



インテリジェント エッジコンピューティング エッジAIを加速する

総合カタログ

iot.asus.com

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ASUSについて



ASUSは、5,000人以上の研究開発の専門家と98か国を網羅する1,000か所のサービスセンターを持つグローバルテクノロジーリーダーです。ASUS IoTは、ハードウェア、ソフトウェア、オーダーメイドのモノのインターネット (IoT) やAIソリューションの包括的なポートフォリオを提供します。

完全に統合され、製品化までの時間を効率的に短縮するアプリケーションの開発を支援することで、お客様の総所有コストを削減します。



ASUSはクラリベイトの「Top 100 Global Innovator (Top100グローバルイノベーター)」に選出されました。



ASUSは2018年、「世界テクノロジー企業上位100社」に



台湾で6年連続で「最も価値のあるブランド」No.1に(2013年以降)



2年連続で「最も信頼される企業ランキング」に(2017年&2018年)

2015年、2016年、2018年、2019年の4年に、フォーチュン誌の「世界で最も称賛される企業」の1社に



環境配慮への意識

ASUSは持続可能な将来の創造に取り組んでいます。ASUSでは、ビジネスのあらゆる面において環境に優しいアプローチを採用し、より環境に優しい明日のための環境アセスメントプログラムに積極的に参加しています。ASUSの内部慣行と生産プロセスは「GreenASUS」という理念に従って行われており、地球を守ることを重視しています。



環境に優しいデザイン

優れた製品デザインとは美的観点からだけでなく、その設計方法や機能に対しても当てはまります。製品を簡単に修理でき、長期間使え、簡単にリサイクルしやすいため、モジュール式の部品を使用しています。



環境に優しい生産

どの製品も環境を考えたものになっています。ASUSは、鉛やハロゲンなどの有害物質を使用せずに、製造する過程において厳格なガイドラインを遵守しています。



環境に優しいサービスとマーケティング

ASUSは、環境アセスメントプログラムおよびEPEATやTCOなどの認証登録をしており、グリーンテクノロジー基準を満たすか、それを上回っていることを保証しています。



グリーン購入

ASUSは、環境への影響を減らすことだけでなく、部品の調達から製品の出荷まで、より環境に優しいサプライチェーンを確保することにも力を注いでいます。



国際認証

法人向けの、業界標準を超える優れた品質で、ASUSはULおよびBlue Angelを含む複数の国際的な安全および環境団体によって認証されています。ASUSは安全、安心、そして持続可能なソリューションを提供し、あなたのビジネスにとって理想的な選択肢となるでしょう。



D33005

ASUS IoT について

ASUS IoTはASUSのサブブランドとして、AIやIoT分野における素晴らしいソリューションの創造に尽力しています。ASUSの使命は、組み込みシステムの信頼できるプロバイダーとなり、AIoTソリューションのエコシステムの拡大に貢献するパートナーとなることです。ASUS IoTは、多様な垂直市場においてクラス最高の製品とサービスを提供することを目指しています。また、効率性を高める完全統合型アプリケーションをお客様と連携して開発し、世界中の人々に便利で効率的かつ安全な生活環境、職場環境を提供することに努めています。



最先端のハードウェア設計およびソフトウェア開発機能



信頼性、互換性、安全性を確保する優れた品質管理



効率的な熱設計と電力保護



製品の可用性を保証



x86およびARMプラットフォームソリューション



複数のコンプライアンスが利用可能

intel
partner

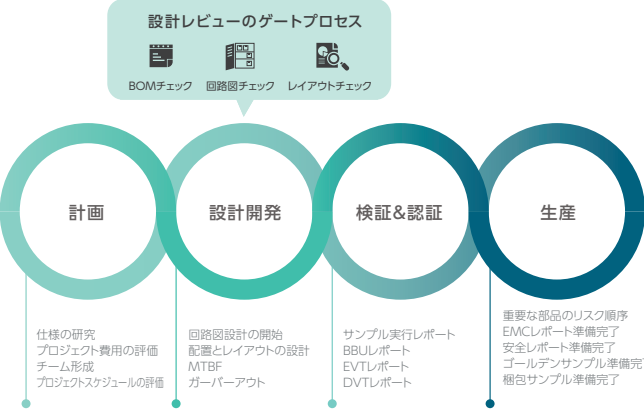
Titanium

ASUSは、Intel® IoT Solutions Allianceのアソシエイトメンバーです。Intel® IoT Solutions Allianceは、市場初のIoTソリューションを提供する世界で最も信頼されている協会の1つです。このメンバーシップはASUSとIntelの密接な関係を表し、ASUSがお客様により良い戦略、サポート、継続的なイノベーションを提供できるようにします。

設計・製造・サービス

より良いプロセスで、より良い結果を

ASUSは、業界標準を超える製品とサービスをお届けすることで知られています。当社のエンジニアは、品質を保証するために厳しい基準に基づいて設計し、実際の性能と信頼性を確保するために最高のコンポーネントのみを使用しています。ASUSは、カスタマイズされた生産を小規模または大規模でご提供することに加えて、モジュール、マザーボードまたはシステム向けの修正標準または完全にカスタマイズされた設計および製造サービスのための柔軟なオプションもご提供します。



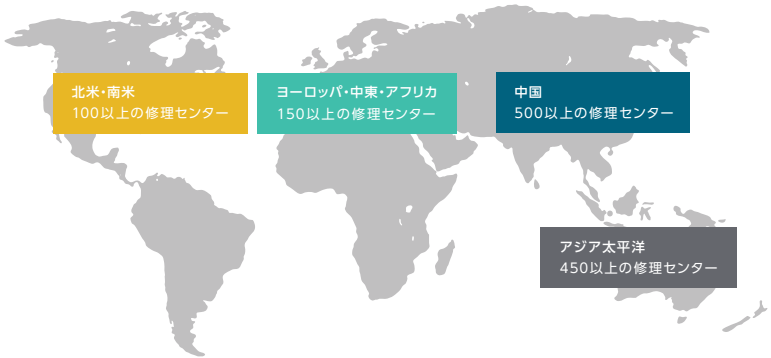
すべてのASUS製品は一連の厳格な検証を受けているため、お客様は最高品質の一貫した結果を受け取ることができるのでご安心いただけます。

- 動的試験 - 高度、振動、衝撃、落下
- 環境試験 - 温度、湿度、熱、音響ノイズ、ハードウェアモニター
- 電源試験 - 線間電圧と電源周波数、消費電力、電源線障害
- 機能試験 - UEFIのBIOS、システムユーティリティ、OS、外部ハードウェアの互換性
- 排出量試験 - EMC、EMI

ASUSの工場はISO 9001、ISO 14001、OHSAS 18001、ISO 13485、QC 080000、ISO/TS 16949の認証を受けています。また、ASUSはお客様に当社の生産施設を訪問していただく機会をご提供しています。訪問をご予約するには、お近くのASUS担当者にお問い合わせください。

グローバルリーチ、ローカルタッチ

ASUSには世界中に数百カ所の地域サービスセンターがあります。そのため、お客様が修理を必要とする機器をお持ちの場合、遠隔地に発送する代わりにお近くのサービスセンターにお持ちいただけるので、効率的でタイムリーなサービスがご提供できます。これらのサービスセンターは、ASUSまたはASUSによって訓練が認定された認定サービスプロバイダーによって所有または運営され、最高のサービスと品質を提供いたします。



オートメーション



ASUS IoT Automationは、堅牢性、インテリジェンス、柔軟性、および管理容易性のために最適化されています。また、標準ベースの事前検証済みシステムに加えて、ファンレスシャーシデザインと専用I/O適応性により、進化しつつある産業用およびマシンビジョンのアプリケーションをサポートします。

ホスピタリティ



ASUS IoT ホスピタリティは、ホテル、イベントセンター、旅行業界向けに設計されています。ASUS IoTは、最先端の技術とハードウェアとソフトウェアの専門知識を活用し、ゲストの体験を向上させ、ワークフローの効率と柔軟性を向上させ、全体的な生産性を向上させるカスタマイズソリューションを提供しています。

リテール



ASUS IoT リテールは、過酷な環境に耐え、広範なAI機能をサポートする強力なシステムを必要とするリテラー向けに設計されています。ASUSインテリジェントエッジコンピュータは幅広い動作温度と電源入力で動作できるため、屋外環境で24時間毎日動作するリテールでの使用に最適です。ASUS IoT インテリジェントエッジコンピュータは、さまざまな拡張に対応するさまざまなI/Oのオプションもご提供します。たとえば、自動販売機では複数の支払い方法をサポートし、継続的なリアルタイムの広告を表示する必要があります。

ゲーム



ASUS IoT ゲーミングは、ビデオ・ロトリー・ターミナル(VLT)、スロットと宝くじマシン、最新の処理性能を備えた電子ゲームとキオスク向けのエン터테인먼트、新しいグラフィックテクノロジーのサポート、セキュリティの強化、信頼性の高いユーザーエクスペリエンスを保証するように設計されています。Intel® Internet of Things Solutions Allianceのアソシエイトメンバーとして、ASUS IoTはシステムインテグレーターが新しい処理技術、ロードマップ、計画のためのリソースにアクセスできるようにしています。

