

IPC Components

INDUSTRIAL BOARDS

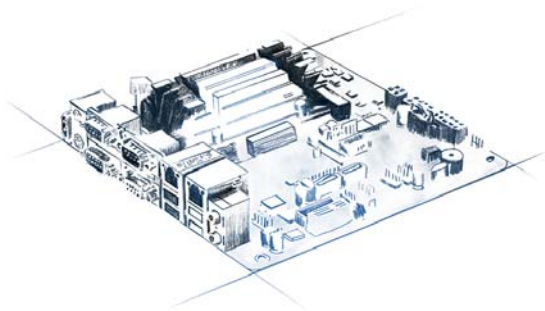
VERSION 2020|1

INDUSTRIAL MAINBOARDS

EMBEDDED BOARDS

FULL-/HALF-SIZE CPU CARDS

EXPANSION MODULES



INDUSTRIAL BOARDS

VARIETY EX STOCK

Every year, the manufacturers provide us with more as 50 new board variants. From this variety of new products we search for you, our customers, the technically most interesting boards with the best price/performance ratio. We value fast availability and can therefore deliver most of our boards from stock.

THIS DISTINGUISHES OUR BOARDS

- Current Technologies
- Up to 15 years availability
- Temperature range at least 0°C to 60°C
- Wide-Temp variants from -40°C to 85°C
- Ideal for industrial projects
- Use of high-quality components

RELIABLE PROJECT PARTNER









Thanks to our many years of project experience, we are not just a component distributor, but a strong, reliable partner for your projects where an industrial PC board is used. We will be happy to advise you.

SERVICES

- Advice around the board
- Board modifications
- Individual board sets
- BIOS/DMI adaptations
- Compatibility test
- Test records
- Cable assembly
- Stocking
- Direct Active Service and Support



INDUSTRIAL BOARDS – SELECTION GUIDE

	AUTOMATION/ CONTROL	DEVICES/ MACHINES	MACHINE VISION	I4.0/ IIOT	ARTIFICIAL INTELLIGENCE	TRANSPORT/ LOGISTICS	DIGITAL SIGNAGE	POI/ POS
								
Features	<ul style="list-style-type: none"> • High clock rate • Numerous interfaces 	<ul style="list-style-type: none"> • Numerous interfaces • Direct Display control • Energy saving • Very compact 	<ul style="list-style-type: none"> • High graphics performance • High clock rate 	<ul style="list-style-type: none"> • Numerous communication possibilities 	<ul style="list-style-type: none"> • High performance • Numerous cores 	<ul style="list-style-type: none"> • Energy saving • Certification • Protection against Shok/ Vibration 	<ul style="list-style-type: none"> • Numerous graphics interfaces • High graphics performance 	<ul style="list-style-type: none"> • Numerous interfaces • Very compact
Form factor/ page								
Pico-ITX Embedded Boards p. 5	✓	✓		✓				
3.5" Embedded Boards p. 9	✓	✓	✓	✓	✓	✓		✓
Mini-ITX Boards p. 18	✓		✓		✓	✓	✓	✓
µATX Boards p. 24	✓		✓		✓	✓	✓	✓
ATX Boards p. 26	✓		✓	✓	✓		✓	
CPU Cards p. 30	✓	✓	✓				✓	✓
Expansion modules p. 34	✓	✓		✓		✓		

BOARD SETS – READY-MADE OR CUSTOM-MADE

INDIVIDUAL BOARD SETS

Are you looking for the right computer components for installation in your developed device or system?

To make your choice easier and to avoid the risk of compatibility problems, we offer you complete board sets or put together your own individual board set.

Whether standard or individually configured - the choice of boards with different form factors and the corresponding components is large.

SAVE TIME AND MONEY

The sets consist of a board, a processor, memory, fan and the appropriate operating system.

Depending on the set, a suitable power supply and accessories are also supplied.

We coordinate the procurement and stocking of the components for you. So you can be sure that your projects can be handled smoothly.

All components are assembled by us and tested for compatibility. On request, specific tests are also carried out before delivery and a Windows license is supplied.



STANDARD BOARD SETS

Model	Spectra Board-Set, Mini-ITX Q87	Spectra Board-Set, Mini-ITX H110	Spectra Board-Set, µATX Q87	Spectra Board-Set, µATX H110	Spectra Board-Set, µATX Q370	Spectra Board-Set, ATX Q87
Article n°	158735	159315	158733	159330	159314	158731
Board	Mini-ITX, Q87, S1150, PCIe16, 2x mPCIe	Mini-ITX, H110, S1151, PCIe16	µATX, Q87, S1150, PCIe16, 2x PCI	µATX, H110, S1151, PCIe16, PCIe8, PCIe1, PCI	µATX, Q370, S1151, PCIe16, 3x PCIe4, M.2, 4GLAN	ATX, Q87, S1150, PCIe16, 3x PCIe1, 3x PCI
Processor	Core™ i3-4330 3,5GHz TT	Core™ i5-7500T 2,7GHz BD	Core™ i3-4330 3,5GHz TT	Core™ i5-6500TE 2,3GHz Tray	Core™ i3-8100T 3,1GHz Tray	Core™ i3-4330 3,5GHz TT
Memory	SO-DIMM DDR3L 4GB/ CIR-S3SUSPM1604G	2 x SO-DIMM DDR4 4GB/CIR-S4SUS2404G	2x DDR3L-RAM 4GB/ CIR- S3DUSPM1604G	2 x DDR4-RAM 4GB/ CIR-S4DUS2104G	2 x DDR4-RAM 4GB/ CIR-S4DUSV2604G	2x DDR3L-RAM 4GB/ CIR-S3DUSPM1604G
Fan	Cooler S115x SBC/MB Standard Core™-i 2HE (BP)					
Power Supply	-	-	-	Fortron FSP500- 70AAPB/IPC (SL)	Fortron FSP500-70ACB/ IPC (EN62368)	-
Operating System	Microsoft Windows 7 Pro	Microsoft Windows 10 Pro	Microsoft Windows 7 Pro	Microsoft Windows 10 Pro	Microsoft Windows 10 Pro	Microsoft Windows 7 Pro
Backplane	-					
Accessories	-	-	-	Power cord cold devices plug D 1.8 m		-

Model	Spectra Board-Set, ATX H110	Spectra Board-Set, ATX Q170	Spectra Board-Set, ATX Q370	Spectra Board-Set, PICMG1.3 Q87	Spectra Board-Set, PICMG1.3 Q170	Spectra Board-Set, PICMG1.3 Q370
Article n°	159306	159313	159329	158736	159333	159328
Board	ATX, H110, S1151, PCIe16, 6PCI	ATX, Q170, S1151, PCIe16, 2PCIe4, 4PCI	ATX, Q370, S1151, 7PCIe16/8/4/1, M.2, 3GLAN	CPU-Karte, PICMG1.3 full, Q87, S1150, mPCIe	CPU-Karte, PICMG1.3 full, Q170, LGA1151, VGA, iDP	CPU-Karte, PICMG1.3 full, Q370, S1151, VGA, M.2
Processor	Pentium G4400 3,3GHz TT	Core™ i3-6100 3,7GHz Tray	Core™ i7-8700 3,2GHz BD	Core™ i3-4330 3,5GHz TT	Core™ i7-7700 3,6GHz Tray	Core™ i5-8500 3,0GHz Tray
Memory	2 x DDR4-RAM 4GB/CIR-S4DUS2104G		2 x DDR4-RAM 8GB/ CIR-S4DUSW2608G	2 x DDR3L-RAM 4GB/ CIR-S3DUSPM1604G	2 x DDR4-RAM16GB/ CIR-S4DUSR2416G	2 x DDR4-RAM 4GB/ CIR-S4DUSV2604G
Fan	Cooler S115x SBC/MB Standard Core™-i 2HE (BP)			Cooler S1150 SBC CF-1150SC-R20/1HE	Cooler/CPU LGA1150/95W	
Power Supply	Fortron FSP500-70ACB/IPC (EN62368)			-	PS/2, 600W ATX, PFC	-
Operating System	Microsoft Windows 10 Pro			Microsoft Windows 7 Pro	Microsoft Windows 10 Pro	
Backplane	-			PICMG1.3, 13-Slot, 4PCIe, 8PCI		-
Accessories	Power cord cold devices plug D 1.8 m			-		

EMBEDDED BOARDS

IDEAL FOR DEVICE DEVELOPMENT

Embedded boards are ideally suited for the development of devices such as ticket vending machines, cash register systems, X-ray apparatus, etc.

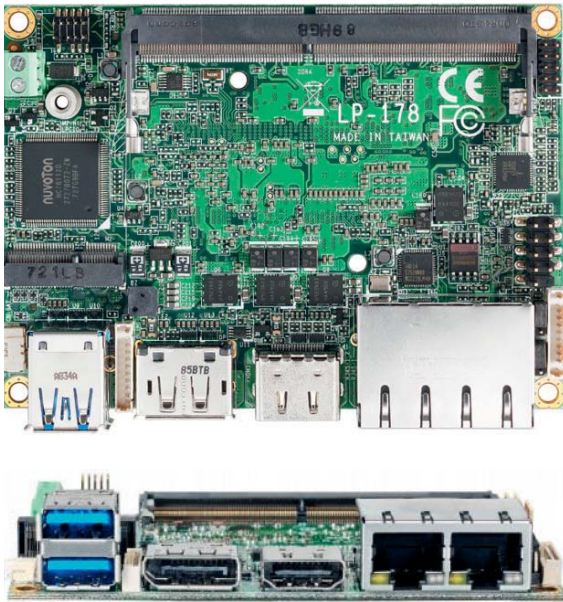
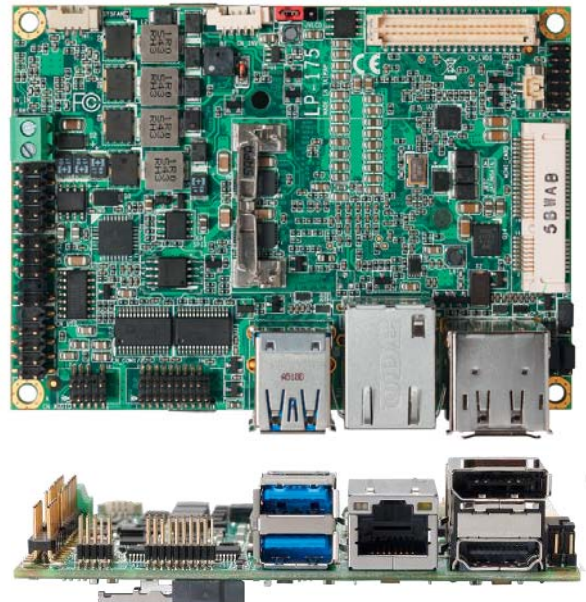
Due to their low construction size they find place in innumerable applications.

COOLING ON THE BOTTOM OF THE BOARD

The cooling is often mounted on the bottom of the board, so that the heat can be dissipated directly via the enclosure walls.

EXPANSION OPTIONS

Single supply voltage and numerous expansion options – even in the extended temperature range – make these boards with long-term availability a successful guarantee for your application. Control, measure, communicate are the main focus.

LP-178**WHISKEY LAKE PLATFORM****LP-175PK****KABY LAKE PLATFORM**

Model	LP-1787	LP-178C	LP-175PK7F	LP-175PK5F	LP-175PK3F
Article n°	160288	160290	154291	154290	154289

SYSTEM

CPU	Intel® Core™ i7-8665UE	Intel® Celeron4305UE	Intel® Core™ i7-7600U	Intel® Core™ i5-7300U	Intel® Core™ i3-7100U
Chipset	processor-integrated		Sunrise Point-LP		
Memory	1 x DDR4 SO-DIMM, max. 16GB		1 x DDR4 SO-DIMM, max. 16 GB		
BIOS	Insyde		Phoenix		
Watchdog Timer	256 Levels		256 Levels		
SSD / CF / mSATA / M.2	M.2 E-Key for WiFi / Bluetooth		mSATA via mPCIe		
HW Monitoring	yes		yes		
Expansion slots	-		1 x mPCIe		

GRAPHICS

Controller	Intel® HD Graphics		Intel® HD Graphics		
Interface	DisplayPort, HDMI, Header for LVDS or VGA		DisplayPort/VGA, HDMI, 18-/24-bit Single/Dual Channel LVDS		

ETHERNET

Controller	Intel® I219-LM Gigabit-LAN Intel® I210-AT Gigabit-LAN		Intel® I219-LM Gigabit-LAN		
Interfaces	RJ45		RJ45		

MULTI I/O

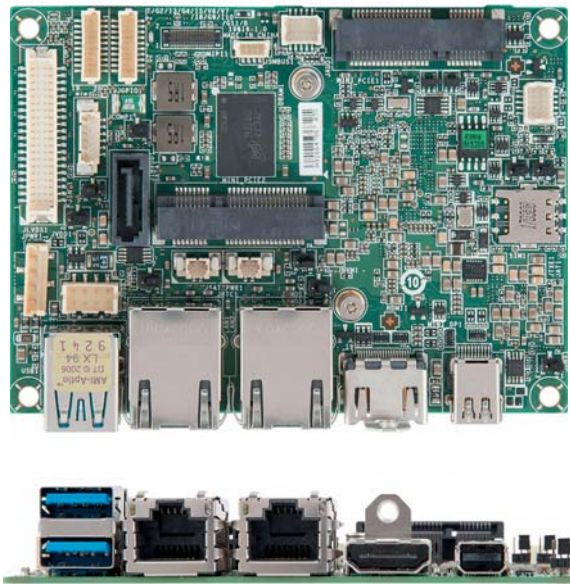
Chipset	1 x SATA III, 2 x RS-232, LPC, PS/2, SMBus		1 x SATA III, 2 x RS-232, LPC, PS/2, LCD		
USB	2 x USB 3.1 Gen. 2, 2 x USB 2.0 (internal)		2 x USB 3.0, 2 x USB 2.0 (internal)		
Audio	Realtek ALC262 HD		Realtek ALC262 HD Audio		
Others	-		-		

