ADLINK
Leading EDGE COMPUTING

Solution Brief

All-in-one Smart Panel speeds human-machine interaction device development



www.adlinktech.com

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In the current market for interactive device installations, system integrators (SI), brand vendors, and other operators are required to quickly address rapidly evolving market demands. Innovative human-machine interaction systems integrating touch, vision, and/or sound are widespread, including ticketing, vending, and automatic teller machines, kiosks, and a growing variety of facilities in airports and other public transportation, retail, tourism, healthcare, and manufacturing environments. Reducing time-to-market (TTM) is critical in bringing these implementations to reality.

Even so, it is difficult to arbitrarily accelerate TTM. Even minor responses to changes in application requirements can resonate, requiring alterations to a host of key components, including touch panel, display screen, mainboard, and I/O interfaces. Developers may have to return to the design stage and revalidate, wasting tremendous time and effort, inflating the development cycle and increasing total cost of ownership (TCO).

To accelerate TTM, lower TCO, and enhance design flexibility, ADLINK is pleased to introduce its Smart Panel solution, an all-in-one open frame panel computer integrating touch panel, display screen, mainboard, heat sink, and I/O interface (Figure 1). Coupled with ADLINK's unique Function Module (FM) design, the Smart Panel enables an 80/20 development model, delivering 80% of the total solution ready for use, including circuit layout, drivers, customized touch panel, mainboard and display function validation, leaving only 20% of development tasks remaining, specifically mechanical design evaluation, and FM board customization.

The high level of modularization provides optimal flexibility, allowing users to choose from wide-ranging combinations of panel types, display sizes, CPU performance, and I/O interface for the specific configuration that best suits their requirements. No matter the choice, there is no requirement to redesign the mainboard, thereby eliminating time-consuming board validation burdens.

Reduced TTM key to success

ADLINK's Smart Panel is factory-configured with display, touch panel, mainboard, and heat sink, with mainboard-mounted I/O. Further I/O port expansion is available via connection of ADLINK's FM board or other I/O boards by board-to-board connector. SI and brand vendors can change I/O format, type, quantity, and/or location with no need to replace the mainboard, reducing TTM for continued success. Industry-leading flexibility and effective pre-configuration allow SP-equipped prototypes to achieve completion in weeks' time.

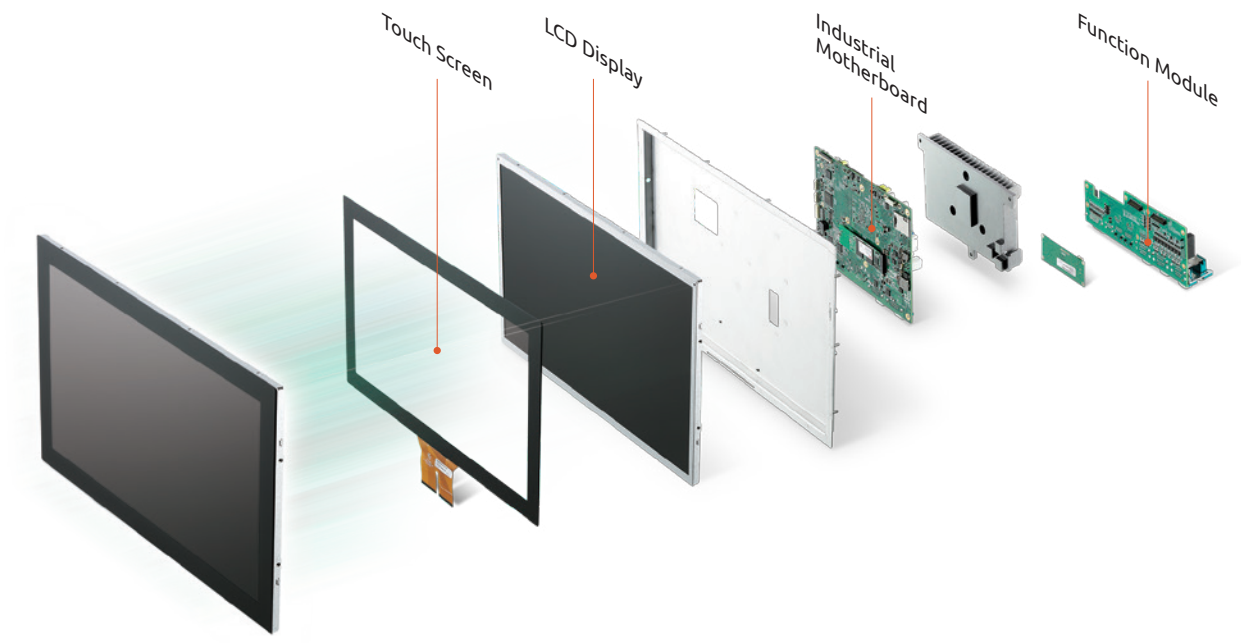


Figure 1: To accelerate TTM, lower TCO, and enhance design flexibility, ADLINK's Smart Panel solution is an all-in-one open frame panel computer integrating touch panel, display screen, mainboard, heat sink, and I/O interface.