ヘルスケア



ASUSファンレスシステムと産業用マザーボードは、ポイントオブケアデバイス、統合型手術室、一般病棟、および薬剤管理向けに設計されています。ASUSファンレスシステムは、細菌の蓄積を防ぎ、病院での衛生状態を維持して感染のリスクを軽減するファンレス設計に加えて、完全に密閉されたハウジングを備えています。

ライフスタイル & ホーム



ASUS IoT スマートホーム製品は最新技術を実装する革新的なソリューションで、完全統合型のコネクテッドホームのエコシステムを生み出します。ASUSは、効率性を高めるために設計されたさまざまな製品と、ご自宅をより快適で安全にする製品をご提供します。

成功事例

感染拡大を防止

新型コロナウイルスの感染が拡大する中、多くの国ではソーシャルディスタンスを促すためにロックダウンや休校などの厳格な措置が取られています。中国のある企業は、ASUS Tinker Boardを活用して「AI Face Recognition Intelligent Column」を開発しました。高精度な温度測定と動的な顔認識を備えた同ソリューションは、校内の感染拡大防止に役立っています。



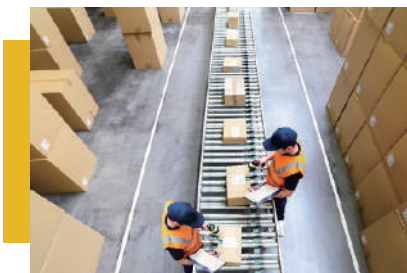
キオスク端末

ヨーロッパの端末メーカーは、小売店が顧客と本当のつながりを築けるようキオスク端末にTinker Boardを採用しています。タッチ端末は販路開拓（対話型拡張機能付カタログなど）、情報提供、コミュニケーションなどあらゆるネットワークで発展しています。



倉庫管理

中国のIT企業は、ASUS Tinker Boardをマシンビジョンのカメラシステムに搭載し、倉庫管理に役立てています。同社は荷物の追跡、仕分け、配送を効率的に行うことのできるソリューションを構築しました。同システムにより、荷物に記載されたコードの読み取りやOCR（光学式文字認識）を効率よく行えるようになりました。Tinker Boardが可能にしたこれらの高度な機能により、非常に正確で効率的な仕分け・配送を実現しました。



ASUS IoT Tinker Edge Tを 搭載した自動運転車を Maker Faire Taipei 2019に出展

人数カウント用デバイスを製造する大手メーカーは、スマートカメラにTinker Edge Tを採用し、実用的なデータを提供することで、来店客数、スタッフ、マーケティング戦略を最適化し、コンバージョンレートや利益向上に貢献しています。



スマートミラー

ASUS IoT EV22AとEV13Aをヘアサロンのスマートミラーに採用したSolmatelは、革新的なDOOH広告で新たなチャンネルの開拓に成功しました。サイズの異なる2つのモデルを揃えることで、EV22AとEV13Aスマートミラーはさまざまなシーンに対応します。EV22AとEV13Aは、現在、台湾の主要都市や商業地域にある880件以上のヘアサロンで導入されています。



EV充電ステーション

Fortune Electricは、パワフルで多機能なASUS IoT ALPR Edge AI Dev Kitを活用した全く新しいEV充電ステーションを開発しました。人工知能（AI）を搭載し、ディープラーニングアルゴリズムを組み合わせたALPR技術は、画像ノイズを最小限に抑え、ナンバープレートに記されているような重要な標識の識別を最大限高めます。ASUS Open Cloud Infrastructure Software（OCIS）と連動した新しい充電ステーションは、最大99.99%という驚異的な精度のALPRを提供し、駐車と充電の双方において信頼性の高い自動料金請求を実現します。



自動販売機

ある自動販売機メーカーは、お客様とのつながりを深め、従来の自動販売機と比べ閲覧・購入体験を飛躍的に向上させる次世代型自動販売機の開発にASUS IoT PE200Uを活用しました。ASUS IoT PE200Uは、IoT用途に最適な高性能でTCOに最適化されたエッジコンピューターです。消費者の自動販売機体験を再構築し、在庫管理の改善やターゲットに合わせた店頭広告で、お客様の利益向上に貢献します。



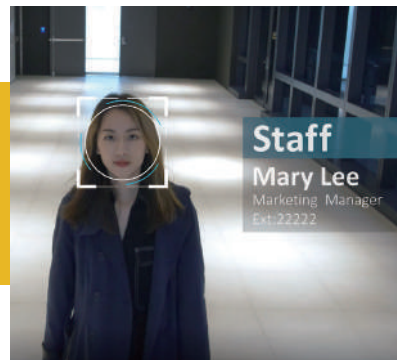
EHS安全管理システム

台湾ブリヂストンは、ASUS IoTと提携してEHS安全管理システムを導入しました。EHS安全管理システムにより、業務上の危険性を定量化し、潜在的な未知の危険性を特定でき、パフォーマンス分析や教育ワークフローがより合理的で効果的なものとなります。



スマートアクセス制御

本社ビルには、AIによる顔認識技術とリアルタイムで信頼性の高い高精度な監視を行うIPカメラネットワークが導入されています。柔軟性に優れたこのシステムは、来訪者の顔が認識できない場合に管理者や関係部署に通知を行うよう設定できます。これにより、効率的で効果的なセキュリティ対策を行うことが可能となります。



ガラス検査装置

大手産業機器システムインテグレーター(SI)は、スマートフォン製造用の特注のガラス検査装置にASUS IoT Q170A-IM-A産業用マザーボードとASUS IoT EBE-4Uベアボーン・ラックマウントサーバーを活用しています。汎用性に優れたこの2つの製品をQ170A-IM-Aの豊富な接続性と組み合わせることで、SIは大幅な拡張が可能な産業用検査装置を開発することができました。



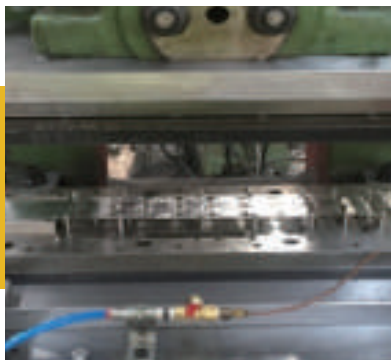
スマート会議室

ASUS IoT技術により、従業員はさまざまなニーズに合わせてスマート会議室を利用できます。これらのスマート会議室には、顔認識技術を使用したAIチェックイン、チェックインに成功すると自動で点灯する照明、ワイヤレスのプレゼンテーション機能と自動温度管理、シングルダッシュボードによるリアルタイムのデバイス監視などの機能が備わっています。



金属プレス加工(分野)におけるスマートマニファクチャリング

ASUS AIコンピュータビジョンソリューションは金属プレス加工のコスト削減と品質管理水準の向上に貢献しました。完全なインライン検査とAPIを活用して、生産プロセスと連携します。また、品質検査水準を高くすることで偏差を最小限に抑え、スループットと顧客満足度を高めます。



スマートジム

ASUS IoTスマートジムでは、年齢や性別ごとのフィットネス機器の使用状況の追跡に人数カウントシステムを使用しています。システムのバックエンドがデータの統合分析を行い、コースの計画やリソースのスケジュールに活用されます。これらの技術により、マネージャーは施設全体の使用状況を素早く把握することができ、経営効率とパフォーマンスを大幅に向上させることができます。



エッジ コンピュータ

AIoTおよびクラウドコンピューティングの最前線では、エッジコンピュータがリアルタイムで受信したデータの処理、フィルタリング、分析、および処理を担当します。これにより、データのトラフィックが減少するだけでなく、遅延とデータ転送のコストも削減されます。

ASUS エッジコンピュータは、高い安定性と信頼性が確保されており、世界クラスのアフターサービスと長期的な可用性が保証されています。それにより、製品のライフサイクルコストの低減を実現します。

PE100A

NXP® i.MX 8M ARM Cortex-A53 core, 4GB LPDDR4, HDMI, Dual LAN, 16G eMMC, 1*M.2 E Key slot, 1*Mini-PCIe, 1*Micro SD Card, 3*USB 3.2 Gen 1



Features

- Certified with RF Regulation: CE-RED
- 16GB on board MMC, Mini PCIe slot for storage capacity
- Compact size gateway with low power consumption and scalable processor for diverse IoT applications
- Support Linux Yocto OS and Ubuntu server
- Wide Operating Temperature Range: -20~60°C