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	12 V DC-in 2-pin		5 V DC-in 2-pin		
Dimensions	100 x 72 mm		100 x 72 mm		
Operating temp.	0°C to 60°C		0°C to 60°C		
Storage temp.	-20°C to 80°C		-20°C to 80°C		
Relative humidity	10% to 90%, non-condensing		10% to 90%, non-condensing		

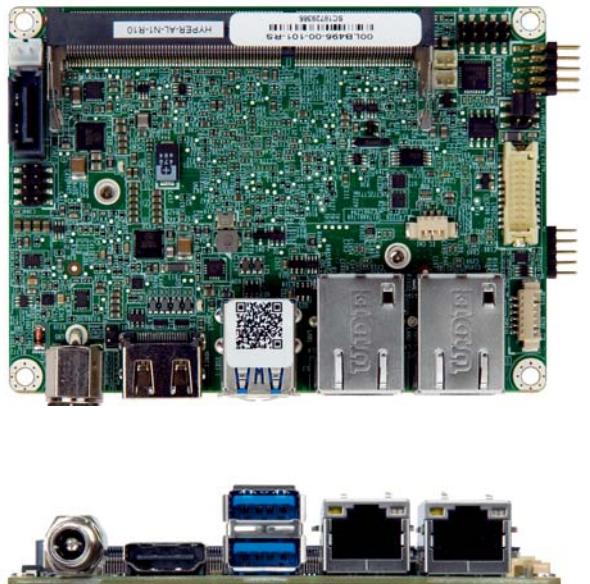
MS-9816-N4200

APOLLO LAKE PLATFORM



HYPER-AL-N1

APOLLO LAKE PLATFORM



Model	MS-9816-N4200 V1.1	HYPER-AL-N1
Article n°	161019	156764

SYSTEM

CPU	Intel® Pentium® N4200	Intel® Celeron® N3350
Chipset	processor-integrated	processor-integrated
Memory	1 x LPDDR4, max. 4GB	DDR3L SO-DIMM, max. 8GB
BIOS	AMI	AMI UEFI
Watchdog Timer	256 Levels	256 Levels
SSD / CF / mSATA / M.2	mSATA via mPCIe	1 x M.2 A-Key, 1 x M.2 B-Key
HW Monitoring	yes	yes
Expansion slots	1 x full-size mPCIe, 1 x half-size mPCIe	-

GRAPHICS

Controller	Intel® HD Graphics	Intel® HD Graphics
Interface	HDMI, 18-/24-bit Dual LVDS, Mini-DP	1 x HDMI, 1 x 24-bit LVDS

ETHERNET

Controller	2 x Intel® I211-AT Gigabit-LAN	2 x Realtek RTL8111H
Interfaces	RJ45	RJ45

MULTI I/O

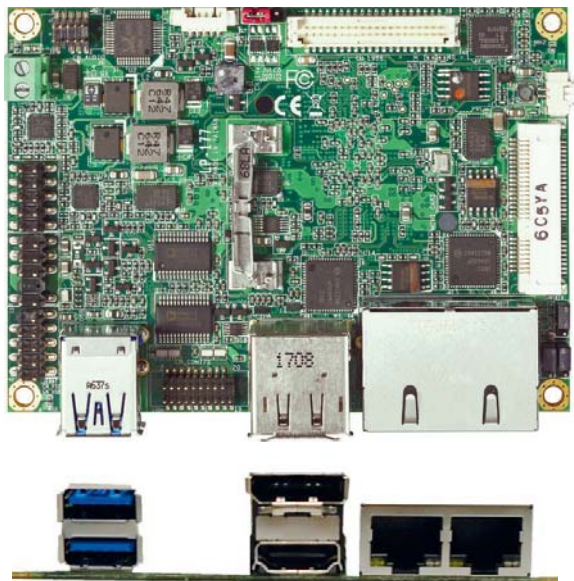
Chipset	Fintek F81866AD-I, 2 x COM, 1 x SATA 3.0	1 x SATAIII, 1 x RS-232, 1 x 8-bit DIO
USB	2 x USB 3.0, 2 x USB 2.0 (internal)	2 x USB 3.0, 2 x USB 2.0 (internal)
Audio	Realtek ALC887-VD2-CG HD	HD, optional ALC892 (7.1 HD)
Others	16-bit digital I/O interface, TPM	8-bit digital I/O interface

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	12V DC-in	12V DC-in
Dimensions	100 x 72 mm	100 x 72 mm
Operating temp.	-10°C to 60°C	-20°C to 60°C
Storage temp.	-20°C to 80°C	-10°C to 70°C
Relative humidity	10% to 90%, non-condensing	5% to 95%, non-condensing

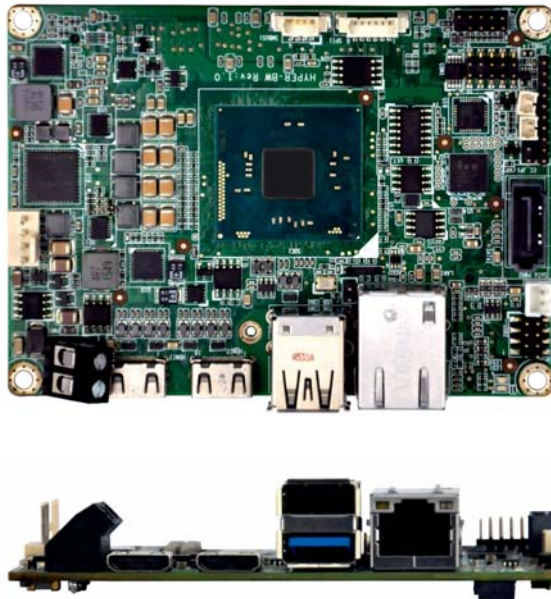
LP-177TN4

APOLLO LAKE PLATFORM



HYPER-BW-E8-ECO

BRASWELL PLATFORM



Model	LP-177TN4F	LP-177TN4S	HYPER-BW-E8-ECO
Article n°	152372	152361	155835

SYSTEM

CPU	Intel® Pentium® N4200		Intel® Atom® Core™ X5-E8000 Processor
	Cooler Fan	Heat Spreader	
Chipset	processor-integrated		processor-integrated
Memory	1 x DDR3L SO-DIMM, max. 8 GB		1 x DDR3L SO-DIMM, max. 8GB
BIOS	Insyde		AMI
Watchdog Timer	256 Levels		256 Levels
SSD / CF / mSATA / M.2	mSATA via mPCIe		M.2
HW Monitoring	yes		yes
Expansion slots	1 x mPCIe		-

GRAPHICS

Controller	Intel® HD Graphics	Intel® HD Graphics
Interface	HDMI, 18-/24-bit Single/Dual LVDS, Header for 2nd LVDS/VGA	2 x mHDMI

ETHERNET

Controller	2 x Intel® I210-AT Gigabit-LAN	Realtek RTL8111
Interfaces	RJ45	RJ45

MULTI I/O

Chipset	1 x SATA III, 2 x RS-232, 1 x LPC, 1 x PS/2, 1 x SMBus, 1 x LCD	1 x SATA, 1 x RS-232
USB	2 x USB 3.0, 2 x USB 2.0 (internal)	1 x USB 3.0, 3 x USB 2.0 (2 of them internal)
Audio	Realtek ALC262 HD	1 x HD
Others	-	-

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	5 V DC-in 2-pin	12V DC-in 2-pin
Dimensions	100 x 72 mm	100 x 72 mm
Operating temp.	0°C to 60°C	-20°C to 60°C
Storage temp.	-20°C to 80°C	-30°C to 70°C
Relative humidity	10% to 90%, non-condensing	5% to 95%, non-condensing

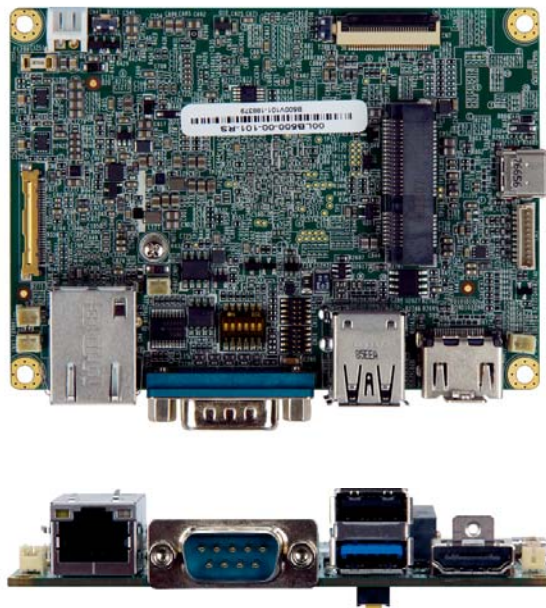
LP-176

BRASWELL PLATFORM



HYPER-RK39

ROCKCHIP RK3390 PLATFORM



Model	LP-176EXIP	LP-176EXIT	HYPER-RK39-R10-EU
Article n°	148561	148563	157593

SYSTEM

CPU	Intel® Atom® Core™ X5-E8000 Processor	Rockchip 3399 Processor (Dual-Core Cortex-A72 to 1,8 GHz + Quad-Core Cortex-A53 to 1,5 GHz)
Chipset	processor-integrated	processor-integrated
Memory	1 x DDR3 SO-DIMM, max. 8 GB	2 GB LPDDR3-1866
BIOS	Phoenix	-
Watchdog Timer	256 Levels	256 Levels
SSD / CF / mSATA / M.2	mSATA via mPCIe	MicroSD, 16 GB eMMC
HW Monitoring	yes	-
Expansion slots	1 x mPCIe	1 x full-size mPCIe (reserved for WWAN)

GRAPHICS

Controller	Intel® HD Graphics	processor-integrated
Interface	DisplayPort, HDMI, LVDS	11-pin Socket for CRT
		HDMI, eDP

ETHERNET

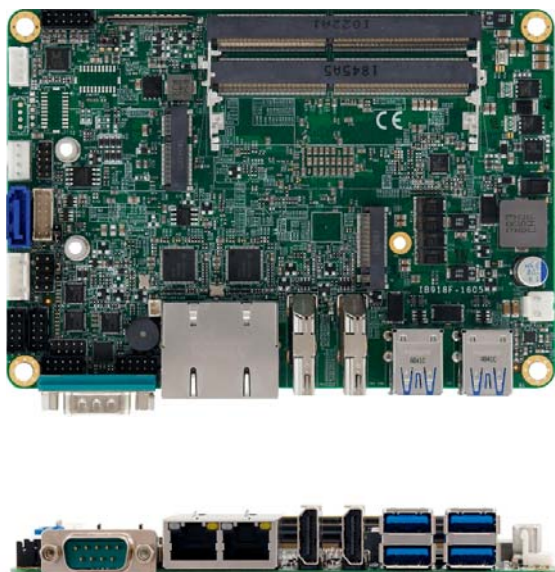
Controller	Intel® I210-AT Gigabit-LAN	Realtek RTL8211E
Interfaces	RJ45	RJ45

MULTI I/O

Chipset	1 x SATA III, 2 x RS-232, 1 x LPC, 1 x PS/2, 1 x SMBus, 1 x LCD Inverter	1 x RS-232/422/485
USB	2 x USB 3.0, 2 x USB 2.0 (internal)	2 x USB 3.1, 1 x USB 2.0
Audio	Realtek ALC262 HD	-
Others	-	8-bit digital I/O interface, I ² C

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	5 V DC-in 2-pin	12 V DC-in 2-pin
Dimensions	100 x 72 mm	100 x 72 mm
Operating temp.	0°C to 60°C	-10°C to 50°C
Storage temp.	-20°C to 80°C	-20°C to 60°C
Relative humidity	10% to 90%, non-condensing	10% to 90%, non-condensing

IB918F**AMD RYZEN V1000 PLATFORM****LE-37M****COFFEE LAKE PLATFORM**

Model	IB918F-1605	IB918F-1202	LE-37M7	LE-37M5
Article n°	159026	159027	157339	157338

SYSTEM

CPU	AMD Ryzen™ V1605B QC APU	AMD Ryzen™ V1202B DC APU	Intel® Core™ i7-8850H	Intel® Core™ i5-8400H
Chipset	SoC		Intel® QM370	
Memory	1 x DDR4 SO-DIMM, max. 32 GB		2 x DDR4 SO-DIMM, max. 32 GB	
BIOS	AMI		Insyde	
Watchdog Timer	256 Levels		256 Levels	
SSD / CF / mSATA / M.2	2 x M.2 via 2 x mPCIe		mSATA via 1 x mPCIe, 1 x M.2 E-Key for WiFi / Bluetooth	
HW Monitoring	-		yes	
Expansion slots	2 x mPCIe		1 x mPCIe	

GRAPHICS

Controller	AMD Raden™ Vega	Intel® UHD Graphics
Interface	2 x HDMI, 24-bit Dual Channel LVDS, eDP	DisplayPort (optional), HDMI, VGA, 18-/24-bit Dual Channel LVDS

ETHERNET

Controller	2 x Intel® I211AT Gigabit-LAN	Intel® I219-LM Gigabit-LAN Intel® I210-AT Gigabit-LAN
Interfaces	RJ45	RJ45

