (16.52" x 10.59" x 2.23")
Certification		BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL
Operating System		Windows 7/8, WES7, WEC7, Linux, Windows 10 Enterprise LTSC	Windows 7/8, WES7, WEC7, Linux, Windows 10 Enterprise LTSC

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# High-Performance Control Panels



Model		TPC-1782H	TPC-1582H	TPC-1282T
CPU		4th Gen. Intel® Core™ i7/i3 Processor	4th Gen. Intel® Core™ i3 Processor	5th Gen. Intel® Core™ i3 Processor
Memory		4 GB DDR3L	4 GB DDR3L	4 GB DDR3L
		1600 MHz SO-DIMM	1600 MHz SO-DIMM	1600 MHz SO-DIMM
		SDRAM	SDRAM	SDRAM
Display	Display Type	TFT LED LCD	TFT LED LCD	TFT LED LCD
	Display Size	17"	15"	12.1"
	Max. Resolution	1280 x 1024	1024 x 768	1024 x 768
	Max. Colors	16.7M	16.2M	16.2M
	Luminance cd/m <sup>2</sup>	350 nits	400 nits	600 nits
	VieWING Angle (H/V°)	170/160	160/140	160/140
	Backlight MTBF	50,000 hr	50,000 hr	50,000 hr
	Touchscreen	Resistive	Resistive	Resistive
Network (LAN)		10/100/1000BASE-T x 2	10/100/1000BASE-T x 2	10/100/1000BASE-T x 2
I/O Ports		RS-232/422/485 x 1 USB 3.0 x 2, HDMI 1.4 x 1 Audio line out x 1, USB 2.0 x 1 (Δ) Audio MIC x 1 (Δ)	RS-232/422/485 x 1 USB 3.0 x 2, HDMI 1.4 x 1 Audio line out x 1, USB 2.0 x 1 (Δ) Audio MIC x 1 (Δ)	RS-232/422/485 x 1 USB 3.0 x 2, HDMI 1.4 x 1 Audio line out x 1, USB 2.0 x 1 (Δ) Audio MIC x 1 (Δ)
HDD (Optional)		2.5" SATA HDD	2.5" SATA HDD	2.5" SATA HDD
Intelligent Keys		-	-	-
CompactFlash Slots		CFast slot x 1	CFast slot x 1	CFast slot x 1
Expansion Slots		Full-size mini PCIe/half-size PCIe	Full-size mini PCIe/half-size PCIe	Full-size mini PCIe/half-size PCIe
Digital Input/Output		-	-	-
Ingress Protection		Front panel: IP65	Front panel: IP65	Front panel: IP66
DC Power Input (Voltage)		24 V <sub>DC</sub> ± 20%	24 V <sub>DC</sub> ± 20%	24 V <sub>DC</sub> ± 20%
Enclosure		Front bezel: Die cast aluminum alloy Back housing: PC/ABS resin	Front bezel: Die cast aluminum alloy Back housing: PC/ABS resin	Front bezel: Die cast aluminum alloy Back housing: PC/ABS resin
Mounting		Desktop, Wall or Panel Mount	Desktop, Wall or Panel Mount	Desktop, Wall or Panel Mount
Weight		6 kg (13.23 lb)	5.5 kg (12.13 lb)	3.2 kg (7.02 lb)
Operating Temperature		0 ~ 55°C (32 ~ 131°F)	0 ~ 55°C (32 ~ 131°F)	0 ~ 55°C (32 ~ 131°F)
Dimensions		414 x 347.5 x 84 mm (16.3" x 13.68" x 3.31")	383 x 307 x 78.5 mm (15.08" x 12.09" x 3.09")	311.8 x 238 x 77.2 mm (12.28" x 9.38" x 3.04")
Certification		BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL
Operating System		Windows 7/8, WES7, WEC7, Linux, Windows 10 Enterprise LTSB	Windows 7/8, WES7, WEC7, Linux, Windows 10 Enterprise LTSB	Windows 7/8, WES7, WEC7, Linux, Windows 10 Enterprise LTSB