Specifications

System	CPU	NXP® i.MX 8M ARM Cortex-A53 Quad core , 1.3 GHz
	Memory	4 GB LPDDR4 onboard
	OS Storage	16 GB eMMC onboard
Wired Interfaces	Video	1 x HDMI 2.0, supports up to 3840 x 2160 @60Hz
	Ethernet	2 x 10/100/1000 Mbps, RJ45 1 x Realtek® RTL8211, supports WOL 1 x Intel I211-AT/1210-AT, supports WOL
	USB	2 x USB 3.2 Gen.1, Type-A 1 x USB 3.2 Gen.1, supports OTG, Type-C
	COM	1 x RS-232/422/485 1 x RS-232/ CANBus, 2 x 5 terminal block
	DIO	4 x DI, 4 x GND, 2.5 KV optical isolation
		4 x DO, 4 x GND, 10KV relay isolation, 2 x 8 terminal block
Wireless Interfaces	Wi-Fi	1 x M.2 2230 E-key socket, supports 802.11 a/b/g/n/ac + BT 4.2 module
	SIM	1 x nano-SIM slot
Expansion Slot	mPCIe	1 x mPCIe socket, supports SATA or USB signal for mSATA/LTE/Google®TPU module
	M.2 E key	1 x M.2 2230 E key socket, supports PCIe or USB signal for Wi-Fi/BT
AI	Edge TPU	Google® Coral Edge TPU (mPCIe socket)
Power	Power	12 to 24 V DC, 2-pin terminal block
Mechanical	Mounting	Wall mount/ Din Rail
	Dimensions	55.5(H) x 145(W) x 78(D) mm
	Weight	0.775 KG
Environment	Operating Temp.	-20~60°C with wide temperature parts, fanless
	Storage Temp.	-40~85°C
	Relative Humidity	10 to 95% (non-condensing)
	EMC	CE(ITE), FCC, VCCI, RCM, BSMI, CCC
	RF Regulation	LTE: CE-RED Wi-Fi: CE-RED
	Safety	UL,CB, CCC, BSMI, CE
	Vibration	Operating: 0.21Grms, 5~500 Hz, 20min duration
	Shock	Operating: 50 G, half sine 11ms duration
	Green	GA (RoHS)
Security	TPM header	Cooperate with TPM 2.0 (Optional)
Others	Watch dog timer	Yes. Set up by software
	Operating System	Linux Yocto , Ubuntu server/ core

PE200U

Intel® Core™ i7/i5/i3 Processor, DDR4 2400MHz, DP, HDMI, Dual-LAN, Multiple COM, 12-24V DC



Features

- Supports 2 x RS-232/422/485, 4 x RS-232
- Supports dual independent video outputs
- Supports Windows® 10 IoT Enterprise or Linux OS
- Wide Operating Temperature Range: -20~60°C

Specifications

System	CPU	Intel® Core™ i7-8665UE	Intel® Core™ i5-8365UE	Intel® Core™ i3-8145UE
	TDP	15W	15W	15W
	# of Cores	4	4	2
	Base Freq.	1.7GHz	1.6GHz	2.2GHz
	Max Turbo Freq.	4.4GHz	4.1GHz	3.9GHz
	Memory	1 x SO-DIMM, DDR4 2400 MHz, supports up to 32GB		
External Interfaces	Display	1 x HDMI 1.4, supports up to 4096 x 2160 @ 24 Hz 1 x DP 1.2a, supports up to 4096 x 2160 @ 60 Hz		
	Ethernet	2 x 10/100/1000 Mbps, RJ45 (1 x Intel i219-V (1Gb)/1 x Intel i211AT (1Gb)) 2 x 802.11af PSE ports, RJ45 (optional) 2 x 10/100/1000 ethernet ports, RJ45 (optional) *either one		
	USB	4 x USB 3.2 Gen 2, type A 4 x USB 2.0, type A (optional)		
	Audio	1 x Mic-in, phone jack 1 x Line-out, phone jack		
	COM	2 x COM: RS-232/422/485, DB9 4 x COM: RS232, DB9 (optional)		
	GPIO	1 x 8bit GPIO, DB9		
Storage	SATA	1 x SATA 6 connector supports 2.5" SSD		
	mSATA	1 x mSATA slot (shared with Mini PCIe socket)		
	Micro SD	1 x Micro SD Card slot (on-board)		
Expansion Slot	Mini PCIe	1 x Mini PCIe socket (SATA / PCIe / USB 2.0 mode)		
	M.2 M Key	1 x M.2 2242 M-key socket, (SATA / PCIe mode)		
	M.2 E Key	1 x M.2 2230 E-key socket (PCIe / USB2.0 / CNVi mode) (supports BT/Wi-Fi module/ Google TPU module)		
	SIM	1 x nano-SIM slot		
Power	Power input	12 to 24 V DC, 2-pin terminal block		
Mechanical	Mounting	Wall-mount/ VESA mount		
	Dimensions	254 (H) x 147 (W) x 57 (D) mm		
	Weight	2.45 kg		
	Operating Temp.	-20~60 C with wide temperature parts, fanless		
Environment	Storage Temp.	-40~85 C		
	Relative Humidity	5 to 95% (non-condensing)		
	EMC	CE (ITE), FCC , VCCI, BSMI, RCM,KCC		
	Safety	UL,CB, CCC, BSMI, CE		
	Vibration	Operating: 0.21Grms, 5~500 Hz, 20min duration		
	Shock	Operating: 50 G, half sine 11ms duration		
	Green	GA (RoHS)		
	TPM	TPM v2.0 powered by Nuvoton NCPT 750 (Optional)		
Others	Watch dog timer	Yes. HW WDT Enable (WDT_EN)		
	Operating System	Windows® 10 IoT Enterprise (64 bit) / Linux		

PE200S

Atom® X Series Processor, DDR3L SO-DIMM, DP, HDMI, Dual-LAN, Multiple COM, 12-24V DC



Features

- Supports 2 x RS-232/422/485, 4 x RS-232
- Supports dual independent video outputs
- Supports Windows® 10 IoT Enterprise or Linux OS
- Wide Operating Temperature Range: -20~60°C

Specifications

System	CPU	Intel® Atom® X5-E3930	Intel® Atom® X5-E3940	Intel® Atom® X7-E3950
	TDP	6.5W	9.5W	12W
	# of Cores	2	4	4
	Base Freq.	1.3GHz	1.6GHz	1.6GHz
	Max Turbo Freq.	1.8GHz	1.8GHz	2.0GHz
	Memory	1 x SO-DIMM, DDR3L 1866 MHz, supports up to 8GB		
External Interfaces	Display	1 x HDMI 1.4, supports up to 3840 x 2160 @ 30 Hz 1 x DP 1.2a, supports up to 4096 x 2160 @ 60 Hz		
	Ethernet	2 x 10/100/1000 Mbps, RJ45 (2 x Intel i210IT (1Gb)) 2 x 802.11af PSE ports, RJ45 (optional) 2 x 10/100/1000 ethernet ports, RJ45 (optional) *either one		
	USB	4 x USB 3.2 Gen 1, type A 2 x USB 2.0, type A (optional)		
	Audio	1 x Mic-in, phone jack 1 x Line-out, phone jack		
	COM	2 x COM: RS-232/422/485, DB9 4 x COM: RS232, DB9 (optional)		
	GPIO	1 x 8bit GPIO, DB9		
Storage	SATA	1 x SATA 6 connector supports 2.5" SSD		
	Micro SD	1 x Micro SD Card slot (on-board)		
Expansion Slot	Mini PCIe	1 x Mini PCIe socket (USB / PCIe2 mode)		
	M.2 M Key	1 x M.2 2242 M-key socket, (SATA mode) (supports M.2 SSD up to 512GB)		
	M.2 E Key	1 x M.2 2230 E-key socket (PCIe2 / USB 2.0 mode) (supports BT/Wi-Fi module)		
	SIM	1 x nano-SIM slot		
Power	Power input	12 to 24 V DC, 2-pin terminal block		
Mechanical	Mounting	Wall-mount/ VESA mount		
	Dimensions	254 (H) x 147 (W) x 57 (D) mm		
	Weight	2.45 kg		
	Operating Temp.	-20~60 C with wide temperature parts, fanless		
Environment	Storage Temp.	-40~85 C		
	Relative Humidity	5 to 95% (non-condensing)		
	EMC	CE (ITE), FCC , VCCI, BSMI		
	Safety	UL,CB, CCC, BSMI, CE		
	Vibration	Operating: 0.21Grms, 5~500 Hz, 20min duration		
	Shock	Operating: 50 G, half sine 11ms duration		
	Green	GA (RoHS)		
	TPM	TPM v2.0 powered by Nuvoton NCPT 750 (Optional)		
Security	TPM	TPM v2.0 powered by Nuvoton NCPT 750 (Optional)		
Others	Watch dog timer	Yes. HW WDT Enable (WDT_EN)		
	Operating System	Windows® 10 IoT Enterprise (64 bit) / Linux		

PE400D

Intel® 10th Gen Xeon® W or Core™ i9/ i7/ i5/ i3 Embedded Computer with 3 expandable PCIe slots



Features

- Diverse SKUs with Intel® 10th Gen CPU support up to 64GB DDR4 memory
- 1 x mPCIe socket for cellular, 1x M.2 for Wi-Fi/BT, 1x M.2 for storage
- 3 x independent displays and 3x PCIe slots
- Wide-operating temperature: -20°C ~60°C