MULTI I/O

Chipset	Fintek F81964D-I 1 x SATA III, 1 x RS-232/422/485, 3 x RS-232	Fintek F81866AD-I 2 x SATA III, 2 x RS-232/422/485, 2 x RS-232, LCD, PS/2, SMBus
USB	4 x USB 3.1, 1 x USB 2.0	4 x USB 3.1, 4 x USB 2.0 (internal)
Audio	Realtek ALC269Q-VC3-GR	Realtek ALC262 HD
Others	digital I/O interface, DC-in, EuP/ErP	digital I/O interface

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	12 V to 24 V DC-in	9 V to 35 V DC-in
Dimensions	146 x 102 mm	146 x 102 mm
Operating temp.	0°C to 60°C	0°C to 60°C
Storage temp.	-20°C to 80°C	-20°C to 80°C
Relative humidity	10% to 90%, non-condensing	10% to 90%, non-condensing

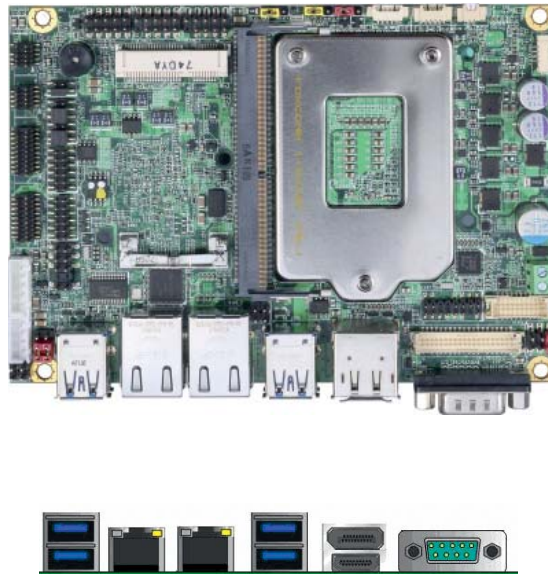
LS-37L

COFFEE LAKE PLATFORM



LS-37K

SKYLAKE AND KABY LAKE PLATFORM



Model	LS-37L	LS-37KT	LS-37K
Article n°	157065	153727	153726

SYSTEM

CPU	Socket FCLGA1151 for 8. Generation Intel® Core™ Desktop Processors	Socket FCLGA1151 for 6. and 7. Generation Intel® Core™ i7/i5/i3 and Xeon® E3-1200 v5 Processors
Chipset	Intel® Q370	Intel® C236
Memory	1 x DDR4 SO-DIMM, max. 16GB	1 x DDR4 SO-DIMM, max. 16 GB (ECC, depending on CPU)
BIOS	Insyde	Phoenix
Watchdog Timer	256 Levels	256 Levels
SSD / CF / mSATA / M.2	mSATA via mPCIe	mSATA via mPCIe
HW Monitoring	yes	yes
Expansion slots	1 x mPCIe	1 x mPCIe

GRAPHICS

Controller	Intel® UHD Graphics	Intel® HD Graphics
Interface	1 x DisplayPort (optional), 1 x HDMI, 1 x DVI, 1 x VGA, onboard 18/24-bit Single/Dual Channel LVDS	DVI, HDMI, 18-/24-bit Single/Dual Channel LVDS, VGA Header for 2nd VGA/LVDS DisplayPort

ETHERNET

Controller	1 x Intel® I219-LM Gigabit-LAN, 1 x Intel® I210-AT Gigabit-LAN	Intel® I219-LM Gigabit-LAN Intel® I210-AT Gigabit-LAN
Interfaces	RJ45	RJ45

MULTI I/O

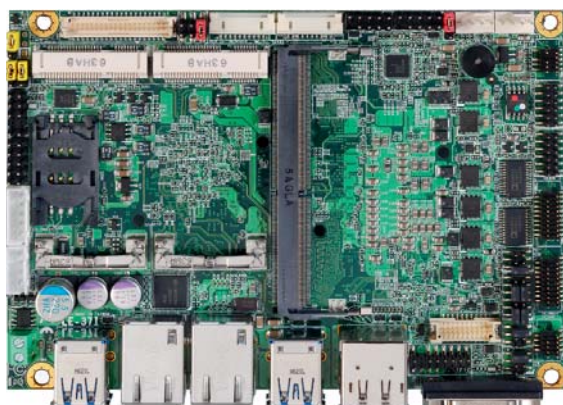
Chipset	2 x SATA III, 4 x RS-232, 2 x RS-232/422/485, 1 x LCD Inverter, 1 x PS/2, 1 x SMBus	2 x SATA III, 1 x RS-232/422/485, 5 x RS-232, LCD, LPC, PS/2, SMBus
USB	4 x USB3.1, 4 x USB2.0 (internal)	4 x USB 3.0, 4 x USB 2.0 (internal)
Audio	Realtek ALC262 HD	Realtek ALC262 HD
Others	digital I/O interface	8-bit digital I/O interface, iAMT11.0

MECHANICAL DATA & ENVIRONMENT CONDITIONS

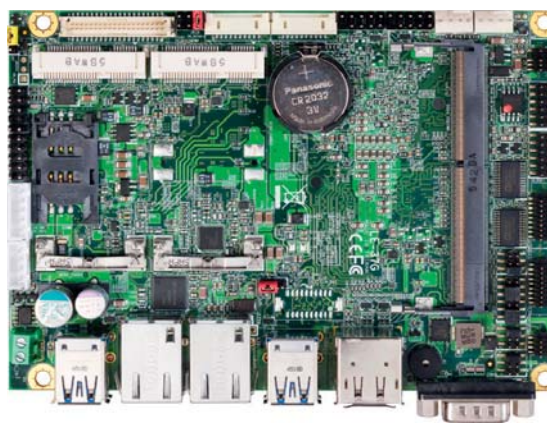
Power	9 to 25V DC-in	9 V to 35 V DC-in
Dimensions	146 x 102 mm	146 x 102 mm
Operating temp.	0°C to 60°C	0°C to 60°C
Storage temp.	-20°C to 80°C	-20°C to 80°C
Relative humidity	10% to 90%, non-condensing	10% to 90%, non-condensing

LE-37IK

SKYLAKE MOBILE PLATFORM

**LE-37GXIPK**

SKYLAKE MOBILE PLATFORM



Model	LE-37IKXF	LE-37IK5F	LE-37IK3F	LE-37GXIPK7F	LE-37GXIPK5F	LE-37GXIPK3F
Article n°	153461	153460	153459	153084	153083	153082

SYSTEM

CPU	Intel® Xeon® E3-1505L	Intel® Core™ i5-7442EQ	Intel® Core™ i3-1505L	Intel® Core™ i7-7600U Processor	Intel® Core™ i5-7300U Processor	Intel® Core™ i3-7100U Processor
Chipset	Intel® CM238	Intel® QM175		Sunrise Point-LP		
Memory	1 x DDR4 SO-DIMM, max. 16 GB ECC			1 x DDR4 SO-DIMM, max. 16 GB		
BIOS	Phoenix					
Watchdog Timer	256 Levels					
SSD / CF / mSATA / M.2	1 x SIM card socket, mSATA via 1 x mPCIe			mSATA via 1 x mPCIe		
HW Monitoring	yes			-		
Expansion slots	2 x mPCIe			2 x mPCIe		

GRAPHICS

Controller	Intel® HD Graphics					
Interface	DisplayPort, DVI-D, HDMI, 18-/24-bit Single/Dual Channel LVDS, VGA			DisplayPort, HDMI, 18-/24-bit Single/Dual Channel LVDS		

ETHERNET

Controller	Intel® I219-LM Gigabit-LAN, Intel® I210-AT Gigabit-LAN					
Interfaces	RJ45					

MULTI I/O

Chipset	2 x SATA III, 1 x RS-232/422/485, 5 x RS-232, LCD, LPC, PS/2, SMBus					
USB	4 x USB 3.0, 4 x USB 2.0 (internal)					
Audio	Realtek ALC262 HD					
Others	digital I/O interface, iAMT11.0			digital I/O interface, DC-out, iAMT		

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	9 V to 30 V DC-in					
Dimensions	146 x 102 mm					
Operating temp.	0°C to 60°C					
Storage temp.	-20°C to 80°C					
Relative humidity	10% to 90%, non-condensing					

MS-98H3

SKYLAKE MOBILE PLATFORM



IB917

SKYLAKE MOBILE PLATFORM



Model	MS-98H3-7600U-001	IB917AF-7600	IB917AF-7300	IB917F-7100	IB917F-3965
Article n°	153566	152234	152235	152236	152237

SYSTEM

CPU	Intel® Core™ i7-7600U Processor	Intel® Core™ i7-7600U	Intel® Core™ i5-7300U	Intel® Core™ i3-7100U	Intel® Celeron® 3965U
Chipset	processor-integrated	processor-integrated			
Memory	1 x DDR4 SO-DIMM, max. 16 GB	2 x DDR4 SO-DIMM, max. 32 GB			
BIOS	AMI	AMI			
Watchdog Timer	256 Levels	256 Levels			
SSD / CF / mSATA / M.2	MicroSD, mSATA via 1 x full-size mPCIe	1 x mSATA			
HW Monitoring	yes	yes			
Expansion slots	2 x full-size mPCIe	1 x full-size mPCIe			

GRAPHICS

Controller	Intel® HD Graphics	processor-integrated
Interface	DisplayPort, HDMI, 18-/24-bit Dual Channel LVDS/eDP, supports 3 independent displays	DisplayPort, HDMI, 24-bit Dual Channel LVDS

ETHERNET

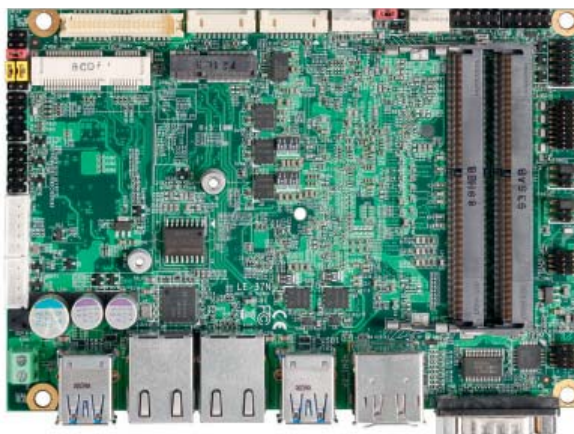
Controller	Intel® I219-LM Gigabit-LAN Intel® I210-AT Gigabit-LAN	Intel® I211-AT Gigabit-LAN Intel® I219-LM Gigabit-LAN Intel® I219-V Gigabit-LAN
Interfaces	RJ45	RJ45

MULTI I/O

Chipset	Fintek F81866AD-I 2 x SATA III, 1 x RS-232/422/485, 5 x RS-232	Fintek F81846AD-I 2 x SATA III, 1 x RS-232/422/485, 3 x RS-232
USB	4 x USB 3.0, 4 x USB 2.0 (internal)	4 x USB 3.0, 2 x USB 2.0 via pin header
Audio	Realtek ALC887-VD2-CG HD Codec	Realtek ALC662 Codec
Others	16-bit digital I/O interface, iAMT	digital I/O interface, iSMART, TPM 2.0

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	12 V to 24 V DC-in	9 V to 24 V DC-in
Dimensions	146 x 102 mm	146 x 102 mm
Operating temp.	-10°C to 60°C	0°C to 60°C
Storage temp.	-20°C to 80°C	-20°C to 80°C
Relative humidity	10% to 90%, non-condensing	10% to 90%, non-condensing

MS-98L3**WHISKEY LAKE PLATFORM****LE-37N7****WHISKEY LAKE PLATFORM**

Model	MS-98L3-i7-8665UE	MS-98L3-i5-8365UE	LE-37N7
Article n°	156336	160397	159939

SYSTEM

CPU	Intel® Core™ i7-8665UE Processor	Intel® Core™ i5-8365UE Processor	Intel® Core™ i7-8665UE Processor
Chipset	SoC		SoC
Memory	2 x DDR4 SO-DIMM, max. 32 GB		2 x DDR4 SO-DIMM, max. 32 GB
BIOS	AMI		Insyde
Watchdog Timer	256 Levels		256 Levels
SSD / CF / mSATA / M.2	2 x M.2, MicroSD	3 x M.2, MicroSD	mSATA via 1 x mPCIe, 1 x M.2 E-Key for WiFi / Bluetooth
	1 x SIM card socket		
HW Monitoring	yes		yes
Expansion slots	-		1 x mPCIe

GRAPHICS

Controller	Intel® HD Graphics	Intel® HD Graphics
Interface	DisplayPort, HDMI, eDP, 18-/24-bit Dual Channel LVDS	DisplayPort, HDMI, 18-/24-bit Dual Channel LVDS

ETHERNET

Controller	1 x Intel® I219-LM Gigabit-LAN 3 x Intel® I210-AT Gigabit-LAN	Intel® I219-LM Gigabit-LAN Intel® I210-AT Gigabit-LAN
Interfaces	RJ45	