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Reduced TCO translates to bigger profit

ADLINK's 80/20 development model allows Smart Panel users to skip early-phase development, conserving time and effort for validation, and reducing costs (Figure 2). ADLINK's Smart Panel helps customers further reduce TCO by ensuring that all critical components, including mainboard, touch panel, and power supply have been tested to industry standards prior to shipment. The components' high availability enables Smart Panel to maintain long-term reliable operation, significantly reducing the burdens and cost of repair and maintenance.

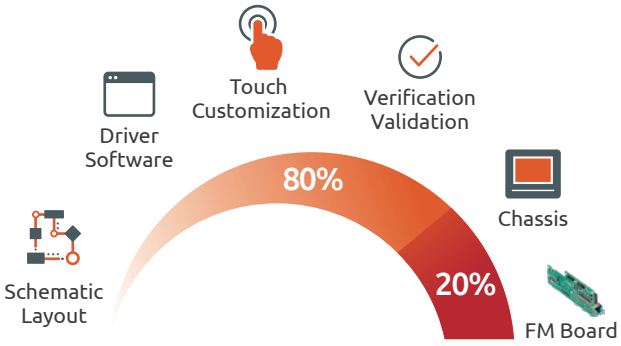


Figure 2: ADLINK's 80/20 development model allows Smart Panel users to skip early-phase development, conserving time and effort for validation, and reducing costs.

Furthermore, users are free to focus their efforts on enhancing core values and developing their own FM, thoroughly securing their intellectual property, as well as catering to specific vertical markets and maximizing profit margins.

Development flexibility widens application scope

ADLINK's FM configuration delivers significantly effective solutions to user obstacles. Take railway applications for example. Brand vendors have conventionally been required to spend considerable time wiring and negotiating detailed aspects of product assembly to be able to adapt industrial computer I/O to usable configurations, making the development process overwhelmingly difficult.

ADLINK's FM integration now allows fast and easy development of I/O configurations compatible with any vertical application, with significantly reduced R&D time and cost. Utilizing the SP as an embedded building block, a brand client was able to present a prototype in weeks, which its client could verify against its requirements of human machine interfaces used in driver's compartments.

ADLINK's Smart Panel can further be embedded in a wide variety of installations. With 4K immersive graphics and media performance, fast video acceleration, support for 3 independent 4K Ultra HD displays, up to 15 simultaneous 1080p30 decode streams, extensive media codec library, and advanced security powered by Intel Atom® and 7th Generation Intel® Core™ processors, the SP can offer self-services in retail kiosks, secure digital transactions for ticketing machines, smooth 3D image rendering for CNC machines, streamline medical examination processes, and serve at poker tables in casinos (Figure 3).

The Smart Panel further supports a wide-range of I/O interfaces, including USB 2.0, I2C, 32 function keys, and power and audio control. Power supply supports 12V and 9-36V, and is available through external isolated power modules or uninterrupted power supply (UPS) systems. The optimal flexibility enables SI and brand vendors to meet virtually any application scenario and stay ahead of market trends.

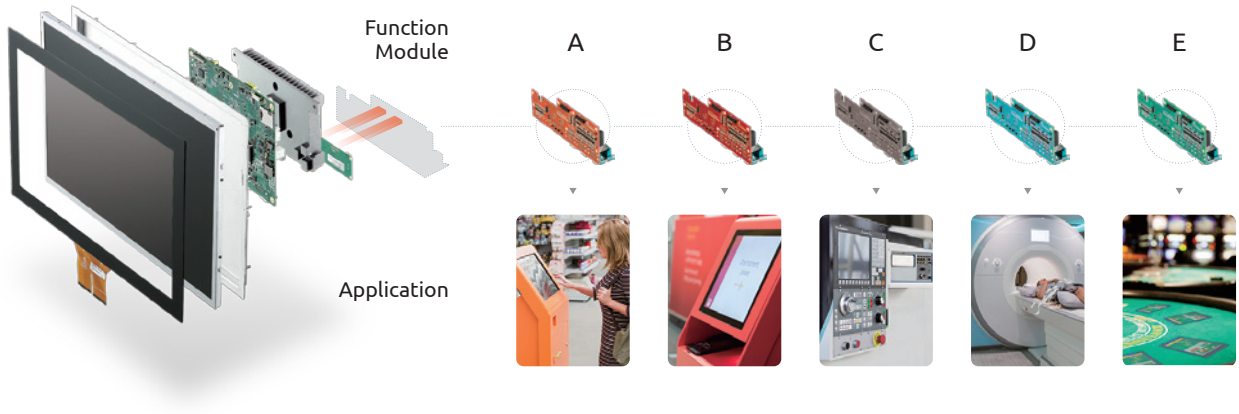


Figure 3: ADLINK's FM integration allows fast and easy development of I/O configurations compatible with any vertical application, with significantly reduced R&D time and cost.