Specifications

System	CPU	Intel® Xeon® W-1290TE	Intel® Core™ i9-10900E	Intel® Core™ i7-10700E	Intel® Core™ i5-10500E	Intel® Core™ i3-10100E
	TDP	35W	65W	65W	65W	65W
System	# of Cores	10	10	8	6	4
	Base Freq.	1.8GHz	2.8GHz	2.9GHz	3.1GHz	3.2GHz
	Max Turbo Freq.	4.5GHz	4.7GHz	4.5GHz	4.2GHz	3.8GHz
	Memory	2 x SO-DIMM, DDR4 2666/2400/2133 MHz, ECC (only for Xeon CPU), max. 64GB				
External Interfaces	Display	1 x HDMI 2.0, supports up to 4096 x 2160 @ 60 Hz 1 x HDMI 1.4, supports up to 4096 x 2160 @ 30 Hz 1 x DP 1.2, supports up to 4096 x 2304 @ 60 Hz *Default 4096 x 2304 @60Hz supports 3 independent displays at the same time				
	Ethernet	3 x Intel® i210-IT (1 GbE, TSN), RJ45				
	USB	2 x USB 3.2 gen.2, 4 x USB 3.2 gen. 1				
	Audio	1 x Mic-in, audio jack 1 x Line-out, audio jack				
	COM/CAN*	3 x COM: RS-232/422/485, DB9 1 x COM*: RS-232/422/485, CANBus (2.0A/B), DB9 *Default RS-232, configured to CANBus by onboard jumper				
	DIO	4 x DI, 4 x DO support relay output, 2 x 8 terminal block				
	SIM	2 x nano SIM slot				
Storage	CFast	1 x Type II CFast slot for OS storage				
	SATA	2 x 2.5" HDD slots (hot-swappable, supports SATA 3.0, 7~7.5mm)				
Expansion Slot	PCIe	3 x PCIe slot *2 configuration: 1 x PCIe16 + 1 x PCIe4 or 2 x PCIe8 + 1 x PCIe4, auto-detect *Max. length<192mm; Max. 100W power supply from motherboard for total 3 slots				
	Mini PCIe	1 x Mini PCIe socket (supports mSATA or cellular module)				
	M.2 M Key	1 x M.2 2242/60/80 M-key socket (PCIex4 & SATA mode)				
	M.2 E Key	1 x M.2 2230 E-key socket (supports CNVi, Wi-Fi/BT module)				
Power	Power	9 to 36 VDC, 2-pin terminal block				
		*System can be powered up by pressable button/remote power button *Pressable power button can be disabled by onboard jumper/BIOS setting				
Mechanical	Mounting	Desktop mount				
	Dimensions	176.6 (H) x 210 (W) x 250 (D) mm				
	Weight	6.8 kg				
Environment	Operating Temp.	-20~60 C w/ all module operating (industrial parts) at 0.3m/s air flow 0~40° w/ all module operating (commercial parts) at 0.3m/s air flow				
	Storage Temp.	-40~85°C				
	Relative Humidity	5 to 95% (non-condensing)				
	EMC	CE (IEC 61000-6-2/4), FCC, VCCI, RCM, CCC, BSMI				
	Safety	UL, CB, CCC, BSMI				
	Vibration	Operating: 0.5 Grms, sine, 5-500 Hz (with SSD)				
	Shock	Operating: 50 Grms, half sine, 11ms(with SSD)				
	Green	GA (RoHS)				
Security	TPM	TPM v2.0 powered by Nuvoton NCPT 750 (Optional)				
Others	Watch dog timer	Yes. HW WDT Enable (WDT_EN)				
	Operating System	Windows 10 IoT Enterprise				

PV100A

NXP® i.MX 8M Arm Cortex-A53 Quad Core
In-vehicle Fanless Embedded Computer



Features

- Integrated 4G LTE, Wi-Fi and GPS solution
- Intelligent Vehicle Power Management: ignition On/Off delay
- Vehicle diagnostic interface support: dual CAN (2.0 A/B, CANOpen, J1939, OBD-II)
- Wide-operating temperature with integrated 4G LTE + Wi-Fi + GPS solution: -20~60°C

Specifications

System	CPU	i.MX8M, 4 x Cortex-A53 Quad Core, 1.3 GHz
	Memory	2 GB DDR4 onboard
	OS Storage	16 GB eMMC onboard
External Interfaces	Video	1 x HDMI 2.0, supports up to 3840 x 2160 @60Hz
	Ethernet	2 x 10/100/1000 Mbps Ethernet ports, RJ45
	USB	2 x USB 3.2 Gen.1, Type-A 1 x USB 3.2 Gen.1, supports OTG, Type-C
	COM	1 x RS-232/422/485, DB9 1 x RS-232/422, DB9
	SIM	1 X Nano-SIM slot
	High Density Connector	4 x isolated DI, 4 x isolated DO 2 x RS-232/422/485
		1 x Mic-in, 1 x Line-out 2 x CANbus (CAN2.0 A/B, CANOpen, J1939, OBDII) *all interfaces are integrated in one high density connector, please purchase high density cable from optional accessory list
Storage	Micro SD	1 x Micro SD Card slot (on-board)
	M.2 E Key	1 x mSATA slot (shared with Mini PCIe socket)
Expansion Slot	Mini PCIe	1 x Mini PCIe socket (supports SATA & PCIe & USB signal, supports mSATA up to 512 GB) * 2 signal configurations can be selected via SW: (1) PCIe & USB (2) SATA & USB
	M.2 B Key	1 x M.2 2242 B-key socket (supports UDR GPS module)
	M.2 E Key	1 x M.2 2230 E-key socket (supports BT/Wi-Fi module)
Power	Power	9 to 36 VDC, 3-pin terminal block *supports ignition ON/OFF control and remote power button
Mechanical	Mounting	Wallmount
	Dimensions	216(L) x 112(W) x 70.5(H) mm
	Weight	1.62 kg
Environment	Operating Temp.	-20~60 C w/ all module operating (industrial parts) 0~40° w/ all module operating (commercial module)
	Storage Temp.	-40~85 C
	Relative Humidity	5 to 95% (non-condensing)
	EMC	CE (ITE), FCC, VCCI, RCM, CCC
	Wi-Fi	CE-RED, RCM
	RF Regulation	4G LTE: CE-RED, RCM
	Vehicle Regulation	E-Mark (12/24V), ISO-7637-2, SAE J1455, EN50155
	Military Standard	MIL-STD-810H
Others	Safety	UL, CE-LVD, CB, CCC, BSMI
	Shock	Operating: IEC 60068-2-27 (w/ SD card), MIL-STD-810H
	Vibration	Operating: IEC 60068-2-64 (w/ SD card), MIL-STD-810H
	Green	GA (RoHS)
	Watch dog timer	Yes. HW WDT Enable (WDT_EN)
Others	G-sensor	Triple-axis accelerometer (±2g/4g/8g)
	Operating System	Linux Yocto

PE1000N

Arm System, NVIDIA Jetson, LPDDR4, eMMC, USB3, Dual LAN, HDMI, M.2 E, M.2 M, mini PCIe, AEM, Dual SIM, 12-24V



Features

- Intelligent Edge AI System with NVIDIA Jetson™ Nano™, TX2 NX and Xavier™ NX
- Fanless design and diverse I/O in a compact size
- Built in Wi-Fi BT module, LTE ready to connect
- Wide range of power input and operating temperature
- Support ASUS Expansion Module (AEM)

Specifications

Processor System	SoM	NVIDIA Jetson Nano™	NVIDIA Jetson TX2 NX	NVIDIA Jetson Xavier™ NX
	CPU	4 x Arm® Cortex®-A57	2 x NVIDIA Denver2 64-Bit 4 x Arm® Cortex®-A57	6 x NVIDIA Carmel Arm®v8.2 64-bit
	GPU	128-core NVIDIA Maxwell™	256-core NVIDIA Pascal™ GPU	384-core NVIDIA Volta™ with 48 Tensor Cores
	Memory	4 GB 64-bit LPDDR4	4 GB 128-bit LPDDR4	8 GB 128-bit LPDDR4x
Wired Interface	eMMC	16 GB	16 GB	16 GB
	Ethernet	2 x 10/100/1000 Mbps, RJ45		
	USB (or Header)	3 x USB 3.2 Gen1, Type-A		
		1 x USB 2.0, Micro-USB for OS Flash		
Wireless Interface		2 x USB 2.0, Pin Header (Internal)		
	COM	2 x RS-232/422/485, DB9	2 x RS-232/422/485, DB9	1 x CANbus, DB9
	DIO	4 x DI, 4 x DO (2x5 Terminal Block, w/ isolation)		
	Display	1 x HDMI 2.0b, 3840 x 2160 @60Hz		
Expansion	Debug Port*	1 x Debug console via Micro-USB		
	Wi-Fi	Built-in (M.2 E Key) 802.11 a/b/g/n/ac, support 2.4G/5GHz, -40 ~ 85°C O.T.		
	Bluetooth	Integrated with Wi-Fi, BT 5.0+		
	Cellular	Optional LTE module (Mini PCIe), -40 ~ 80°C O.T.		
Slot	GPS	Integrated with cellular module		
	M.2 M key**	1 x 2242/2260/2280, for AEM, M.2 SSD (PCIe, I2C and SMBus)		
	M.2 E key**	1 x 2230, for Wi-Fi/BT (PCIe, USB 2.0, I²C and PCM)		
	Mini PCIe	1 x Full-Length socket, for 4G/LTE (USB 2.0)		
Power	SIM	2 x nano-SIM slots		
	Micro SD	1 x Micro SD slot		
Mechanical	Power Input	12 to 24 VDC, 3-pin terminal block (1-pin for remote button)		
	Mounting	Wall-mount (support assembly with DIN rail clips)		
	Dimensions	Board: 3.5", 146 x 105mm System: 152 x 114 x 62 mm		
	Weight	1.4 KG		
Environment	Operating Temp.	-20 ~ 60°C w/ all modules operating		
	Storage Temp.	-40 ~ 85°C		
	Relative Humidity	10 ~ 95% (non-condensing)		
Security	TPM	on-board TPM v2.0		
	Watch Dog Timer	Yes. HW WDT		
Others	Operating System	Ubuntu Desktop		

* On selected models
* For Jetson Nano™, the M key slot shares same PCIe with E key slot. Default occupied with wireless module.