MULTI I/O

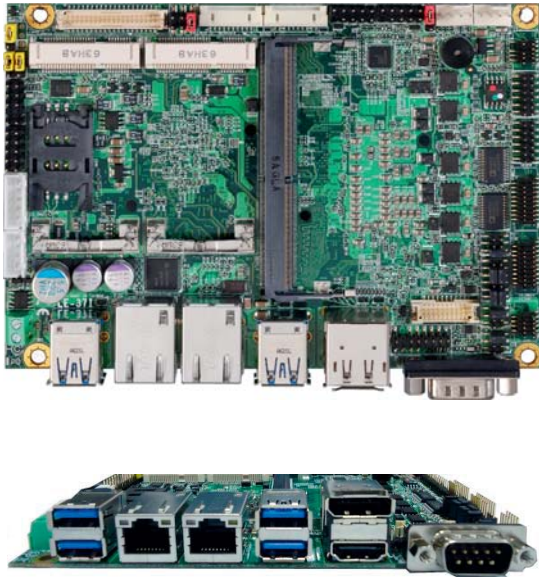
Chipset	Fintek F81866AD-I 2 x SATA III, 2 x RS-232/422/485, 4 x RS-232, SMBus	2 x SATA III, 2 x RS-232/422/485, 1 x RS-232, LCD, PS/2, SMBus
USB	4 x USB 3.1, 4 x USB 2.0 (internal)	
Audio	Realtek ALC887-VD2-CG HD	Realtek ALC262 HD
Others	16-bit digital I/O interface, TPM 2.0, I2C	digital I/O interface

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	12 V to 24 V DC-in	9 V to 35 V DC-in
Dimensions	146 x 102 mm	
Operating temp.	-10°C to 60°C	0°C to 60°C
Storage temp.	-20°C to 80°C	
Relative humidity	10% to 90%, non-condensing	

LE-3717

SKYLAKE MOBILE PLATFORM



LE-37M

SKYLAKE MOBILE PLATFORM



Model	LE-3717F	LE-3717S	LE-37M7
Article n°	150670	150666	157339

SYSTEM

CPU	Intel® Core™ i7-6822EQ Processor		Intel® Core™ i7-8850H Processor
	Cooler Fan	Heat Spreader	
Chipset	Intel® QM170		Intel® QM370
Memory	1 x DDR4 SO-DIMM, max. 16 GB		2 x DDR4 SO-DIMM, max. 32 GB
BIOS	Phoenix		Insyde
Watchdog Timer	256 Levels		256 Levels
SSD / CF / mSATA / M.2	mSATA via 1 x mPCIe, 1 x SIM card socket		mSATA via 1 x mPCIe, 1 x M.2 E-Key for WiFi / Bluetooth
HW Monitoring	yes		yes
Expansion slots	2 x mPCIe		1 x mPCIe

GRAPHICS

Controller	9. Generation Intel® integrated HD Graphics	Intel® UHD Graphics
Interface	DisplayPort, DVI-D, HDMI, 18-/24-bit Single/Dual Channel LVDS, VGA	DisplayPort, HDMI, VGA, 24-bit Dual Channel LVDS

ETHERNET

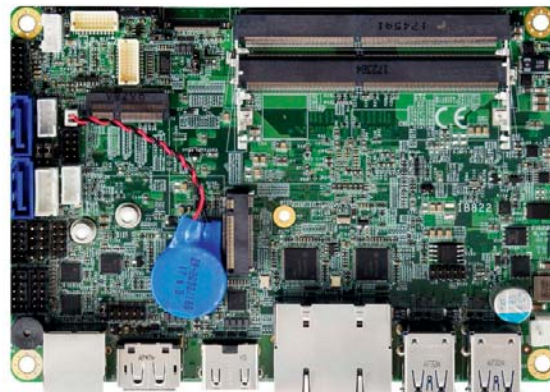
Controller	Intel® I219-LM Gigabit-LAN Intel® I210-AT Gigabit-LAN	Intel® i219-LM Gigabit-LAN Intel® i210-AT Gigabit-LAN
Interfaces	RJ45	RJ45

MULTI I/O

Chipset	2 x SATA III, 1 x RS-232/422/485, 5 x RS-232, LCD, LPC, PS/2, SMBus	2 x SATA III, 2 x RS-232/422/485, 2 x RS-232, PS/2, LCD Inverter, SMBus
USB	4 x USB 3.0, 4 x USB 2.0 (internal)	4 x USB 3.1, 4 x USB 2.0
Audio	Realtek ALC262 HD	Realtek ALC262 HD
Others	digital I/O interface, iAMT11.0	8-bit digital I/O interface

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	9 V to 30 V DC-in	9 to 35 V DC-in
Dimensions	146 x 102 mm	146 x 102 mm
Operating temp.	0°C to 60°C	0°C to 60°C
Storage temp.	-20°C to 80°C	-20°C to 80°C
Relative humidity	10% to 90%, non-condensing	10% to 90%, non-condensing

IB919EF-4305**WHISKEY LAKE PLATFORM****IB822F****GEMINI LAKE PLATFORM**

Model	IB919EF-4305	IB822F-J4005	IB822F-J5005
Article n°	159866	156876	154696

SYSTEM

CPU	Intel® Celeron 4305UE	Intel® Celeron® J4005	Intel® Pentium® Silver J5005
Chipset	processor-integrated	processor-integrated	processor-integrated
Memory	2 x DDR4 SO-DIMM, max. 32 GB	2 x DDR4 SO-DIMM	2 x DDR4 SO-DIMM
BIOS	AMI	AMI	AMI
Watchdog Timer	256 Levels	256 Levels	256 Levels
SSD / CF / mSATA / M.2	2 x M.2	1 x M.2 B-Key, 1 x M.2 E-Key	1 x M.2 B-Key, 1 x M.2 E-Key
HW Monitoring	yes	yes	yes
Expansion slots	-	-	-

GRAPHICS

Controller	Intel® UHD Graphics	Intel® UHD Graphics
Interface	DisplayPort, eDP or 24-bit Dual Channel LVDS	DisplayPort, HDMI, 18-/24-bit Dual Channel LVDS, supports 3 independent displays

ETHERNET

Controller	Intel® I219V Gigabit-LAN Intel® I211AT Gigabit-LAN	2 x Intel® 210AT Gigabit-LAN
Interfaces	RJ45	RJ45

MULTI I/O

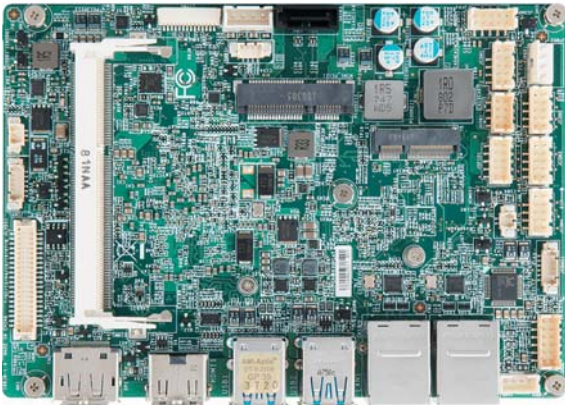
Chipset	Fintek F81964D-I 2 x SATAIII, 1 x RS-232/422/485, 3 x RS-232	Fintek F81964D-I 2 x SATA III, 3 x RS-232, 1 x RS-232/422/485
USB	4 x USB 3.1, 2 x USB 2.0, 1 x USB Typ C	4 x USB 3.0, 2 x USB 2.0
Audio	built-in with Realtek ALC269	SoC built-in HD + Realtek ALC233-VB2-CG Codec
Others	digital I/O interface, EuP/ErP, TPM 2.0	digital I/O interface, iSMART

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	9 to 24V DC-in	12 to 24V DC-in
Dimensions	146 x 102 mm	146 x 102 mm
Operating temp.	0°C to 60°C	0°C to 60°C
Storage temp.	-20°C to 80°C	-20°C to 80°C
Relative humidity	90%, non-condensing @ 60°C	90%, non-condensing @ 60°C

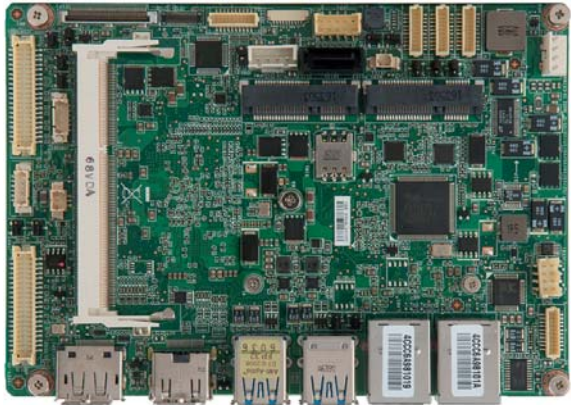
MS-98J8

APOLLO LAKE PLATFORM



MS-98E6

APOLLO LAKE PLATFORM



Model	MS-98J8-E3940	MS-98J8-N3350	MS-98E6-E3940	MS-98E6-N3350
Article n°	155530	155527	152548	151881

SYSTEM

CPU	Intel® Atom™ X5-E3940	Intel® Celeron™ N3350	Intel® Atom™ x5 E3940	Intel® Celeron® N3350
Chipset	processor-integrated		processor-integrated	
Memory	1 x DDR3L SO-DIMM, max. 8GB		2 x DDR3L SO-DIMM, max. 8 GB	
BIOS	AMI		AMI	
Watchdog Timer	256 Levels		256 Levels	
SSD / CF / mSATA / M.2	mSATA via 1 x mPCIe, 1 x M.2 E-Key		mSATA via 1 x full-size mPCIe	
HW Monitoring	yes		yes	
Expansion slots	1 x mPCIe		2 x full-size mPCIe	

GRAPHICS

Controller	Intel® HD Graphics		Intel® HD Graphics	
Interface	DisplayPort, HDMI, 18-/24-bit Dual Channel LVDS, supports 3 independent displays		eDP, DisplayPort, HDMI, 2 x Dual Channel 18-/24-bit LVDS, supports 3 independent displays	

ETHERNET

Controller	2 x Realtek RTL8111H Gigabit-LAN		Intel® I210-IT Gigabit-LAN	2 x Intel® I211-AT Gigabit-LAN
Interfaces	RJ45		RJ45	

MULTI I/O

Chipset	Fintek F81867AD-I 1 x SATA III, 1 x RS-232/422/485, 3 x RS-232, PS/2		Fintek F81867AD-I 1 x SATA III, 1 x RS-232/422/485, 5 x RS-232	
USB	4 x USB 3.2, 2 x USB 2.0		4 x USB 3.2, 2 x USB 2.0 (internal)	
Audio	Realtek ALC887 HD		Realtek ALC887-VD2-CG HD	
Others	8-bit digital I/O interface, TPM		16-bit digital I/O interface, TPM	

MECHANICAL DATA & ENVIRONMENT CONDITIONS

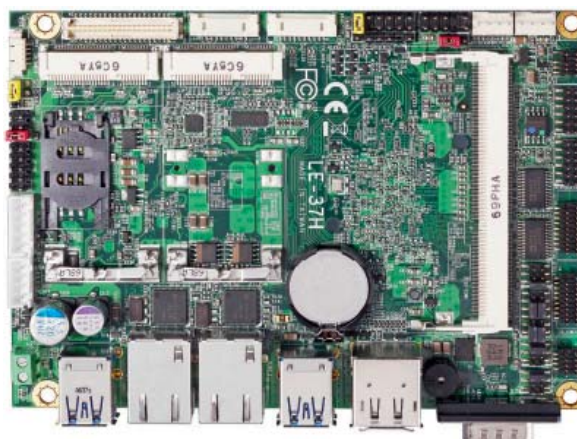
Power	9 to 36V DC-in		12 to 24V DC-in	
Dimensions	146 x 102 mm		146 x 102 mm	
Operating temp.	-10°C to 60°C		-40°C to 85°C	-10°C to 60°C
Storage temp.	-20°C to 80°C		-40°C to 85°C	-20°C to 80°C
Relative humidity	10% to 90%, non-condensing		10% to 90%, non-condensing	

IB818F

APOLLO LAKE PLATFORM

**LE-37HPN4**

APOLLO LAKE PLATFORM



Model	IB818F-150 V2.0	IB818F-420 V2.0	LE-37HPN4F	LE-37HPN4S
Article n°	160871	160872	152795	152228

SYSTEM

CPU	Intel® Atom™ QC x7 / E3950	Intel® Pentium® QC N4200	Intel® Pentium® N4200	
			Cooler Fan	Heat Spreader
Chipset	processor-integrated		processor-integrated	
Memory	1 x DDR3L SO-DIMM, max. 8 GB		1 x DDR3L DIMM, max. 8 GB	
BIOS	AMI		Insyde	
Watchdog Timer	256 Levels		256 Levels	
SSD / CF / mSATA / M.2	1 x mSATA via 1 x full-size mPCIe		1 x SIM card socket, 1 x SD Card socket, mSATA via 1 x mPCIe	
HW Monitoring	yes		yes	
Expansion slots	2 x mPCIe (1 x full-size, 1 x half-size)		2 x mPCIe	

GRAPHICS

Controller	Intel® HD Graphics	Intel® HD Graphics
Interface	HDMI, 18-/24-bit Dual Channel LVDS	DisplayPort, HDMI, 18-/24-bit Single/Dual Channel LVDS

ETHERNET

Controller	2 x Intel® I210-IT Gigabit-LAN	2 x Intel® I211-AT Gigabit-LAN	2 x Intel® I210-AT Gigabit-LAN
Interfaces	RJ45		RJ45

MULTI I/O

Chipset	Fintek F81964D-I	2 x SATA III, 1 x RS-232/422/485 (Jumperless Selection), 3 x RS-232	2 x SATA III, 1 x RS-232/422/485, 4 x RS-232, LPC, PS/2, SMBus, LCD
USB	4 x USB 3.0 (internal), 2 x USB 2.0		4 x USB 3.0, 2 x USB 2.0
Audio	Realtek ALC283 Codec (with Class-D Speaker Amplifier)		Realtek ALC262 HD Audio
Others	digital I/O interface, TPM 2.0		8-bit digital I/O interface

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	12 V to 24 V DC-in 2-pin	9 V to 24 V DC-in
Dimensions	147 x 102 mm	
Operating temp.	-40°C to 85°C	0°C to 60°C
Storage temp.	-40°C to 90°C	
Relative humidity	10% to 90%, non-condensing	

MINI-ITX BOARDS

ORIGINATED FROM VIA BOARDS

The first Mini-ITX boards were developed by VIA and equipped with their own soldered VIA processor. Other manufacturers developed Mini-ITX boards based on Intel® or AMD, which allow an easy change of the CPU. Spectra has been offering these since 2000.