# Industrial Thin-Client Terminals



Model		TPC-1840WP	TPC-1751T		TPC-1551WP
CPU		AMD G-series T56E 1.65GHz	Intel® Atom™ E3827 1.75 GHz Processor	Intel® Celeron® J1900 2.0 GHz Processor	Intel® Atom™ E3827 1.75 GHz Processor
Memory		4 GB (Optional 8 GB) DDR3L 1600 MHz SO-DIMM SDRAM	4 GB (Optional 8 GB) DDR3L 1600 MHz SO-DIMM SDRAM	4 GB (Optional 8 GB) DDR3L 1600 MHz SO-DIMM SDRAM	4 GB (Optional 8 GB) DDR3L 1600 MHz SO-DIMM SDRAM
Display	Display Type	HD TFT LED LCD	SXGA TFT LED LCD		WXGA TFT LED LCD
	Display Size	18.5"	17"		15.6"
	Max. Resolution	1366 x 768	1280 x 1024		1366 x 768
	Max. Colors	16.7M	16.7M		16.7M
	Luminance cd/m <sup>2</sup>	300 nits	350 nits		400 nits
	VieWInG Angle (H/V°)	170/160	160/140		170/160
	Backlight MTBF	50,000 hr	50,000 hr		50,000 hr
Touchscreen		Projected capacitive	Resistive		Projected capacitive
HDD (Optional)		2.5" SATA x 1	via optional kit		via optional kit
Network (LAN)		10/100/1000BASE-T x 2	10/100/1000BASE-T x 2		10/100/1000BASE-T x 2
I/O Ports		RS-232 x 3 RS-232/422/485 x 1 - USB 2.0 x 2	RS-232 x 1, RS-232/422/485 x 1 USB 3.0 x 1 USB 2.0 x 1		RS-232 x 1, RS-232/422/485 x 1 USB 3.0 x 1 USB 2.0 x 1
CompactFlash Slots		-	CFast slot x 1		CFast slot x 1
Expansion Slots		Full-size mini PCIe	Full-size mini PCIe		Full-size mini PCIe
DC Power Input (Voltage)		24 V <sub>DC</sub> ± 20%	24 V <sub>DC</sub> ± 20%		24 V <sub>DC</sub> ± 20%
Dimensions		488 x 309 x 56.7 mm (19.21" x 12.17" x 2.23")	413.7 x 347.2 x 63.8 mm (16.28" x 13.68" x 2.5")		419.7 x 269 x 61.9 mm (16.52" x 10.59" x 2.44")
Weight		7 kg	6 kg		5 kg
Front cover		Front bezel: Die cast aluminum alloy	Front bezel: Die cast aluminum alloy		Front bezel: Die cast aluminum alloy
Operating Temperature		0 ~ 55°C (32 ~ 131°F)	-20 ~ 60°C (-4 ~ 140°F)		0 ~ 55°C (32 ~ 131°F)
Ingress Protection (Front Panel)		IP66	IP66		IP66
Certification		BSMI, CCC, CE	BSMI, CCC, CE		BSMI, CCC, CE
		FCC Class A, UL	FCC Class A, UL, KCC		FCC Class A, UL
Operating System		Windows 7, WES7	Windows 7, WES7, WEC7, Linux, Windows 10 Enterprise LTSB		Windows 7, WES7, WEC7, Linux, Windows 10 Enterprise LTSB

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# Industrial Thin-Client Terminals