EBE-4U

19" Rackmount 4U Barebone



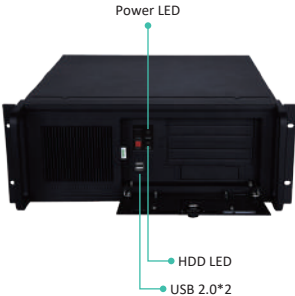
Features

- Standard 19" Rackmount 4U Chassis with 1.2mm durable SGCC & SPCC sheet metal
- Compatible with ATX, Micro ATX, Mini ITX Form Factor MB
- Excellent expansibility with up to 7 Full Height PCI/PCIE Expansion Slots at rear I/O

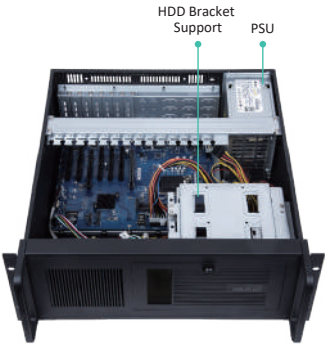
Specifications

Drive Bay	Storage	2*3.5" HDD + 1*3.5" Slim HDD (19mm)
Front I/O	USB2.0	2
Switch		1 x Power on/off, 1 x System Reset
Rear I/O	Standrad motherboard I/O shield	Depend on compatible motherboard design
Expansion Slot		7 slots, Full Height
Indicators	LED Indicators	Power LED, Reset LED
Cooling		1 x 12025 Fan
Power Supply	Wattage	300W Bronze or 500W GOLD ATX Power Supply
	Operating Temperature	0~40°C
Environment	Non-Operating Temperature	-15~60°C
	Relative Humidity	10~95%@40°C, non-condensing
Physical Characteristics	Steel plate thickness of chassis	1.2mm SGCC & SPCC
	Dimension	430.2x457.2x175.7mm(WO/Handle)
Certification	EMI & Safety	CE

Front View



Inside View



(The pictures are for reference only, actual product may vary)

EBS-I10

Compact 2U High Chassis for Mini-ITX Motherboard



Specifications

System	CPU	Intel® Core™ I7-9700E	Intel® Core™ I5-9500E	Intel® Core™ I5-9500TE	Intel® Core™ I3-9100TE
	TDP	65W	65W	35W	35W
	# of Cores	8	6	6	4
	Base Freq.	2.6GHz	3GHz	2.2GHz	2.2GHz
	Max Turbo Freq.	4.4GHz	4.2GHz	3.6GHz	3.2GHz
	Memory	2 x SO-Dimm, DDR4 2666 MHz, max. 32GB			
Drive Bay	Storage	1 x 2.5" (256/512GB) 1 x M.2 2280 (256/512/1TB)			
Front I/O	USB	2 x USB 2.0			
	Audio Jack	2 (not available in GPU SKU)			
Rear I/O	Serial Ports	2 x RS232/422/485			
		3 x RS232			
	HDMI	1			
	DP	2			
	USB3.2 Gen1	4			
	Ethernet	2 x RJ45 (10/100/1000Mbps)			
	Audio Jack	2			
Internal Connector	PCIe	2 x PCIe x16			
	Mini PCIe	1 x Full/Half Mini-PCIe with SATA			
	M.2	1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device			
		1 x M.2 Socket 3 with M key, type 2242/2260/2280			
Expandability	Expansion Slot	1 x Low-profile add-on card (NV A2000)			
Security	TPM	1 x TPM Header			
Power	Power Supply Unit	Flex ATX 250W Gold or 350W Gold			
Environment	Operating Temperature	0~40°C			
	Non-Operating Temperature	-40~85°C			
	Relative Humidity	10~95%			
Dimension	Form Factor	255 x 230 x 88 mm			

EB-ITX-B

Compact Chassis for Mini-ITX Motherboard
with 2 PCIe x8 Expansion Slot



Specifications

Case Items	Key Features	Description
Drive Bay	Storage	1 x 3.5" or 1 x 2.5" HDD
Front I/O	USB	2 x USB 2.0
	LED	2
Rear I/O	Serial Ports	2 x RS232/422/485 1 x RS232
	DVI-D	1
	DP	2
	USB3.2 Gen2	3 (2*Type A, 1*Type C)
	USB3.2 Gen1	1 (Type A)
	USB2.0	4
	Ethernet	2 x RJ45 (10/100/1000Mbps)
	Audio Jack	2
Internal Connector	PS/2	1 x KB, 1 x MS
	PCIe	2 x PCIe x8
	M.2	1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device 1 x M.2 Socket 3 with M key, type 2242/2260/2280
Expandability	Expansion Slot	2 x PCIe x8 add-on card
Security	TPM	1 x TPM Header
Power	Power Supply Unit	Flex ATX 250W Gold
Environment	Operating Temperature	0~40°C
	Non-Operating Temperature	-20~85°C
	Relative Humidity	10~95%
Dimension	Form Factor	310 x 252 x 109 mm (mm)

産業用 マザーボード & シングルボード コンピュータ

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R680EI-IM-A

ITX, LGA 1700 Socket for 12th Gen. CPU, R680E Chipset, DDR5 2*SO-DIMM
1*PCIe Gen 5.0 x16 slot, DP*3, HDMI, 2*M.2 slot, USB 3.2 Gen2 port *4, USB Type C



Specifications

Processor System	CPU	LGA1700 for Intel® 12th Gen. Core™ i9/ i7/ i5/ i3/ Pentium®/ Celeron® Processors
	TDP	Max. 65W
Memory	Chipset	Intel® R680E Chipset
	Technology	Up to DDR5 4800 MHz, ECC support
Display	Max. Socket	2 x 32GB (Total 64GB)
	Display Port	2 x SO-DIMM
Expansion Slot	HDMI	3, Supports DP 1.4, up to 4K resolution
	eDP/LVDS	1
Ethernet	PCIe	1 x Header (Support either eDP or LVDS ; switched by BIOS)
	M.2	1 x PCIe 5.0 x16 Slot (Bifurcation Support: 16x to 8x+8x)
Audio	Speed	1 x M.2 E key, Type 2230 for WIFI/BT device (PCIe & CNVi)
	Controller	1 x M.2 M key, Type 2242/2260/2280 (PCIe x4 & SATA mode)
Storage	Teaming	10/100/1000Mbps/2500Mbps
	Connector	1 x Intel® i210AT (co-lay i211AT), 1 x Intel® i225LM (Intel vPro supported)
Rear I/O	Codec	Yes
	SATA port	2 x RJ-45
Internal Connector	COM header	Realtek ALC897 High Definition Audio
	USB3.2 Gen1	Line-Out, Line-In
Watchdog Timer	PS/2	4 x SATA Gen 3.0, Up to 6Gb/s, Support RAID 0,1,5,10
	Security	Display Port 3
Power	USB3.2 Gen2	HDMI 1
	Power Type	USB3.2 Gen1 3 (2*Type A, 1*Type C)
Operating System	Panel SW	USB2.0 1 (Type A)
	Form Factor	USB2.0 4 (Type A)
Environment	SP/DIF	Ethernet 2 x RJ45
	Certification	Serial Port 1 (RS232/422/485)
Dimension	EMI & Safety	Audio jack 2
		PS/2 1 x Keyboard, 1x Mouse
Certification		COM header 4 x COM Header (1 x RS232/422/485, 3 x RS232)
		USB3.2 Gen1 1 x USB3.2 Gen1 Stick Connector
Certification		USB2.0 1 x Header Support Additional 2 x USB3.2 Gen1 Ports
		CPU Fan Connector 1 x Header Support Additional 2 x USB2.0 Ports
Certification		Chassis Fan Header 1 x Header (PWM Mode)
		Disable ME 1 x Header
Certification		Front Panel Audio Connector (AAFP) 1 x Header
		System Panel Header 1 x Header
Certification		Clear CMOS Jumper 1 x Header
		Speaker Connector 1 x Header
Certification		LVDS/ eDP selection 1 x Header
		Panel SW 1 x Header
Certification		SP/DIF 1 x Header
		Chassis Intrusion 1 x Header
Certification		GPIO Header 1 x Header (8-Bit)
		H/W YES
Certification		Security TPM 1 x SPITPM header
		Power IAMT/vPRO Yes
Certification		Power Type ATX / 12V DC-IN (supported by additional cable)
		Operating System Microsoft Windows Windows 10 (64bit)
Certification		Linux Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
		Environment Operating Temperature 0~60°C
Certification		Non-Operating Temperature -40~85°C
		Relative Humidity 5%~95%
Certification		Dimension Form Factor Mini-ITX, 170 x 170 mm
		Certification EMI & Safety CE (Class B), FCC (Class B)

Q670EI-IM-A

ITX, LGA 1700 Socket for 12th Gen. CPU, Q670E Chipset, DDR5 2*SO-DIMM
1*PCIe Gen 5.0 x16 slot, DP*3, HDMI, 2*M.2 slot, USB 3.2 Gen2 port *4, USB Type C