MINI-ITX FORMFAKTOR

Mini-ITX is the smallest 1-slot form factor that can be built into an ATX package. The Mini-ITX boards are ATX compatible because the mounting screws and the I/O shield are in the same place as on an ATX board.

WIDE SPECTRUM

- All performance classes
- Long-term availability up to 15 years
- Wide Range Single Supply voltage or ATX
- Numerous expansion options via PCIe, PCI, mPCIe or M.2
- Wide-temp models from -40°C to +85°C available. Just ask us.

MI998AF

COFFEE LAKE PLATFORM

**MS-98L1**

COFFEE LAKE PLATFORM



Model	MI998AF-C246	MI998AFE	MS-98L1-C246
Article n°	158269	158288	151584

SYSTEM

CPU	Socket LGA 1151 for 9. & 8. Generation Intel® Core™ i7/i5/i3, Celeron®, Xeon®, Pentium® Desktop Processors		Socket LGA 1151 for 8. Generation Intel® Core™ i7/i5/i3, Celeron®, Xeon®, Pentium® Desktop Processors
Chipset	Intel® C246	Intel® Q370	Intel® C246
Memory	2 x DDR4 SO-DIMM, max. 32 GB		2 x DDR4 SO-DIMM, max. 32 GB
BIOS	AMI		AMI
Watchdog Timer	256 Levels		256 Levels
SSD / CF / mSATA / M.2	1 x M.2 M-Key, 1 x M.2 E-Key		1 x M.2 M-Key, 1 x M.2 E-Key
HW Monitoring	yes		yes
Expansion slots	1 x PCIe(x16)		1 x full-size mPCIe, 1 x PCIe(x16)

GRAPHICS

Controller	Intel® UHD Graphics		Intel® UHD Graphics
Interface	24-bit Dual Channel LVDS	eDP	2 x DisplayPort, HDMI, 18-/24-bit Dual Channel LVDS, supports 3 independent displays
	DisplayPort, HDMI, DVI-D		

ETHERNET

Controller	Intel® I219-LM Gigabit-LAN Intel® I210-AT Gigabit-LAN	1 x Intel® I219-LM Gigabit-LAN 3 x Intel® I210-AT Gigabit-LAN
Interfaces	RJ45	RJ45

MULTI I/O

Chipset	4 x SATA III, 2 x RS-232/422/485, 2 x RS-232	Fintek F81866AD-I 3 x SATA III, 2 x RS-232/422/485, 4 x RS-232
USB	6 x USB 3.0, 2 x USB 2.0	4 x USB 3.2 Gen2, 6 x USB 3.2 Gen1 (2 of them internal), 2 x USB 2.0 (internal)
Audio	Realtek ALC888S-VD2-GR	Realtek ALC887
Others	digital I/O interface, iAMT 11.6, TPM 2.0, RAID	16-bit digital I/O interface, TPM

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	ATX 24-pin, 12V 8-pin	ATX 24-pin, 12V 8-pin
Dimensions	170 x 170 mm	170 x 170 mm
Operating temp.	0°C to 60°C	-10°C to 60°C
Storage temp.	-20°C to 80°C	-20°C to 80°C
Relative humidity	90%, non-condensing @ 60°C	10% to 90%, non-condensing

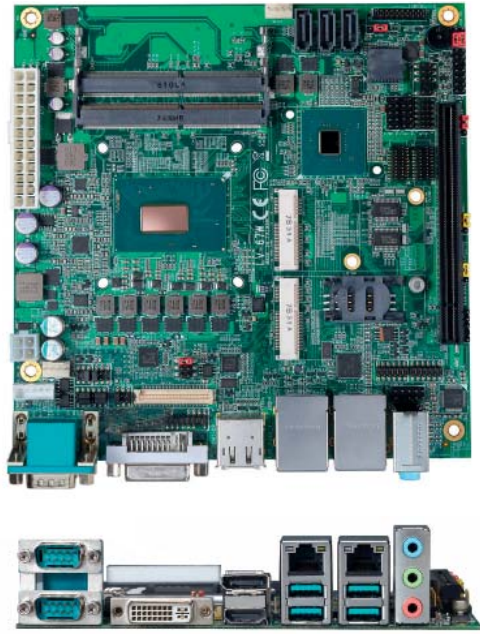
LV-67X

COFFEE LAKE PLATFORM



LV-67W

COFFEE LAKE PLATFORM



Model	LV-67XT	LV-67X	LV-67W7	LV-67W5
Article n°	156334	155939	156469	155940

SYSTEM

CPU	Socket FCLGA1151 for 8. Generation Intel® Core™ Desktop Processors	Intel® Core™ i7-8850H	Intel® Core™ i5-8400H
Chipset	Intel® Q370	Intel® QM370	
Memory	2 x DDR4 DIMM, max. 32 GB	2 x DDR4 SO-DIMM, max. 32 GB	
BIOS	Insyde	Insyde	
Watchdog Timer	256 Levels	256 Levels	
SSD / CF / mSATA / M.2	SIM card socket, mSATA via 1 x mPCIe	SIM card socket, mSATA via 1 x mPCIe	
HW Monitoring	yes	yes	
Expansion slots	1 x PCIe(x16), mPCIe, half-size mPCIe	1 x PCIe(x16), 2 x mPCIe	

GRAPHICS

Controller	Intel® HD Graphics		Intel® HD Graphics
Interface	HDMI, LVDS, DVI, VGA		DisplayPort, HDMI, LVDS, DVI, VGA
	Header for VGA or 2nd LVDS	DisplayPort	

ETHERNET

Controller	Intel® I219-LM Gigabit-LAN (supports Intel® AMT 12) Intel® I210-AT Gigabit-LAN	Intel® I219-LM Gigabit-LAN (supports Intel® AMT 12) Intel® I210-AT Gigabit-LAN
Interfaces	RJ45	RJ45

MULTI I/O

Chipset	3 x SATAIII, 2 x RS-232/422/485, 4 x RS-232, LPC, LCD Inverter, PS/2, SMBus	3 x SATAIII, 1 x RS-232/422/485, 4 x RS-232, LPC, LCD Inverter, PS/2, SMBus
USB	6 x USB3.1 (2 of them internal), 4 x USB2.0 (internal)	6 x USB3.1 (2 of them internal), 4 x USB2.0 (internal)
Audio	Realtek ALC262 HD	Realtek ALC262 HD
Others	8-bit digital I/O interface	2 x 8-bit digital I/O interface

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	ATX 24-pin, 12V DC 4-pin	ATX 24-pin, 9 to 35V DC 4-pin
Dimensions	170 x 170 mm	170 x 170 mm
Operating temp.	0°C to 60°C	0°C to 60°C
Storage temp.	-20°C to 80°C	-20°C to 80°C
Relative humidity	10% to 90%, non-condensing	10% to 90%, non-condensing

LV-67Z**WHISKEY LAKE PLATFORM****LV-67S****SKYLAKE SERVER PLATFORM**

Model	LV-67Z7	LV-67ST	LV-67S
Article n°	161198	148214	147821

SYSTEM

CPU	Intel® Core™ i7-8665UE	Socket FCLGA1151 for 6. and 7. Generation Intel® Core™ i7/i5/i3 and Xeon® E3-1200 V5/V6 Processors
Chipset	processor-integrated	Intel® C236
Memory	2 x DDR4 SO-DIMM, max. 32GB	2 x DDR4 DIMM, max. 32 GB (non-ECC)
BIOS	Insyde	Phoenix
Watchdog Timer	256 Levels	256 Levels
SSD / CF / mSATA / M.2	mSATA via 1 x mPCIe	1 x SIM card socket, 1 x mSATA via mPCIe, 1 x mSATA via half-size mPCIe
HW Monitoring	yes	yes
Expansion slots	1 x PCIe(x4), 1 x mPCIe, 1 x M.2 E-Key	1 x PCIe(x16), 2 x mPCIe (1 x full-size, 1 x half-size)

GRAPHICS

Controller	Intel® UHD Graphics	Intel® HD Graphics
Interface	HDMI, LVDS, DisplayPort	CRT, DVI, HDMI, LVDS, supports 3 independent displays

ETHERNET

Controller	Intel® I219-LM Gigabit-LAN (supports Intel® AMT 12) Intel® I210-AT Gigabit-LAN	Intel® I219-LM Gigabit-LAN Intel® I210-AT Gigabit-LAN
Interfaces	RJ45	RJ45

MULTI I/O

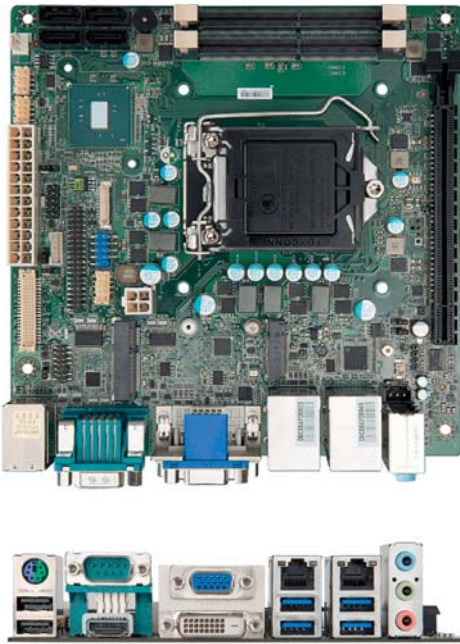
Chipset	2 x SATAIII, 2 x RS-232/422/485, 4 x RS-232, LPC, LCD Inverter, PS/2, SMBus	4 x SATA III, 1 x RS-232/422/485, 5 x RS-232 (4 of them internal), LCD Inverter, LPC, PS/2, SMBus
USB	4 x USB3.1 Gen. 2, 2 x USB2.0	6 x USB 3.0 (2 of them internal), 4 x USB 2.0 (internal)
Audio	Realtek ALC262 HD	Realtek ALC262 HD
Others	digital I/O interface, SMBus	8-bit digital I/O interface, iAMT11.0

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	ATX 24-pin	ATX 24-pin, 12V DC 4-pin
Dimensions	170 x 170 mm	170 x 170 mm
Operating temp.	0°C to 60°C	0°C to 60°C
Storage temp.	-20°C to 80°C	-20°C to 80°C
Relative humidity	10% to 90%, non-condensing	10% to 90%, non-condensing

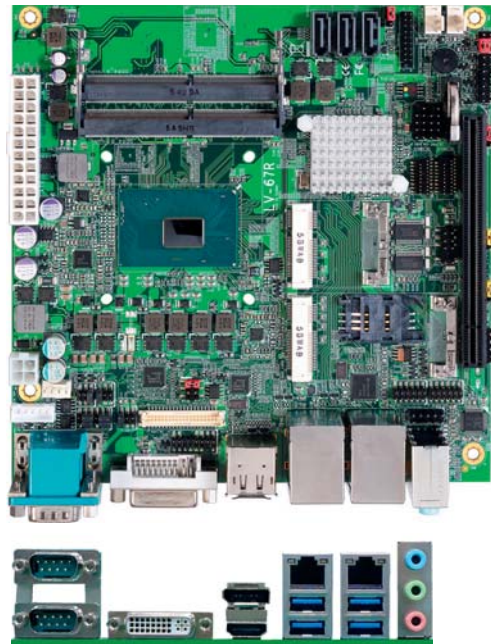
MS-98E1

SKYLAKE SERVER OR DESKTOP PLATFORM



LV-67R

SKYLAKE MOBILE SERVER OR MOBILE PLATFORM



Model	MS-98E1-C236	MS-98E1-H110	LV-67RKX	LV-67RTK7
Article n°	151584	151833	153936	153939

SYSTEM

CPU	Socket LGA 1151 for 6. Generation Intel® Core™ i7/i5/i3, Celeron®, Xeon®, Pentium® Desktop Processors		Intel® Xeon® E3-1505M Processor	Intel® i7-7820EQ Processor
Chipset	Intel® C236	Intel® H110	Intel® C236	Intel® QM175
Memory	2 x DDR4 SO-DIMM, max. 32 GB		2 x DDR4 SO-DIMM, max. 32 GB	
			ECC	non-ECC
BIOS	AMI		Phoenix	
Watchdog Timer	256 Levels		256 Levels	
SSD / CF / mSATA / M.2	1 x mSATA via full-size mPCIe		1 x SIM card socket, 1 x mSATA via full-size mPCIe	
HW Monitoring	yes		yes	
Expansion slots	1 x PCIe(x16), 2 x mPCIe (1 x full-size, 1 x half-size)		1 x PCIe(x16), 2 x mPCIe (1 x full-size, 1 x half-size)	

GRAPHICS

Controller	Intel® HD Graphics		Intel® HD Graphics	
Interface	DVI-D, HDMI, LVDS, VGA, supports		DVI-I, HDMI, LVDS, VGA, supports 3 independent displays	
	3 independent Displays	2 independent Displays	DisplayPort	Header for 2nd LVDS/VGA

ETHERNET

Controller	Intel® I219-LM Gigabit-LAN Intel® I210-AT Gigabit-LAN	Intel® I219-LM Gigabit-LAN Intel® I210-AT Gigabit-LAN
Interfaces	RJ45	