Smart panel assets boost competitive advantage

ADLINK's Smart Panel guarantees ruggedness, flexibility, and long-term supply, fully satisfying the requirements of the dynamic IoT environment. A wide temperature range from -40˚C to 85˚C, rugged SODIMM, wide DC input voltage range, over voltage protection (OVP) and under voltage protection (UVP), combined with IP65-rated intrusion resistance, guarantee smart Panel performance in the most demanding settings.

ADLINK's Smart Panel provides choices of 7-inch to 21.5-inch 16:9 displays, P-CAP or resistive touch panels, mainboards powered by Intel Atom® or Intel® Core™ processors, support for Windows 10, Linux and Android operating systems, and FM boards customizable for vertical application. External power supply can be connected to the FM board to support power-hungry modules such as graphics cards and others (Figure 4).

Long-term supply is guaranteed with the proven availability of Intel processors and display modules, and ADLINK's Smart Panel Starter Kit assists SI and brand vendors in validating fundamental elements, providing a complete design guide for Smart Panel use. Early-phase software, hardware, and mechanical design are also sped through early-stage development. Altogether, the ADLINK Smart Panel delivers the highest level of flexibility and integration anywhere on the market.

About ADLINK

ADLINK Technology is leading edge computing with solutions that drive data-to-decision applications across industries. ADLINK offers building blocks and generic and market-specific IIoT platforms to serve the automation, communications, medical, transportation, and defense/government verticals. Our products include motherboards, blades, chassis, modules, gateways, systems and end-to-end solutions based on industry standard form factors, as well as test & measurement products and smart touch computers, displays and handhelds that support the global transition to always connected systems. ADLINK is a Premier Member of the Intel® Internet of Things Solutions Alliance and is active in several standards organizations and interoperability initiatives.

intel IoT Solutions Alliance Premier

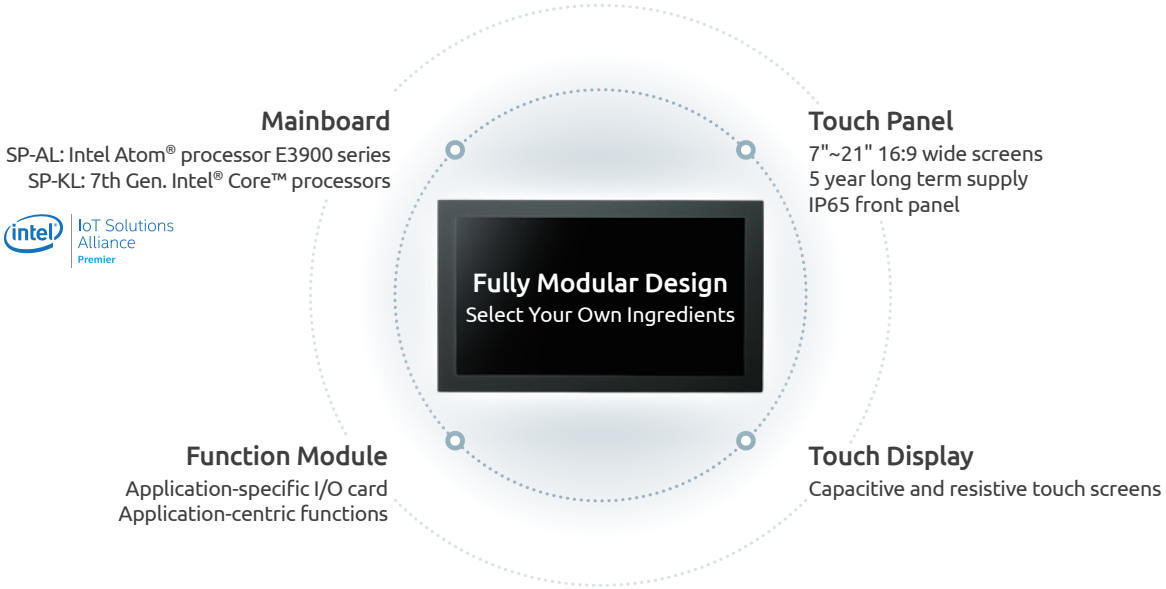


Figure 4: ADLINK's Smart Panel guarantees ruggedness, flexibility, and long-term supply, fully satisfying the requirements of the dynamic IoT environment.