Specifications

Processor System	CPU	LGA1700 for Intel® 12th Gen. Core™ i9/ i7/ i5/ i3/ Pentium®/ Celeron® Processors
	TDP	Max. 65W
Memory	Chipset	Intel® Q670E Chipset
	Technology	Up to DDR5 4800 MHz
Display	Max. Socket	2 x 32GB (Total 64GB)
	Display Port	3, Supports DP 1.4, up to 4K resolution
Expansion Slot	HDMI	1
	eDP/LVDS	1 x Header (Support either eDP or LVDS ; switched by BIOS)
Ethernet	PCIe	1 x PCIe 5.0 x16 Slot (Bifurcation Support: 16x to 8x+8x)
	M.2	1 x M.2 E key, Type 2230 for WIFI/BT device (PCIe & CNVi) 1 x M.2 M key, Type 2242/2260/2280 (PCIe x4 & SATA mode)
Audio	Speed	10/100/1000Mbps/2500Mbps
	Controller	1 x Intel® i210AT (co-lay i211AT), 1 x Intel® i225LM (Intel vPro supported)
Storage	Teaming Connector	Yes
	Connector	2 x RJ-45
Rear I/O	Codec	Realtek ALC897 High Definition Audio
	Connector	Line-Out, Line-In
Internal Connector	SATA port	4 x SATA Gen 3.0, Up to 6Gb/s, Support RAID 0,1,5,10
	Display Port	3
Watchdog Timer	HDMI	1
	USB3.2 Gen2	3 (2*Type A, 1*Type C)
Security	USB3.2 Gen1	1 (Type A)
	USB2.0	4 (Type A)
Power	Ethernet	2 x RJ45
	Serial Port	1 (RS232/422/485)
Operating System	Audio jack	2
	PS/2	1 x Keyboard, 1x Mouse
Environment	COM header	4 x COM Header (1 x RS232/422/485, 3 x RS232)
	USB3.2 Gen1	1 x USB3.2 Gen1 Stick Connector
Dimension	USB2.0	1 x Header Support Additional 2 x USB3.2 Gen1 Ports
	CPU Fan Connector	1 x Header Support Additional 2 x USB2.0 Ports
Certification	Chassis Fan Header	1 x Header (PWM Mode)
	Disable ME	1 x Header
	Front Panel Audio Connector (AAFP)	1 x Header
	System Panel Header	1 x Header
	Clear CMOS Jumper	1 x Header
	Speaker Connector	1 x Header
	LVDS/ eDP selection	1 x Header
	Panel SW	1 x Header
	SP/DIF	1 x Header
	Chassis Intrusion	1 x Header
	GPIO Header	1 x Header (8-Bit)
	H/W	YES
	TPM	1 x SPI TPM header
	IAMT/vPRO	Yes
	Power Type	ATX / 12V DC-IN (supported by additional cable)
	Microsoft Windows	Windows 10 (64bit)
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
	Operating Temperature	0~60°C
	Non-Operating Temperature	-40~85°C
	Relative Humidity	5%~95%
	Form Factor	Mini-ITX, 170 x 170 mm
	EMI & Safety	CE (Class B), FCC (Class B)

Q470EA-IM-A

ATX, LGA 1200 Socket for 10th Gen. CPU, Q470E Chipset, 4*U-DIMM
2*PCIe x16 slots, VGA, HDMI, DP, 3*M.2 slot, USB 3.2 Gen2, USB Type C



Specifications

Processor System	CPU	Intel® Socket 1200 for 10th Generation Core™ i9/ i7/ i5/ i3/Pentium®/Celeron® Processors
	TDP	Up to 125W
Memory	Chipset	Intel® Q470E Chipset
	Technology	DDR4 2400/2666/2933 MHz
Display	Max. Socket	128GB (32GB per U-DIMM)
	VGA	4 x U-DIMM
Expansion Slot	HDMI	1, up to 1920 x 1200 @ 60Hz
	DP	1, up to 4096 x 2160 @ 30Hz
Ethernet	Triple Display	2, up to 4096 x 2160 @ 60Hz
	PCIe	VGA + HDMI + DP/ DP + HDMI + DP/ VGA + DP + DP
Audio	PCI	2 x PCIe 3.0/2.0 x16 slot (1 x16 mode/ 2 x8 mode)
	M.2	*If any expansion card is installed on the second x16 slot, BIOS automatically switches the signal from 1 x16 mode to 2 x8 mode.
Storage	SIM Socket	3 x PCIe 3.0/2.0 x4 slot (x4, x4, x2 mode)
	Speed	1 x M.2 M key, type 2242/2260/2280 (PCIe x4/ SATA mode)
Rear I/O	Controller	1 x M.2 B key, type 3042/3052/2260/2280 (PCIe x1/USB 3.2 Gen1/USB 2.0)
	Connector	*type 3042/3052 support 4G/5G module
Internal Connector	Codec	1 x M.2 E key, type 2230 (PCIe x1/USB 2.0)
	Connector	2 x RJ-45
Watchdog Timer	SATA port	Up to 6 x SATA Gen 3.0, up to 6Gb/s* , RAID 0/1/5/10
	H/W	*If install M.2 PCIe x4/ SATA SSD on M.2 M key slot, 2/ 1 SATA port will be disabled.
Security	VGA	1
	HDMI	1
Power	DP	2
	USB 3.2 Gen2	4 (3 x type A, 1 x Type C)
Operating System	USB 2.0	2
	Ethernet	2
Environment	COM Port	1 x RS232/422/485
	PS/2	1
Dimension	Audio jack	3 (Line-Out, Line-In, Mic in)
	COM header	1 x (RS232/422/485); 4 x RS232
Certification	USB2.0	1 x Header support additional 2 x USB2.0 connectors
	USB3.2 Gen 1	2 x Vertical connector
	CPU Fan Connector	1 x Header support additional 2 x USB3.2 Gen1 connectors
	Chassis Fan Header	1 (PWM mode)
	Chassis Intrusion Header	3 (PWM mode)
	Front Panel Audio Connector (AAFP)	1
	System Panel Header	1
	Clear CMOS Jumper	1
	Speaker Connector	1
	LPC Debug Header	1
	I²C Header	1
	Parallel (LPT Header)	1
	Buzzer	1
	GPIO Header	1 (8 Bit)
	SPDIF	1
	AT/ATX Select Header	1
	Power Connector	1 x 8-pin ATX 12V Power Connector & 1 x 24-pin ATX Power Connector
	H/W	YES
	TPM	1 x SPI TPM header
	vPro	yes
	Power Type	AT mode/ ATX mode
	Microsoft Windows	Windows 10 (64bit) / Win10 IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
	Operating Temperature	0~60° C
	Non-Operating Temperature	-40~85° C
	Relative Humidity	15%~95%
	Form Factor	ATX, 305 x 244 mm
	EMI & Safety	CE (Class B), FCC (Class B)

Q370M-IM-A

Micro ATX , LGA1151 socket for 9th/8th Gen CPU, Q370 chipset, 4*U-DIMM, 1*PCIe x16,2*DP, HDMI, VGA, Intel® vPro support



Specifications

Processor System	CPU	LGA1151 socket for 9th/8th Generation Intel® Core™ i9/ i7/ i5/ i3/Pentium®/Celeron® Processors
	Chipset	Intel® Q370 Chipset
	TDP	65W
Memory	Technology	DDR4 2666/2400/2133MHz
	Max. Speed	64GB
	Socket	4 x U-DIMM
Display	Controller	Intel UHD Graphics 630/610
	HDMI	1,Supports HDMI 1.4 up to 4096 x 2160@24Hz/2560 x 1600@60Hz
	Display Port	2,Supports DP 1.2a up to 4096 x 2304@60 Hz
	VGA	1,Supports up to 1920 x 1200@60Hz
	Multi Display	Dual DP+HDMI+VGA, DP+HDMI+VGA, Dual DP+HDMI, Dual DP+VGA,
Expansion Slot	PCIe	1 x PCI Express 3.0/2.0 x16
		2 x PCI Express 3.0/2.0 x1
	M.2	1 x PCI 2 x M.2 Socket with M Key, type 2242/2260/2280 storage devices with IRST support(1@ SATA* & PCIe mode), SATA mode share with SATA6G_2. Ready for Intel® Optane Memory 1 x M.2 Socket with E Key, type 2230 Wi-Fi devices support
Ethernet	Speed	10/100/1000Mbps
	Controller	1 x Intel® i219LM
	Connector	1 x RJ-45
Audio	Codec	Realtek® ALC887/ALC897 8-channel High Definition Audio CODEC
	Connector	Line-in, Line-out, Mic-in
Storage	SATA port	6 x SATA 6.0 Gb/s ports (gray), support Raid 0,1,5,10
Rear I/O	PS/2	1 x Keyboard (Purple), 1 x Mouse port (Green)
	DisplayPort	2
	HDMI	1
	VGA	1
	Ethernet	1
	USB	USB 3.2 Gen 2 (TypeA)x 1, USB 2.0 (TypeA) x 2
	Audio	3 Audio jacks support 8 channel
	Serial Port	2 (2 x RS-232 header)
Internal Connector	USB	2, support additional 4 x USB 3.2 Gen 1 connectors
	USB2.0	1, support additional 2 x USB2.0 connectors
	Fan header	CPU fan x 1, Chassis fan x 2
	Chassis intrusion header	1
	Front panel audio header (AAFP)	1
	System panel header	1
	Clear CMOS jumper	1
	LPC Debug header	1
	LPT port header	1
	Power connector	1 x 24-pin ATX Power connector, 1 x 8-pin ATX 12V Power connector
	Speaker connector	1
	MONO-out header	1 (with AMP IC)
	DIS ME jumper	1
Security	TPM	TPM 2.0 IC Onboard (NPCT750)
Power	Power Type	ATX power
Environment	Operating Temperature	0~60°C
	Non-Operating Temperature	40~85°C
	Relative Humidity	5%~95%
Dimension	Form Factor	Micro ATX, 244 x 244 mm
Certification	EMI & Safety	CE, FCC