MULTI I/O

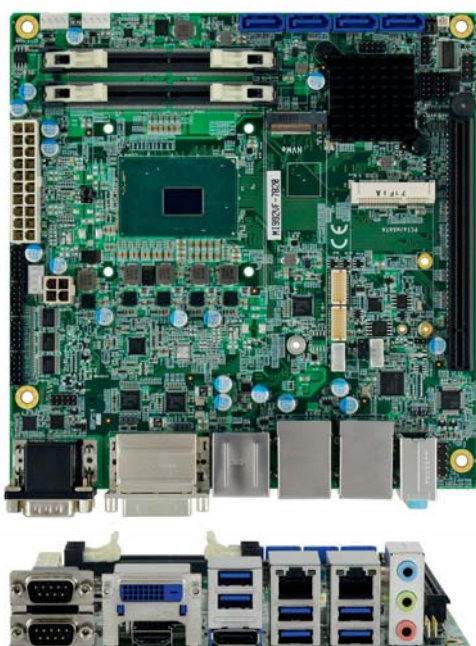
Chipset	Fintek F81866AD-I 5 x SATA III, 1 x RS-232/422/485, 5 x RS-232 (4 of them internal)	3 x SATA III, 1 x RS-232/422/485, 5 x RS-232 (4 of them internal), LPC, PS/2, SMBus, LCD Inverter
USB	4 x USB 3.0, 5 x USB 2.0 (4 of them internal), 1 x USB 2.0 (vertical, internal)	6 x USB 3.0 (2 of them internal), 4 x USB 2.0 (internal)
Audio	Realtek ALC887 HD Audio Codec	Realtek ALC262 HD Audio
Others	8-bit digital I/O interface	8-bit digital I/O interface, iAMT11.0

MECHANICAL DATA & ENVIRONMENT CONDITIONS

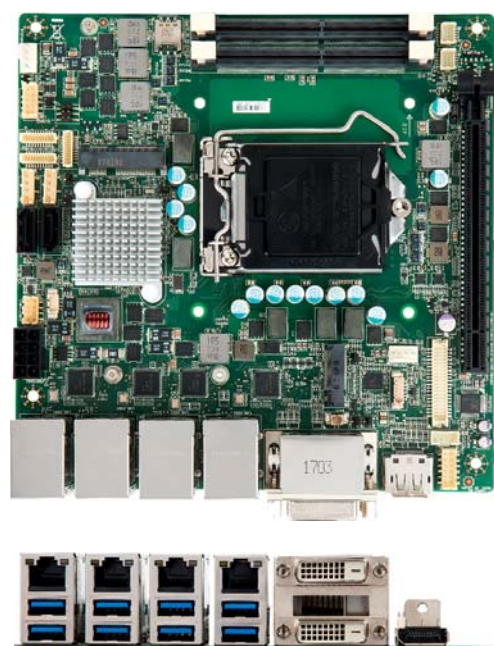
Power	ATX 24-pin	ATX 24-pin, 6 to 30V DC 4-pin
Dimensions	170 x 170 mm	170 x 170 mm
Operating temp.	0°C to 60°C	0°C to 60°C
Storage temp.	-20°C to 80°C	-20°C to 80°C
Relative humidity	10% to 90%, non-condensing	10% to 90%, non-condensing

MI992

SKYLAKE SERVER OR DESKTOP PLATFORM

**MS-98K1-Q170**

SKYLAKE / KABYLAKE PLATFORM



Model	MI992VF-X3G	MI992VF-7820	MI992VF-7440	MI992EF-7100	MS-98K1-Q170
Article n°	153422	153415	153419	153421	154717

SYSTEM

CPU	Intel® Xeon® E3-1505M	Intel® Core™ i7-7820EQ	Intel® Core™ i5-7440EQ	Intel® Core™ i3-7100E	Socket LGA1151 for 6. and 7. Generation Intel® Core i7/i5/i3 Processors
Chipset	Intel® CM238			Intel® H175	Intel® Q170
Memory	2 x DDR4 SO-DIMM, max. 32GB			2 x DDR4 SO-DIMM, max. 32 GB	
	ECC	non-ECC			
BIOS	AMI				AMI
Watchdog Timer	256 Levels				256 Levels
SSD / CF / mSATA / M.2	1 x mSATA via mPCIe, 1 x M.2 M/B-Key (via SATA III and PCIe)				M.2 M-Key
HW Monitoring	yes				yes
Expansion slots	1 x PCIe(x16), 2 x mPCIe				1 x PCIe(x16), 1 x mPCIe

GRAPHICS

Controller	Intel® HD Graphics		Intel® HD Graphics
Interface	DisplayPort, DVI-D, HDMI, 24-bit Dual Channel LVDS		HDMI, DisplayPort, 2 x DVI-D, 18-/24-bit Dual Channel LVDS, supports 3 independent displays

ETHERNET

Controller	Intel® I211-AT Gigabit-LAN		4 x Intel® I210-AT Gigabit-LAN
	Intel® I219-LM Gigabit-LAN	Intel® I219-V	
Interfaces	RJ45		RJ45

MULTI I/O

Chipset	Fintek F81866AD-I, 2 x RS-232/422/485, 4 x RS-232 (internal)		Fintek F81866AD-I
	4 x SATA III	2 x SATA III	2 x SATA III, 4 x RS-232/422/485 (internal)
USB	6 x USB 3.0, 4 x USB 2.0 (internal)		8 x USB 3.0, 3 x USB 2.0 (internal)
Audio	Realtek ALC892 Codec		Realtek ALC887 HD Codec
Others	8-bit digital I/O interface, RAID, TPM 2.0, iAMT 11.6, iSMART		16-bit digital I/O interface, TPM

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	ATX 20-pin		12 V to 24 V DC-in 8-pin
Dimensions	170 x 170 mm		170 x 170 mm
Operating temp.	0°C to 60°C		0°C to 60°C
Storage temp.	-20°C to 80°C		-20°C to 80°C
Relative humidity	10% to 90%, non-condensing		10% to 90%, non-condensing

μATX BOARDS

STANDARD FOR OVER 20 YEARS

In 1997 the μATX standard for motherboards was introduced. The boards are 25% smaller than the ATX boards and offer up to four expansion slots.

They are backward compatible to the ATX standard and can therefore also be installed in ATX enclosures. These boards often offer the same chipsets as the full-size ATX boards – at a lower cost.

TYPICAL APPLICATIONS

- Medical field, e.g. MRT or CT
- Image processing
- Data acquisition on site
- Metrology
- Quality control
- Operator terminals

MS-98L2

COFFEE LAKE PLATFORM



MB991AF

SKYLAKE DESKTOP OR SERVER PLATFORM



Model	MS-98L2-C246 (SKU1)	MS-98L2-Q370 (SKU2)	MB991AF-C236	MB991AF
Article n°	155658	155659	152230	152231

SYSTEM

CPU	Socket LGA 1151 for 8. Generation Intel® Desktop Coffee Lake-S Xeon® / i7/i5/i3 / Pentium® / Celeron® Processors		Socket LGA1151 for 6. and 7. Generation Intel® Core™ i7/i5/i3, Pentium® / Celeron® QC/DC Processors	
Chipset	Intel® C246 Express	Intel® Q370 Express	Intel® C236	Intel® Q170
Memory	4 x DDR4 DIMM, max. 64 GB (ECC, depends on CPU)		4 x DDR4 DIMM, max. 64 GB (ECC, depends on CPU)	
BIOS	AMI UEFI		AMI	
Watchdog Timer	256 Levels		256 Levels	
SSD / CF / mSATA / M.2	1 x M.2 M-Key		1 x mSATA via mPCIe (via SATA III) 1 x M.2	
HW Monitoring	yes		yes	
Expansion slots	1 x mPCIe (full-size/half-size), 1 x PCIe(x16), 3 x PCIe(x4)		1 x PCIe(x16), 1 x PCIe(x8), 1 x PCIe(x4), 1 x mPCIe	

GRAPHICS

Controller	Intel® HD Graphics		Intel® HD Graphics	
Interface	2 x DisplayPort, HDMI, 18-/24-bit Dual Channel LVDS, VGA supports 3 independent Displays		LVDS, 2 x HDMI	

ETHERNET

Controller	1 x Intel® I219-LM Gigabit-LAN 3 x Intel® I210-AT Gigabit-LAN	Intel® I219-LM Gigabit-LAN Intel® I211-AT Gigabit-LAN
Interfaces	RJ45	

MULTI I/O

Chipset	4 x SATAIII, 2 x RS-232/422/485 (internal), 4 x RS-232 (internal), PS/2 (internal)	Fintek F81846AD-I + F81504D 5 x SATA III, 7 x RS-232 (4 of them internal), 1 x RS-232/422/485
USB	4 x USB 3.1 (Gen. 2), 4 x USB 3.1 (Gen. 1), 5 x USB 2.0 (internal)	6 x USB 3.0, 4 x USB 2.0 (internal)
Audio	Realtek ALC887 HD	
Others	16-bit digital I/O interface, TPM	8-bit digital I/O interface, RAID, iAMT, TPM, iSMART

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	24-pin ATX	ATX
Dimensions	244 x 244 mm	244 x 244 mm
Operating temp.	-10°C to 60°C	0°C to 60°C
Storage temp.	-20°C to 80°C	-20°C to 80°C
Relative humidity	10% to 90%, non-condensing	5% to 90%, non-condensing

ATX BOARDS

SUCCESSOR OF THE AT STANDARD

In 1995 the layout format ATX was defined as the successor of the AT standard by Intel® and standardized in 1999.

ATX improved the standardization and interchangeability of parts. The ATX standard meets the rough industrial requirements to a high degree and offers up to 7 expansion slots.

ATX is still the common motherboard design and serves as a layout template for many smaller boards.

FEATURES

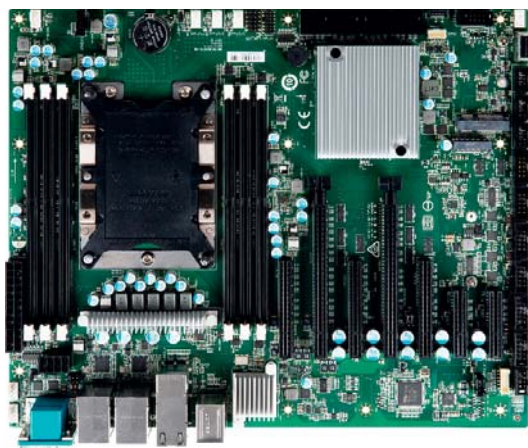
- Temperature range up to +60°C
- Use in 24/7 operation possible
- Up to 15 years long-term availability
- Legacy slots, such as PCI, ...
- Extension via small, flexible M.2 cards

TYPICAL APPLICATIONS

- 19" industrial PC for robotics, measuring and medical technology
- Test benches
- Retrofit applications

MS-98M9

CASCADE / SKYLAKE PLATFORM

**MS-98L9**

KABYLAKE / SKYLAKE PLATFORM



Model	MS-98M9-C622	MS-98M9-C621	MS-98L9 V2.0
Article n°	157462	157461	159360

SYSTEM

CPU	Socket LGA 3647 for 1. and 2. Generation Intel® Xeon® Processors		Socket LGA 1151 for 6. and 7. Generation Intel® Core™ i7/i5/i3/ Pentium®/Celeron® Desktop Processors
Chipset	Intel® C622 Express	Intel® C621 Express	Intel® H110 Express
Memory	6 x DDR4 RDIMM, max. 192GB		2 x DDR4 UDIMM, max. 32 GB
BIOS	AMI UEFI		AMI UEFI
Watchdog Timer	256 Levels		256 Levels
SSD / CF / mSATA / M.2	1 x M.2 M-Key, 1 x mSATA via mPCIe		-
HW Monitoring	yes		yes
Expansion slots	1 x mPCIe, 2 x PCIe(x16)*		1 x PCIe(x16), 1 x PCIe(x4), PCI, ISA

GRAPHICS

Controller	-	Intel® HD Graphics
Interface	-	HDMI, VGA, supports 2 independent displays

ETHERNET

Controller	1 x Intel® X557-AT2 for Dual 10 GbE LAN 2 x Intel® I210-AT GbE LAN	2 x Intel® I210-AT GbE LAN	1 x Intel® I219-LM Gigabit-LAN 2 x Intel® I211-AT Gigabit-LAN
Interfaces	RJ45		RJ45

MULTI I/O

Chipset	Fintek F81866AD-I 8x SATAIII, 2 x RS-232/422/485, 4 x RS-232, PS/2	Fintek F81866AD-I 4 x SATAIII, 1 x RS-232/422/485, 5 x RS-232, PS/2
USB	6 x USB 3.2 Gen.1, 7 x USB 2.0 (internal)	4 x USB 3.1 Gen.1, 5 x USB 2.0 (3 of them internal)
Audio	Realtek® ALC887-VD2-CG HD	Realtek® ALC887-VD2-CG
Others	16-bit digital I/O interface, TPM	16-bit digital I/O interface, TPM

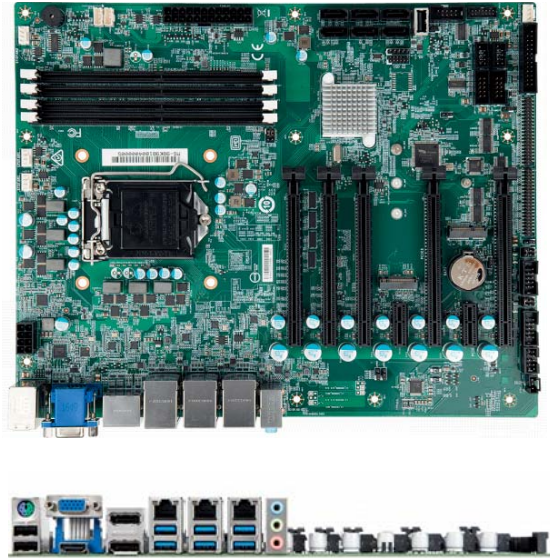
MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	ATX, 24-pin	ATX 24-pin
Dimensions	305 x 244 mm	305 x 244 mm
Operating temp.	0°C to 60°C	-10°C to 60°C
Storage temp.	-20°C to 80°C	-20°C to 80°C
Relative humidity	10% to 90%, non-condensing	10% to 90%, non-condensing