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Model Name	Smart Panel - AL Series					
	SP-07WP-AL Series	SP-10WP(R)-AL Series	SP-12WP(R)-AL Series	SP-15WP(R)-AL Series	SP-18WP(R)-AL Series	SP-21WP(R)-AL Series
Product Image						
System						
Processor	Intel Atom® x5-E3930 / Intel Atom® x7-E3950 (Optional)					
Memory	1x SODIMM socket, DDR3L 1600MHz (Up to 8GB), supports rugged SODIMM					
Storage	eMMC 5.0, up to 64GB (Optional) 1x SATA header for 2.5" SSD or HDD, 1x M.2 slot, type 2280					
External I/O						
Ethernet	2x GbE (Standard: Intel® I211-AT, Option: Intel® I210IT), RJ-45, WOL					
Serial Port	2x RS-232/422/485 programmable, support 9 bit mode and auto flow					
USB 2.0	1x USB 2.0, Type A, OCP, 1000mA					
USB 3.0	1x USB 3.0, Type A, OCP, 1600mA					
DisplayPort	1x DP, DP++, supports resolutions up to 4096 x 2160					
Internal I/O						
Mini PCIe	1x mPCIe slot (PCIe + USB), compliant with PCIE mini card spec v1.2, supports full/half size					
USIM	1x SIM slot for 3G/4G communication					
USB	1x wafer, supports camera or dongle					
I2C	1x wafer, supports IoT sensors (not including algorithm), 2x wafers for I2C clients					
Audio	1x wafer, supports 2x 2W stereo speaker, built-in amplifier, 1x wafer, Mic-in, mono, Line-out					
Keys	1 box header, supports physical key x 32 for data input 1 wafer, supports LCD bcklight up/down, volume up/down (Optional)					
GPIO	1x wafer, supports 8-pin GPI/O					
Power						
Connector	1x 4 circuit mini fit					
DC Input	AT/ATX +12VDC standard, optional +9 to +36VDC					
AC Input	120W/160 W AC-DC adapter (Optional)					
Power/Fail Reset	1x wafer, supports system reset & power button, 1x power LED					
Backup Battery	1x wafer for backup battery for RTC, 1x wafer for UPS kit to backup data when AC shuts down (Optional)					
Notification						
Thermal Sensor	1x CPU Tj, 2 x PCBA top & bottom-mounted thermal sensors (Optional)					
TPM	TPM 2.0 (Optional)					
LED Indicator	1x wafer, supports 1x power, 1x storage, 4x COM (Tx & Rx) 1x WDT, 3x user-defined					
Debug port	1x DB40					
Mechanical Bracket						
IP Grade	IP65 for front					
Material	SGCC					
Display and Touch (Standard)						
	7"	10.1"	12.1"	15.6"	18.5"	21.5"
Display Ratio	16:9					
Display Resolution	1024 x 600	1280 x 800	1366 x 768	1920 x 1080		
Display View Angle	75/75/70/75	85/85/85/85	89/89/89/89	85/85/85/85	85/85/80/80	60/60/70/70
Luminance (Nits)	250 cd/m^2	400 nits (typ)	400 nits (typ)	400 nits (typ)	450 nits (typ)	500 nits (typ)
Capcitive Touch	5 points capacitive touch screen or 1 point 5 wire resistive touch screen, full-flat					
Environmental						
Operating Temp.	-20°C to 60°C	-20°C to 60°C	-30°C to 70°C	0°C to 50°C	0°C to 50°C	0°C to 50°C
Storage Temp.	-30°C to 80°C	-20°C to 70°C	-20°C to 70°C	-20°C to 70°C	-20°C to 70°C	-20°C to 70°C
Operating Humidity	10-90% RH operating, non-condensing, 5-95% RH storage					
Vibration	OP 5 Grms, 5-500Hz (with SDD), EN61373 Class 1B (Railway reliability), ISO 7637-2					
Shock	OP 100G peak acceleration, 6 ms (with SSD), EN61373 Class 1B (railway Reliability)					
ESD	Air: ±15kV, Contact: ±8kV					
Software						
SEMA	SEMA 3.5					
WDT	Watch Dog Timer supported					
Operating System	Windows 10 64-bit, Linux Ubuntu 16.04 LTS, QT compatible, 64-bit, Android					

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