Q370I-IM-A R3.0

Mini-ITX, LGA1151 socket for the 9th/8th Gen CPU, Q370 chipset, 2*SO-DIMM. 1*PCIe x16, 2*DP, DVI-D, LVDS, eDP, 2*M.2 slot



Specifications

Processor System	CPU	LGA1151 socket for the 9th/8th Generation Intel® Core™ i7/ i5/ i3/ Pentium® / Celeron® processors supports 14nm CPU, Max. 65W TDP
	CHIPSET	Intel® Q370 chipset
Memory	Technology	DDR4 2666/2400/2133 MHz
	Max.	64GB
	Socket	2 x SO-DIMM
Display	DVI-D	1, Supports up to 1920 X 1200 @ 60 Hz
	Display Port	2, Supports DP 1.2a up to 4096 x 2160 @ 60 Hz
	LVDS	1, Supports up to 1920 x1200 @ 60Hz
	Embedded Display Port	1, 2 lanes supported (co-lay with LVDS), Supports up to 1920 x1200 @ 60Hz
Expansion Slot	Multi Display	DVI-D+DP+LVDS, DP+DP+LVDS, DP+DP+DVI-D, DVI-D+DP+eDP, DP+DP+eDP
	PCIe	1 x PCIe 3.0/2.0 x16 slot
	M.2	1 x M.2 Socket 1 with E key, type 2230 for WiFi/BT device (support Intel® CNVi,PCIe) 1 x M.2 Socket 3 with M key, type 2242/2260/2280(PCIe & SATA mode)
Ethernet	Speed	10/100/1000 Mbps
	Controller	1 x Intel® i219LM, supports WOL/PXE
	Connector	1 x Intel® i210AT colay with i211AT), supports WOL/PXE 2 x RJ-45
Audio	Codec	Realtek ALC897-VD2 High Definition Audio
	Connector	Line-Out, Line-In
Storage	SATA port	4 x SATA Gen 3.0, up to 6Gb/s
	DVI-D	1
	Display Port	2
	USB3.2 Gen1	4
	USB 2.0	4
	Ethernet	2
	Serial Port	1(RS232/422/485)
	Audio jack	2
Rear I/O	PS/2	1 x Keyboard Port, 1 x Mouse Port
	Serial Port	3 (RS232)
	USB3.2 Gen1	1 x Header Support Additional 2 X USB3.2 Gen1 Connectors , 1 X Stick Socket
	USB2.0	1 x Header Support Additional 2 X USB2.0 Connectors
	CPU Fan Connector	1 (PWM Mode)
	Chassis Fan Header	1 (PWM+DC Mode)
	Chassis Intrusion Header	1
	Front Panel Audio Header (AAFP)	1
Internal Connector	System Panel Header	1(10-1 Pin)
	Clear CMOS Jumper	1
	Speaker Connector	1(4-pin)
	LPC Debug Header	1
	S/PDIF Header	1
	I²C Header	1
	GPIO Header	1 (8 Bit)
	AT/ATX Select Header	1
	Power Connector	1 X 4-pin ATX Power Connector, 1 X 24-pin ATX Power Connector
Watchdog Timer	H/W	YES
Security	TPM	1 x SPI TPM header
Power	Power Type	Both ATX mode and DC in (need an extra card)
	Voltage	DC in 12V
Operating System	Microsoft Windows	Windows® 10 (64bit) / Win10 IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
Environment	Operating Temperature	0~60°C
	Non-Operating Temperature	-40~85°C
	Relative Humidity	0%~85%
Dimension	Form Factor	Mini-ITX, 170 x 170 mm
Certification	Safety	CE, FCC

Q170A-IM-A

ATX, LGA1151 socket for the 6th/7th Gen CPU, Q170 chipset, 2*U-DIMM.
4*PCIe, 3*PCI, HDMI, VGA, Dual LAN, M.2 slot



Specifications

Processor System	CPU	Intel® Socket 1151 for 7th/6th Generation Core™ i7/i5/i3/Pentium®/ supports Intel® 14 nm CPU, support max. 65W CPU
	CHIPSET	Intel® Q170 chipset
Memory	Technology	DDR4 2400/2133 MHz
	Max.	32GB
	Socket	2 x U-DIMM
Display	VGA	1, Supports up to 1920 x 1200 @60Hz
	HDMI	1, Supports up to 4096 x 2160 @ 24Hz
	Dual Display	VGA+HDMI(Default)
Expansion Slot	PCIe	1 x PCIe 3.0/2.0 x16 slot (x16 mode)
		2 x PCIe 3.0/2.0 x16 slot (x4 mode)
	PCI	1 x PCIe 3.0/2.0 x4 slot
	M.2	3 x PCI 1 x M.2 Socket 3 with M key, type 2242/2260/2280(SATA mode)
Ethernet	Speed	10/100/1000Mbps
	Controller	1 x Intel® I219LM, 1 x Intel® I211AT, supports WOL/PXE
	Connector	2 x RJ-45
Audio	Codec	Realtek ALC897
	Connector	Line-Out, Line-In, Mic in
Storage	SATA port	4 x SATA Gen 3.0, up to 6Gb/s, * SATA port 4 shared with M.2
Rear I/O	VGA	1
	HDMI	1
	USB 3.2 Gen1	4
	Ethernet	2
	Serial Port	2(RS232/422/485)
	Audio jack	3
	PS/2	1 x Keyboard Port, 1 x Mouse Port
Internal Connector	Serial Port	6 (RS232)
	USB2.0	2 x Header Support Additional 4 x USB2.0 Connectors
		2 x Stick Socket
	CPU Fan Connector	1 (PWM Mode)
	Chassis Fan Header	1 (PWM+DC Mode)
	Chassis Intrusion Header	1
	Front Panel Audio Connector (AAFP)	1
	System Panel Header	1
	Clear CMOS Jumper	1
	SpeakerConnector	1
	LPC Debug Header	1
	I²C Header	1
	Parallel	1
	GPIO Header	1 (8 Bit)
	AT/ATXSelectHeader	1
	Power Connector	1 x 4-pin ATX Power Connector, 1 x 24-pin ATX Power Connector
Watchdog Timer	H/W	YES
Security	TPM	1 x SPI TPM header
Power	Power Type	AT/ATX mode
Operating System	Microsoft Windows	Windows 7 (32/64bit) / Windows 10 (64bit) / Win10 IoT Enterprise
	Linux	Ubuntu, Red Hat Enterprise, Fedora Workstation, Open SUSE
Environment	Operating Temperature	0~60° C
	Non-Operating Temperature	-40~85° C
	Relative Humidity	10~95%
Dimension	Form Factor	ATX, 305 x 244 mm
Certification	EMI & Safety	CE, FCC

H610A-IM-A

ATX, LGA1700 socket for the 12th Gen CPU, H610 chipset, 2*U-DIMM, 2*PCIe
x16 slots, VGA, HDMI, DP, Dual LAN, M.2 slot, USB 3.2 Gen2