* configurable: 2 x PCIe(x16) or 4 x PCIe(x8) or 1 x PCIe(x16) + 2 x PCIe(x8)

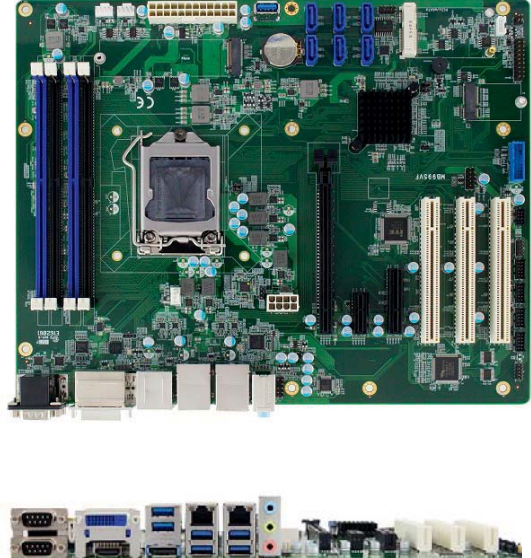
MS-98K9 V2.1

COFFEE LAKE PLATFORM



MB995VF

COFFEE LAKE PLATFORM



Model	MS-98K9 V2.1-C246	MS-98K9 V2.1-Q370	MB995VF-C246	MB995VF
Article n°	159359	161668	155287	155288

SYSTEM

CPU	Socket LGA 1151 for 8. Generation Intel® Xeon® / Core™ i7/i5/i3/ Pentium® / Celeron® Desktop Processors		Socket LGA 1151 for 8. Generation Intel® Xeon® E / Core™ i7/i5/i3/ HC/QC/DC Processor	
Chipset	Intel® C246 Express	Intel® Q370 Express	Intel® C246	Intel® Q370
Memory	4 x DDR4 UDIMM, max. 64 GB (ECC, depends on CPU)			
BIOS	AMI UEFI		AMI	
Watchdog Timer	256 Levels		256 Levels	
SSD / CF / mSATA / M.2	1 x M.2 M-Key via 1 x PCIe (x4) (SATAIII)		mSATA , 1 x M.2 M-Key, 1 x M.2 E-Key	
HW Monitoring	yes		yes	
Expansion slots	2 x PCIe(x16)*, 3 x PCIe(x4), 2 PCI		1 x PCIe(x16), 1 x PCIe(x4), 1 x PCIe(x1), 3 x PCI, 1 x mPCIe	

GRAPHICS

Controller	Intel® HD Graphics	Intel® HD Graphics
Interface	2 x DisplayPort, HDMI, VGA supports 3 independent displays	DisplayPort, HDMI, DVI-D

ETHERNET

Controller	1 x Intel® I219-LM Gigabit-LAN 2 x Intel® I210-AT Gigabit-LAN	Intel® I219LM Gigabit-LAN Intel® I210AT Intel® I211AT Gigabit-LAN
Interfaces	RJ45	2 x RJ45

MULTI I/O

Chipset	Fintek F81866AD-I 4 x SATAIII, 2 x RS-232/422/485, 4 x RS-232, PS/2	Fintek F81966D-I, 2 x RS-232/422/485, 4 x RS-232 (internal) 6 x SATAIII 4 x SATAIII
USB	6 x USB 3.2, 7 x USB 2.0 (5 of them internal)	4 x USB 3.1, 5 x USB 3.0, 2 x USB 2.0
Audio	Realtek® ALC887-VD2-CG	Intel® C246/Q370 built-in HD and Realtek® ALC888S-VD2-GR
Others	16-bit digital I/O interface, TPM	8-bit digital I/O interface, iAMT, TPM, RAID, iSMART, Eup/ErP

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	ATX 24-pin	ATX 24-pin
Dimensions	305 x 244 mm	305 x 244 mm
Operating temp.	-10°C to 60°C	0°C to 60°C
Storage temp.	-20°C to 80°C	-20°C to 80°C
Relative humidity	10% to 90%, non-condensing	90% (non-condensing @ 60°C)

* configurable: 1 x PCIe(x16) or 2 x PCIe(x8)

AS-C7A

SKYLAKE SERVER PLATFORM

**MB990VF**

SKYLAKE DESKTOP PLATFORM



Model	AS-C7A	AS-C7AT	MB990VF
Article n°	150052	150053	145940

SYSTEM

CPU	Socket FCLGA1151 for 6. and 7. Generation Intel® Core™ S-Serie and Xeon® E3-1200 V5/V6 Desktop Processors	Socket LGA1151 for 6. and 7. Generation Intel® Core™ i7/i5/i3, Pentium®, Celeron® Desktop Processors
Chipset	Intel® C236	Intel® Q170
Memory	4 x DDR4 DIMM, max. 64 GB (ECC, depends on CPU)	4 x DDR4 DIMM, max. 64 GB (ECC, depends on CPU)
BIOS	Phoenix	AMI
Watchdog Timer	256 Levels	256 Levels
SSD / CF / mSATA / M.2	mSATA via 1 x mPCIe	-
HW Monitoring	yes	yes
Expansion slots	1 x PCIe(x16), 1 x PCIe(x4), 1 x PCIe(x1), 4 x PCI, 2 x mPCIe, 1 x SIM-Socket	1 x PCIe(x16), 1 x PCIe(x8), 1 x PCIe(x4), 1 x PCIe(x1), 3 x PCI, 1 x mPCIe

GRAPHICS

Controller	Intel® HD Graphics		Intel® HD Graphics
Interface	DVI-D, HDMI, LVDS, VGA, supports 3 Displays		DVI-D, DisplayPort, HDMI
	DisplayPort	11-pin Socket for 2.VGA	

ETHERNET

Controller	Intel® I219-LM Gigabit-LAN Intel® I210-AT Gigabit-LAN	Intel® I219-LM Gigabit-LAN Intel® I211-AT Gigabit-LAN
Interfaces	RJ45	RJ45

MULTI I/O

Chipset	4 x SATA III, 1 x RS-232/422/485, 5 x RS-232 (4 of them internal), LPC, LCD Inverter, PS/2, SMBus	Fintek F81866D-I 6 x SATA III, 1 x RS-232/422/485, 5 x RS-232 (4 of them internal)
USB	6 x USB 3.0 (2 of them internal), 4 x USB 2.0 (internal)	10 x USB 3.0 (4 of them internal), 4 x USB 2.0 (internal)
Audio	Realtek ALC262 HD	Realtek ALC892, 7.1 Channel Codec
Others	8-bit digital I/O interface	8-bit digital I/O interface, iAMT, iSMART, EuP/ErP, RAID, TPM

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	ATX 24-pin	ATX 24-pin
Dimensions	305 x 244 mm	305 x 244 mm
Operating temp.	0°C to 60°C	0°C to 60°C
Storage temp.	-20°C to 80°C	-20°C to 80°C
Relative humidity	10% to 90%, non-condensing	10% to 90%, non-condensing

CPU CARDS

PICMG STANDARD

The PICMG standard defined in 1994 that the expansion slots and the processor unit should be set up separately.

CHANGE, UPDATE, REPAIR

Due to this separation, CPU cards installed in a system can be changed easily. It doesn't matter if a newer version is preferred or a change in case of repair is needed.

PICMG 1.0 VERSUS PICMG 1.3

In contrast to PICMG 1.0 with ISA and PCI bus, CPU cards with PICMG 1.3 offer a PCI- and PCIe interface from the board to the backplane. This enables a higher bandwidth and a higher data transfer speed.

THE RIGHT CPU CARD FOR EVERYONE

With PICMG 1.0, PICMG 1.3 half-size and PICMG 1.3 full-size, Spectra has 3 standards in its range that offer you the right card for exactly your application.

SPCIE-C246

COFFEE LAKE PLATFORM

**IB995AF**

COFFEE LAKE PLATFORM



Model	SPCIE-C246	IB995AF-C246
Article n°	159616	160083

SYSTEM

CPU	Socket LGA 1151 for 9. and 8. Generation Intel® Core™ i9/i7/i5/i3 / Celeron® / Pentium® Processors	Socket LGA 1151 for 9. and 8. Generation Intel® Core™ i7/i5/i3 / Xeon® Desktop Processors
Chipset	Intel® C246	Intel® C246
Memory	4 x DDR4 DIMM, max. 64 GB	2 x DDR4 DIMM, max. 32 GB
BIOS	AMI	AMI
Watchdog Timer	256 Levels	256 Levels
SSD / CF / mSATA / M.2	1 x M.2 M-Key	1 x M.2 M-Key, 1 x M.2 E-Key
HW Monitoring	yes	yes
Expansion slots	1 x PCIe(x16), 4 x PCIe(x1), 4 x PCI	1 x PCIe(x16), 1 x PCIe(x4) or 4 x PCIe(x1), 4 x PCI

GRAPHICS

Controller	Intel® HD Graphics	Intel® UHD Graphics
Interface	DisplayPort (internal), HDMI, supports 2 independent displays	DVI-D, DVI-I, 24-bit Dual Channel LVDS

ETHERNET

Controller	Intel® I219LM Gigabit-LA Intel® I211-AT Gigabit-LAN	Intel® I219LM Gigabit-LAN Intel® I210-AT Gigabit-LAN
Interfaces	RJ45	RJ45

MULTI I/O

Chipset	Fintek F81866D-I 6 x SATA 6 Gb/s supports RAID 0/1/5/10, 1 x RS-422/485, 3 x RS-232, 1 x SMBus	Fintek F81964D-I 5 x SATAIII, 1 x RS-232/422/485, 3 x RS-232
USB	4 x USB 3.1 Gen.1 (2 of them internal), 7 x USB 2.0 (6 of them internal)	5 x USB 3.0, 3 x USB 2.0 (1 of them via M.2 E-Key)
Audio	7.1 Channel HD via optional Audio kit	Realtek ALC662
Others	8-bit digital I/O interface, i ² C, TPM, iAMT	digital I/O interface, TPM 2.0, iAMT 11.6, RAID

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	ATX	ATX 12 V
Dimensions	338 x 126 mm	338 x 126 mm
Operating temp.	-20°C to 60°C	0°C to 60°C
Storage temp.	-30°C to 70°C	-20°C to 85°C
Relative humidity	5% to 95%, non-condensing	90%, non-condensing @ 60°C

FS-A79G204

COFFEE LAKE PLATFORM



PEAK 889VL2

COFFEE LAKE PLATFORM



Model	FS-A79G204	PEAK 889VL2-Q	PEAK 889VL2-H
Article n°	161138	156441	156442

SYSTEM

CPU	Socket FCLGA 1151 for 8. Generation Intel® Core™ Desktop Processors	Socket FCLGA 1151 for 8. Generation Intel® Core™ Desktop Processors	
Chipset	Intel® Q370	Intel® Q370	
Memory	2 x DDR4 DIMM, max. 32 GB	2 x DDR4 DIMM, max. 64 GB, non-ECC	
BIOS	Insyde	AMI	
Watchdog Timer	256 Levels	256 Levels	
SSD / CF / mSATA / M.2	1 x SIM card socket, 1 x mSATA via 1 x mPCIe	M.2 M-Key	
		supports PCIe(x4)	supports SATAIII
HW Monitoring	yes	yes	
Expansion slots	1 x mPCIe, 1 x PCIe(x16), 1 x PCIe(x4), 4 x PCI	1 x PCIe(x16), 1 x PCIe(x4), 4 x PCI	

GRAPHICS

Controller	Intel® HD Graphics	Intel® HD Graphics	
Interface	1 x DisplayPort, 2 x DVI, 1 x VGA, onboard 18/24-bit Single/Dual Channel LVDS supports 3 independent Displays	1 x DisplayPort, 1 x DVI-I, supports	
		3 independent Displays	2 independent Displays

ETHERNET

Controller	Intel® I219-LM Gigabit-LAN Intel® I210-AT Gigabit-LAN	Intel® I219-LM Gigabit-LAN Intel® I211 Gigabit-LAN	
Interfaces	RJ45	RJ45	

MULTI I/O

Chipset	3 x SATAIII, 2 x RS-232/422/485, 4 x RS-232, LCD Inverter, LPC, SMBus, PS/2	4 x SATAIII	3 x SATAIII
		1 x RS-232/422/485, 3 x RS-232, LPT, PS/2	
USB	6 x USB 3.1 (internal), 4 x USB 2.0 (internal)	6 x USB 3.1 (4 of them internal), 2 x USB 3.0 (internal), 4 x USB 2.0 (internal)	
Audio	Realtek ALC262 HD	Realtek ALC262 HD	
Others	8-bit digital I/O interface	8-bit digital I/O interface	

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	ATX PICMG 1.3, 12V 4-pin	ATX PICMG 1.3, 12V 4-pin	
Dimensions	338 x 126 mm	338 x 126 mm	
Operating temp.	0°C to 60°C	-20°C to 60°C	
Storage temp.	-20°C to 60°C	-20°C to 80°C	
Relative humidity	10% to 90%, non-condensing	10% to 90%, non-condensing	