Model		TPC-1551T	TPC-1251T	TPC-1051WP	TPC-651T
CPU		Intel® Atom™ E3827 1.75 GHz Processor	Intel® Atom™ E3827 1.75 GHz Processor	Intel® Atom™ E3827 1.75 GHz Processor	Intel® Atom™ E3827 1.75 GHz Processor
Memory		4 GB (Optional 8 GB) DDR3L 1600 MHz SO-DIMM SDRAM	4 GB (Optional 8 GB) DDR3L 1600 MHz SO-DIMM SDRAM	4 GB (Optional 8 GB) DDR3L 1600 MHz SO-DIMM SDRAM	4 GB (Optional 8 GB) DDR3L 1600 MHz SO-DIMM SDRAM
Display	Display Type	XGA TFT LED LCD	XGA TFT LED LCD	WXGA TFT LED LCD	VGA TFT LED LCD
	Display Size	15"	12.1"	10.1"	5.7"/6.5"
	Max. Resolution	1024 x 768	1024 x 768	1280 x 800	640 x 480
	Max. Colors	16.7M	16.2M	262K	262K
	Luminance cd/m <sup>2</sup>	400 nits	600 nits	300 nits	550/800 nits
	VieWING Angle (H/V°)	160/140	160/140	170/170	160/140
	Backlight MTBF	50,000 hr	50,000 hr	25,000 hr	50,000 hr
Touchscreen		Resistive	Resistive	Projected capacitive	Resistive
HDD (Optional)		2.5" SATA x 1	2.5" SATA x 1	2.5" SATA x 1	2.5" SATA x 1
Network (LAN)		10/100/1000BASE-T x 2	10/100/1000BASE-T x 2	10/100/1000BASE-T x 2	10/100/1000BASE-T x 2
I/O Ports		RS-232 x 1, RS-232/422/485 x 1 USB 3.0 x 1 USB 2.0 x 1	RS-232 x 1, RS-232/422/485 x 1 USB 3.0 x 1 USB 2.0 x 1	RS-232 x 1, RS-232/422/485 x 1 USB 3.0 x 1 USB 2.0 x 1	RS-232 x 1, RS-232/422/485 x 1 USB 3.0 x 1 USB 2.0 x 1
CompactFlash Slots		CFast slot x 1	CFast slot x 1	CFast slot x 1	CFast slot x 1
Expansion Slots		Full-size mini PCIe	Full-size mini PCIe	Full-size mini PCIe	Full-size mini PCIe
DC Power Input (Voltage)		24 V <sub>DC</sub> ± 20%	24 V <sub>DC</sub> ± 20%	24 V <sub>DC</sub> ± 20%	24 V <sub>DC</sub> ± 20%
Dimensions		383.20 x 307.30 x 61.10 mm (15.09" x 12.10" x 2.41")	311.80 x 238 x 57.2 mm (12.28" x 9.37" x 2.25")	283.1 x 202.3 x 61.4 mm (11.15" x 7.96" x 2.42)	199 x 152 x 58.9 mm (7.83" x 5.98" x 2.32")
Weight		3.9 kg	2.6 kg	2.6 kg	1.5 kg
Front cover		Front bezel: Die cast aluminum alloy	Front bezel: Die cast aluminum alloy	Front bezel: Die cast aluminum alloy	Front bezel: Die cast aluminum alloy
Operating Temperature		-20 ~ 60°C (-4 ~ 140°F)	-20 ~ 60°C (-4 ~ 140°F)	-20 ~ 55°C (-4 ~ 131°F)	-20 ~ 60°C (-4 ~ 140°F)
Ingress Protection (Front Panel)		IP66	IP66	IP66	IP66
Certification		BSMI, CCC, CE	BSMI, CCC, CE	BSMI, CCC, CE	BSMI, CCC, CE
		FCC Class A, UL, KCC	FCC Class A, UL, KCC	FCC Class A, UL	FCC Class A, UL
Operating System		Windows 7, WES7, WEC7, Linux, Windows 10 Enterprise LTSB	Windows 7, WES7, WEC7, Linux, Windows 10 Enterprise LTSB	Windows 7, WES7, WEC7, Linux, Windows 10 Enterprise LTSB	Windows 7, WES7, WEC7, Linux, Windows 10 Enterprise LTSB