PCIE-Q370

COFFEE LAKE PLATFORM

PIC688C

SKYLAKE OR KABYLAKE PLATFORM



Model	PCIE-Q370	PIC688C
Article n°	160368	154929

SYSTEM

CPU	Socket LGA 1151 for 9. and 8. Generation Intel® Core™ i9/i7/i5/i3 / Celeron® / Pentium® Processors	Socket LGA 1151 for 6. and 7. Generation Intel® Xeon® / Core™ i7/i5/i3 Processors
Chipset	Intel® Q370	Intel® C236 Express
Memory	4 x DDR4 DIMM, max. 64 GB	2 x DDR4 SO-DIMM, max. 32GB
BIOS	AMI UEFI	-
Watchdog Timer	256 Levels	256 Levels
SSD / CF / mSATA / M.2	1 x M.2 M-Key	-
HW Monitoring	yes	yes
Expansion slots	1 x PCIe(x16), 4 x PCIe(x1), 4 x PCI	supports to zu 30 PCIe

GRAPHICS

Controller	Intel® HD Graphics	Intel® HD Graphics
Interface	VGA	DisplayPort (internal), DVI-I (VGA), supports 3 independent displays

ETHERNET

Controller	Intel® I219LM Gigabit-LAN Intel® I211-AT Gigabit-LAN	Intel® WG1219LM Gigabit-LAN Intel® I211 Gigabit-LAN
Interfaces	RJ45	RJ45

MULTI I/O

Chipset	Fintek F81866D-I 6 x SATA 6 Gb/s supports RAID 0/1/5/10, 1 x RS-422/485, 3 x RS-232, 1 x SMBus	4 x SATAIII supports RAID 0/1/5/10, 2 x RS-232/422/485, 2 x RS-232, PS/2
USB	4 x USB 3.1 Gen. 1 (2 of them internal), 7 x USB 2.0 (6 of them internal)	2 x USB 3.0, 4 x USB 2.0 (internal)
Audio	Realtek ALC892 HD via optional Audio kit	
Others	8-bit digital I/O interface, I ² C, iAMT, TPM	16-bit digital I/O interface, TPM

MECHANICAL DATA & ENVIRONMENT CONDITIONS

Power	ATX PICMG 1.3, 12V 4-pin	ATX PICMG 1.3, 12V 4-pin
Dimensions	338 x 126 mm	208 x 126 mm
Operating temp.	-20°C to 60°C	-20°C to 60°C
Storage temp.	-30C to 70°C	-20°C to 85°C
Relative humidity	5% to 95%, non-condensing	0% to 90%, non-condensing

MPCIE EXPANSION MODULES FOR EMBEDDED BOARDS & CPU CARDS

FEATURES

Mini PCI-Express (mPCIe) cards are available with various functions:

- Classic interfaces:
RS-232/422/485, LPT, Firewire, USB
- Audio and video interfaces:
e.g. Video Capture, DVI
- Communication:
WLAN, GSM, 3G, LAN, Dual LAN
- Control and measurement technology:
digital I/O, Counter
- Further modules are under development

mPCIe is the successor of mPCI. The standard, originally specified for notebooks, allows a compact design for extensions such as WLAN and Bluetooth.

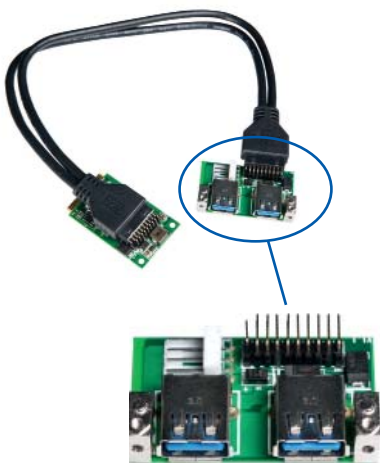
With 51 x 30 mm, mPCIe expansion cards are only half the size of mPCI cards.

By using the standard signals from PCIe, USB and I²C bus, no additional drivers are required.

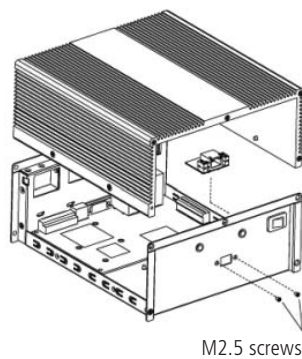
The mPCIe interface, with a variety of expansion cards, has established itself in the industrial environment.

Thanks to mPCIe technology, it is possible to individually adapt even embedded systems with very compact designs to different tasks.

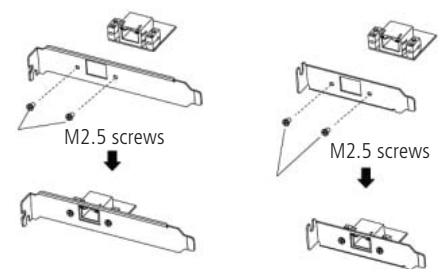
Due to the screw connection of the boards, the boards are also insensitive to shock and vibration.



MOUNTING ON THE CHASSIS



MOUNTING ON SLOT BRACKET



MPCIe EXPANSION MODULES

(PCI-EXPRESS MINI-CARD)

Dimensions: 30 x 50,95 mm or 30 x 26,6 mm (half-size)



Article n°	Model	Description	Commentary
Fieldbus			
158205	CIFX-90E-RE/ET/F MASTER	Real-Time-Ethernet, Wide-temp	EtherCAT*
158796	CIFX-90E-RE/ET/F SLAVE	Real-Time-Ethernet, Wide-temp	EtherCAT*
158204	CIFX-90E-DP/ET/F MASTER	PROFIBUS-DP, AIFX-DP, Wide-temp	for all Boards with mPCIe
158206	CIFX-90E-DP/ET/F SLAVE	PROFIBUS-DP, AIFX-DP, Wide-temp	for all Boards with mPCIe
158210	CIFX 90E-CO/ET/F MASTER	CANopen, AIFX-CO, Wide-temp	for all Boards with mPCIe
158208	CIFX 90E-CO/ET/F SLAVE	CANopen, AIFX-CO, Wide-temp	for all Boards with mPCIe
129680	MPX-2515	2 x CAN 2.0	for all Boards with mPCIe
Ethernet			
150304	MPX-350	2 x Gigabit-LAN, Intel® i350AM	for all Boards with mPCIe
158092	MEC-LAN-M102	2 x Gigabit-LAN, Wide-temp	for all Boards with mPCIe
Firewire			
152286	MPX-2213	1 x 1394A, 2 x 1394B	for all Boards with mPCIe
USB			
156840	MEC-USB-M102	2 x USB 3.0, Hot-Swap	for all Boards with mPCIe
Serial			
152785	MPX-4232	2 x RS-232, 2 x RS-422 or 2 x RS-485	for all Boards with mPCIe
Capture			
129939	MPX-25858	8 x Capture, Video, SDK	for all Boards with mPCIe
129368	MPX-6864A	4 x Capture, Scode, CMS	for all Boards with mPCIe
125897	MPX-6864	4 x Capture, Realtime	for all Boards with mPCIe
SATA/RAID			
158093	MEC-SAT-M102	2 x SATA III	for all Boards with mPCIe
127105	MPX-9125	2 x SATA III (RAID 0,1)	for all Boards with mPCIe
Graphics			
130222	MEC-DIS-M002	1 x VGA, 1 x DVI	for all Boards with mPCIe
127664	MPX-750	DVI-I	for all Boards with mPCIe
Computing Accelerator			
159327	Mustang-MPCIe-MX2-R10	2 x Intel® Movidius™ Myriad™ X VPU, Multi-OS	for all Boards with mPCIe
159326	Mustang-M2BM-MX2-R10	2 x Intel® Movidius™ Myriad™ X VPU, Multi-OS	for all Boards with M.2 2280 Key
159325	Mustang-V100-MX4-R10	2 x Intel® Movidius™ Myriad™ X VPU, Multi-OS	for all Boards with PCIe
Others			
121838	MPX-827	SD / SDHC	for all Boards with mPCIe
123497	MPX-TP4R	4-wire Touchcontroller	for all Boards with mPCIe

* optional for EtherNet/IP, PROFINET, POWERLINK, Open MODBUS/TCP, SERCOS, VARAN, DeviceNet

M.2 EINSTECKMODULE

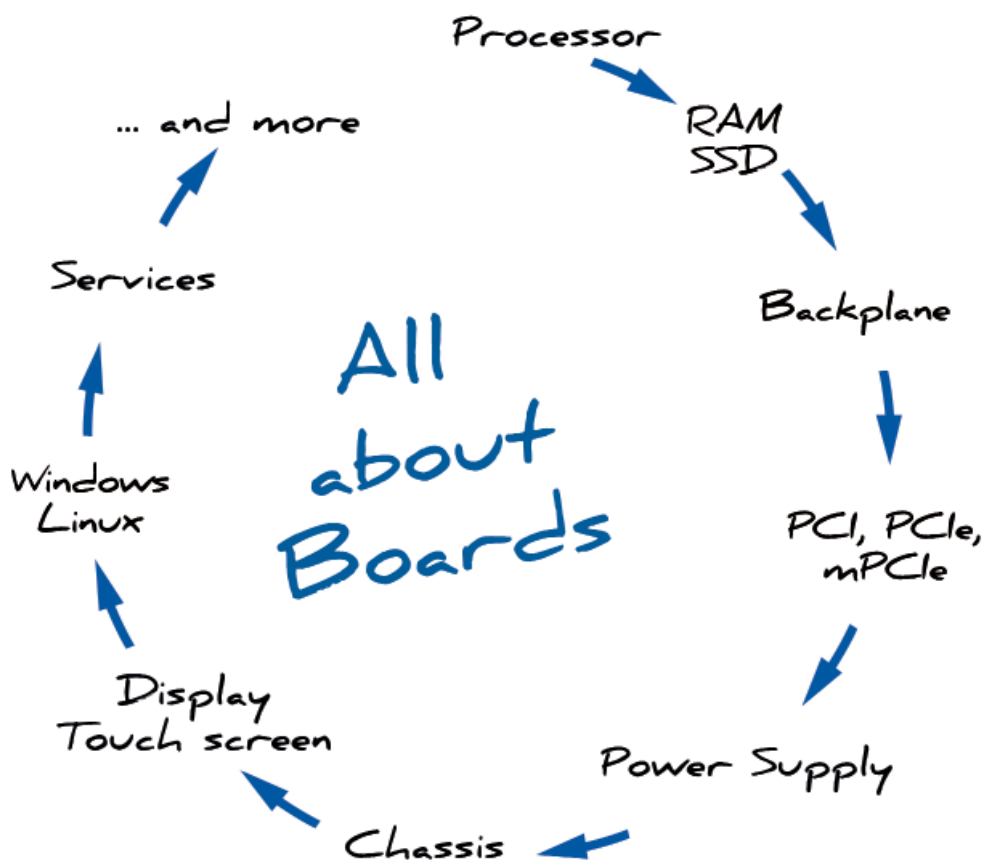
(M.2 2280)

Dimensions: 22 x 80 mm



Article n°	Model	Description	Commentary
Fieldbus			
156104	NF350D	2 x GLAN i350-AM2, Server	for all Boards with M.2 M-Key Socket
157958	ASM2142-M201C	USB 3.1 Gen. 2 USB-C	for all Boards with M.2 M-Key Socket
157959	ASM2142-M202	2 x USB 3.1 Gen. 2	for all Boards with M.2 M-Key Socket

ALL ABOUT BOARDS



BACKPLANES



Form factor	Number of slots	PCI	PCIexpress	mPCIe	ISA
PICMG 1.3	4 to 19	■	■		■
Halfsize PICMG 1.3	3 to 8	■	■		
PICMG 1.0	4 to 19	■			■
PCI	5 to 13	■			
ISA	3 to 10				■
PCISA	3 to 13	■			■
PIC0e	3 to 7	■	■		
Riser	1 to 3	■	■	■	
Butterfly	2 to 4	■			■

PC EXPANSION CARDS



Function	PCI	PCIexpress	mPCIe	M.2
Graphics		■	■	
Audio	■	■		
Capture		■	■	
Compression		■		
Computing Accelerator (KI)		■		
Ethernet / PoE	■	■	■	■
Ethernet Switch	■	■		
WLAN		■	■	■
GPS			■	
Cellular			■	
Paralell	■	■	■	
Serial	■	■	■	
USB	■	■	■	■
Firewire	■	■	■	
Watchdog	■			
RAID Controller		■		
SATA Controller	■	■	■	
Touch Controller			■	
Fieldbus				
CANbus	■	■	■	
CANopen	■		■	
DeviceNet	■		■	
PROFIBUS	■	■	■	
Real Time Ethernet				
PROFINET	■	■	■	
EtherCAT	■	■	■	
Ethernet/IP	■	■	■	
Measure & I/O cards				
Analog I/O	■	■		
Digital I/O	■	■	■	
Specials (Encoder, Motion,...)	■	■		

powered by individuality



Spectra GmbH & Co. KG

Mahdenstr. 3
72768 Reutlingen
Germany

Phone +49 (0) 7121 1432-10
E-Mail spectra@spectra.de
Web www.spectra.de

Sales team Industrial PC Components

Phone +49 (0) 7121 1432 -165
E-Mail sales@spectra.de



Spectra GmbH & Co. KG

Gewerbepark Ost 1
4621 Sipbachzell (Wels)
Austria

Phone +43 (0) 7240 20190
E-Mail info@spectra-austria.at
Web www.spectra-austria.at



Spectra (Schweiz) AG

Flugplatzstr. 5
8404 Winterthur
Switzerland

Phone +41 (0) 43 27710-50
E-Mail info@spectra.ch
Web www.spectra.ch



spectra
Industrie-PC & Automation



More information:
spectra.de/boards-EN