# Domain-Focused



Model	IPPC-5211WS	SPC-2140WP/1840WP	SPC-1881WP	FPM-8151H	TPC-8151WM	TPC-8191WM	
CPU	Intel Celeron J1900	AMD T56N	Intel® Core™ i7/ i5 / i3 Processor	-	Intel Celeron CPU G3900TE @ 2.30 GHz	Intel Celeron CPU G3900TE @ 2.30 GHz	
Memory	4 GB DDR3L SDRAM	4 GB DDR3L SDRAM	4 GB DDR3L SDRAM	-	4 GB DDR3L SDRAM	4 GB DDR3L SDRAM	
Display	Display Type	TFT LED LCD	TFT LED LCD	TFT LED LCD	TFT LED LCD	TFT LED LCD	
	Display Size	21.5"	21.5" / 18.5"	18.5"	15"	15.6"	
	Max. Resolution	1920 x 1080	21.5": 1920 x 1080 18.5": 1366 x 768	1366 x 768	1024 x 768	1366 x 768	1600 x 900
	Max. Colors	16.7M	16.7M	16.7M	16.2M	16.7M	16.7M
	Luminance cd/m <sup>2</sup>	300 nits	300 nits	300 nits	350 nits	300 nits	250 nits
	VieWING Angle (H/V°)	178/178	21.5": 178/178 18.5": 170/160	170/160	160/140	80 (left), 80 (right), 80 (up), 80 (down)	85 (left), 85 (right), 80 (up), 80 (down)
	Backlight MTBF	50,000 hr	50,000 hr	50,000 hr	50,000 hr	70,000 hr	30,000 hr
	Touchscreen	Projected capacitive touch	Projected capacitive touch	Projected capacitive touch	Resistive	Projected capacitive touch	Projected capacitive touch
Network (LAN)	10/100/1000BASE-T x 2	10/100/1000BASE-T x 2	10/100/1000BASE-T x 2	-	10/100/1000BASE-T x 1	10/100/1000BASE-T x 1	
I/O Ports	RS-232/422/485 x 1 RS-232 x 1 USB 3.0 x 1	RS-232 x1 (connection:M12 A-coded, 8-pin male) USB 2.0 x1 (connection:M12 A-coded, 8-pin female) 24 V <sub>DC</sub> power input (connection:M12 A-coded, 5-pin male)	RS-232 x1 (connection:M12 A-coded, 8-pin male) USB 2.0 x1 (connection:M12 A-coded, 8-pin female) 24 V <sub>DC</sub> power input (connection:M12 A-coded, 5-pin male)	VGA DVI-D	USB 3.0 x 3 (rear) USB 2.0 x 1 (rear) USB 3.0 x 1 (front)	USB 3.0 x 3 (rear) USB 2.0 x 1 (rear) USB 3.0 x 1 (front)	
HDD (Optional)	2.5" SATA HDD	2.5" SATA HDD	2.5" SATA HDD	-	2.5" SATA HDD	2.5" SATA HDD	
Expansion Slots	Full-size mini PCIe x1	Full-size mini PCIe x1	Full-size mini PCIe x1	-	-	-	
Digital	-	-	-	-	-	-	
Input/Output	-	-	-	-	-	-	
Ingress Protection	All-Around IP69k	All-Around IP66	All-Around IP66	Front IP66	-	-	
DC Power Input (Voltage)	24 V <sub>DC</sub> ± 20%	24 V <sub>DC</sub> ± 20%	24 V <sub>DC</sub> ± 20%	24 V <sub>DC</sub> ± 20% / 12 V <sub>DC</sub> /4.75A	19 V <sub>DC</sub>	19 V <sub>DC</sub>	
Enclosure	Front bezel: Stainless steel Back housing: Aluminum/stainless steel	Front bezel: Die cast aluminum alloy Back housing: Die cast aluminum alloy	Front bezel: Die cast aluminum alloy Back housing: Die cast aluminum alloy	Front bezel: 316L stainless steel Back housing: Stainless steel	Front bezel: Die cast aluminum alloy Back housing: PC/ABS resin	Front bezel: Die cast aluminum alloy Back housing: PC/ABS resin	
Mounting	VESA and flange adapter for arm and foot mount	VESA	VESA	VESA / Panel Mount	Desktop, Wall or VESA Mount	Desktop, Wall or VESA Mount	
Weight	16 kg	9 kg	9 kg	8.5 kg	4.4 kg	5.5 kg	
Operating Temperature	0 ~ 50°C (32 ~ 122°F)	0 ~ 55°C (32 ~ 131°F)	0 ~ 55°C (32 ~ 131°F)	-20 ~ 60°C (-4 ~ 140°F)	0 ~ 40°C (32 ~ 130°F)	0 ~ 40°C (32 ~ 130°F)	
Dimensions	555 x 346.5 x 81 mm	21.5": 558.4 x 349.8 x 65 mm 18.5": 488 x 309 x 65 mm	488 x 309 x 65 mm	414 x 347.5 x 84 mm	400.74 x 241 x 78.5 mm	510 x 291 x 66 mm	
Certification	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL	BSMI, CCC, CE, FCC Class A, UL	CCC, CE, FCC Class A, UL	CCC, CE, FCC Class A, UL	
Operating System	Windows 7/8, WES7, WEC7, Linux, Windows 10 Enterprise LTSB	Windows 7/8, WES7, WEC7, Linux	Windows 7/8, WES7, WEC7, Linux, Windows 10 Enterprise LTSB	Windows 7/8, WES7, WEC7, Linux, Windows 10 Enterprise LTSB	WIN 10 Enterprise LTSB	WIN 10 Enterprise LTSB	

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