Specifications

Processor System	CPU	LGA1700 Socket for Intel® Core™ i9/ i7/ i5/ i3/ Pentium® /Celeron® Processors
	CHIPSET	Max. 125W TDP Intel® H610 chipset
Memory	Technology	Up to DDR4 2400/2666/2933/3200 MHz
	Max.	64GB
	Socket	2 x U-DIMM
Display	HDMI	1, Supports HDMI 2.1 up to 4096 x 2160 @ 60 Hz
	VGA	1, up to 1092 x 1200 @ 60 Hz
	DP	1, up to 4096 x 2160 @ 60 Hz
	Triple Display	DP+HDMI+VGA(default)
Expansion Slot	PCIe x16	1 x PCIe 5.0 x16 slot
		1 x PCIe 3.0/2.0 x16 slot (x 4mode)
	PCIe x4	1 x PCIe 3.0/2.0 x1 slot
	PCI	4 x PCI slot
	M.2	1 x M.2 Socket 3 with M key, type 2242/2250/2280 (SATA/PCIe x 1 mode)
Ethernet	Speed	10/100/1000Mbps
	Controller	1 x intel® i219V, 1 x intel® i210AT
	Connector	2 x RJ-45
Audio	Codec	Realtek ALC897 High Definition Audio
	Connector	Line-Out, Mic-In
Storage	SATA port	4 x SATA Gen 3.0, up to 6Gb/s, * SATA port 4 shared with M.2
Rear I/O	HDMI	1
	VGA	1
	DP	1
	USB 3.2	4(2 x USB 3.2 Gen2, 2 x USB 3.2 Gen1)
	USB 2.0	4
	Ethernet	2
	Serial Port	2(RS232/422/485)
Internal Connector	Audio jack	2
	Serial Port	4 (RS232)
	USB2.0	1 x Header Support Additional 2 x USB2.0 Connectors
	CPU Fan Connector	1 (PWM Mode)
	Chassis Fan Header	2 (PWM Mode)
	Chassis Intrusion Header	1
	Front Panel Audio Connector (AAFP)	1
	System Panel Header	1 (10-1 Pin)
	Buzzer	1
	Clear CMOS Jumper	1
	Speaker Connector	1 (4-pin)
	COM Debug Header	1
	I²C Header	1
	Parallel	1
	GPIO Header	1 (8 Bit)
	AT/ATX Select Header	1
	Power Connector	2 x 4-pin ATX Power Connector, 1 x 24-pin ATX Power Connector
Watchdog Timer	H/W	YES
Security	TPM	1 x SPI TPM header
Power	Power Type	both ATX/AT mode
Operating System	Microsoft Windows	Windows® 10 (64bit) / Win10 IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
Environment	Operating Temperature	0~60°C
	Non-Operating Temperature	-40~85°C
	Relative Humidity	10%~95%
Dimension	Form Factor	ATX
Certification	EMI & Safety	CE, FCC

H610M-IM-A

Micro-ATX, LGA1700 socket for the 12th Gen CPU, H610 chipset,2*U-DIMM,1*PCIe x16, 1*PCIe x4, 2*PCI, 1*M.2Slot, 1* Mini PCIe,4*SATA connectors, 9*USB, 6*COM,Triple Display



Specifications

Processor System	CPU	Max. 65W TDP
	CHIPSET	Intel® H610 chipset
Memory	Technology	DDR4
	Max.	64GB
	Socket	2 x U-DIMM
Display	HDMI	2, Supports HDMI 1.4b up to 4096 x 2160 @ 60 Hz
	Display Port	1, Supports DP 1.2a up to 4096 x 2160 @ 60 Hz
	VGA	1, Supports 1920 x 1200 @60 Hz
	Triple Display	VGA/ DP/ HDMI1/ HDMI2
Expansion Slot	PCIe x16	1 x PCIe 5.0 x16 slot
	PCIe x4	1 x PCIe 3.0/2.0 x4 slot (x1 speed)
	PCI	2 x PCI slot
	Mini PCIe	1 x full/half mini-PCIe
Ethernet	Speed	10/100/1000Mbps
	Controller	1 x Realtek® 8111H, 1 x Intel® i219V
	Connector	2 x RJ-45
Audio	Codec	Realtek ALC897 High Definition Audio
	Connector	Line-Out, Mic-In
Storage	SATA port	4 x SATA Gen 3.0, up to 6Gb/s (*No.4 SATA port shared with M.2)
	M.2	1 x M.2 Socket 3 with M key, type 2242/2260/2280(SATA/PCIe x4 mode)
Rear I/O	HDMI	2
	Display Port	1
	VGA	1
	USB 3.2 GEN2	2
	USB 3.2 GEN1	2
	Ethernet	2
	Serial Port	2 (RS232/422/485)
Internal Connector	Audio jack	2
	Serial Port	4 (RS232)
	USB2.0	2 x Header Support Additional 4 x USB2.0 Connectors, 1 x stick socket
	CPU Fan Connector	1 (PWM Mode)
	Chassis Fan Header	1 (PWM Mode)
	Chassis Intrusion Header	1
	Front Panel Audio Header	1 (AAFP)
	System Panel Header	1 (10-1 Pin)
	Clear CMOS Jumper	1
	Speaker Connector	1 (4-pin)
	GPIO Header	1 (8 Bit)
	AT/ATX Select Header	1
	PS/2(KBMS)	1
	I²C header	1
	Power Connector	1 x 8-pin ATX Power Connector, 1 x 24-pin ATX Power Connector
Watchdog Timer	H/W	YES
Security	TPM	1 x SPI TPM header
Power	Power Type	both ATX/AT mode
Operating System	Microsoft Windows	Windows® 10 (64bit) / Win10 IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
Environment	Operating Temperature	0~60°C
	Non-Operating Temperature	-40~85°C
	Relative Humidity	10%~95%, non-coagulation
Dimension	Form Factor	Micro-ATX, 244 x 244mm
Certification	Safety	CE, FCC

H310I-IM-A R3.0

Mini-ITX, LGA1151 socket for the 9th/8th Gen CPU, H310 chipset, 2*SO-DIMM. 1*PCIe x16, 2*DP, HDMI, LVDS, 2*M.2 slot, 1*Mini-PCIe



Coming soon

Specifications

Processor System	CPU	LGA1151 socket for the 9th/8th Generation Intel® Core™ i7/ i5/ i3/ Pentium® / Celeron® processors supports 14nm CPU, Max. 65W TDP
	CHIPSET	Intel® H310 chipset
Memory	Technology	DDR4 2666/2400/2133 MHz
	Max.	32GB
	Socket	2 x SO-DIMM
Display	HDMI	1, Supports HDMI 1.4b up to 4096 X 2160 @ 24 Hz
	Display Port	2, Supports DP 1.2a up to 4096 x 2160 @ 60 Hz
	LVDS	1, Supports 48 bits up to 1.4b 1920 x1200 @ 60Hz
Expansion Slot	PCIe	1 x PCIe 3.0/2.0 x16 slot
	Mini PCIe	1 x full/half mini-PCIe with SATA
	M.2	1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device 1 x M.2 Socket 3 with M key, type 2242/2260/2280(PCIe & SATA mode)
Ethernet	Speed	10/100/1000Mbps
	Controller	1 x Intel® i219V, Support WOL/PXE 1 x Intel® i210AT, Support WOL/PXE
	Connector	2 x RJ-45
Audio	Codec	Realtek ALC897
	Connector	Line-Out, Line-In
Storage	SATA port	4 x SATA Gen 3.0, up to 6Gb/s
	M.2	1 x M.2 Socket 3 with M key, type 2242/2260/2280(PCIe & SATA mode)
	mSATA	1 x full/half mini-PCIe with SATA
Rear I/O	HDMI	1
	Display Port	2
	USB3.2 Gen1	4
	Ethernet	2
	Serial Port	2 (RS232/422/485)
	Audio jack	2
Internal Connector	Serial Port	4 (RS232)
	USB3.2 Gen1	1 x Header Support Additional 2 x USB3.2 Gen1 Connectors
	USB2.0	2 x Header Support Additional 4 x USB2.0 Connectors
	CPU Fan Connector	1 (PWM Mode)
	Chassis Fan Header	1 (PWM+DC Mode)
	Front Panel Audio Header	1
	System Panel Header	1 (10-1 Pin)
	Clear CMOS Jumper	1
	Speaker Connector	1 (4-pin)
	LPC Debug Header	1
	GPIO Header	1 (8 Bit)
	AT/ATX Select Header	1
	Power Connector	1 X 4-pin ATX Power Connector, 1 X 24-pin ATX Power Connector
Watchdog Timer	H/W	YES
Security	TPM	1 x SPI TPM header
Power	Power Type	both ATX/AT mode
Operating System	Microsoft Windows	Windows® 10 (64bit) / Win10 IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
Environment	Operating Temperature	0~60° C
	Non-Operating Temperature	-40~85° C
	Relative Humidity	0%~85%
Dimension	Form Factor	Mini-ITX, 170 x 170 mm
Certification	Safety	CE, FCC

H310M-IM-A

Micro-ATX, LGA1151 socket for the 9th/8th Gen CPU, H310 chipset, 2*DIMM
1*PCIe x16, 1*DVI-D, 1*VGA, 1*M.2 slot, 4*SATA connectors



Specifications

Processor System	CPU	LGA1151 socket for the 9th/8th Generation Intel® Core™ i7/ i5/ i3/ Pentium® / Celeron® processors supports 14nm CPU.
	Max. Speed	4.9GHz eight core
	L2 Cache	12MB
	Chipset	Integrated
	TDP	65W
Memory	Technology	DDR4 2666/2400/2133 MHz, non-ECC, un-buffered memory *DDR4 2666MHz and higher memory modules will run at max. 2666MHz on Intel® 8th Gen. 6-core or higher processors.
	Max. Socket	32GB
		2 x U-DIMM
Display	Controller	Intel UHD Graphics 630/610
	DVI-D	1, Supports 1920 x 1200 @60 Hz
	VGA	1, Supports 1920 x 1200 @60 Hz
	DVI-D+VGA	Multi-VGA output support :DVI-D/VGA ports
	Multi Display	Supports up to 2 displays simultaneous under OS
Expansion Slot	PCIe	1x PCIe x16 2x PCIe 2.0 x1
	PCI	1x PCI
	M.2	1 x M.2 socket 3 with M key, type 2260/2280 storage devices support both SATA* & PCIe x2 mode
Ethernet	Speed	10/100/1000Mbps
	Controller	1 x Realtek RTL8111H Gb Lan
	Connector	1 x RJ-45
Audio	Codec	Realtek® ALC887/ALC 897*-VD2 High Definition Audio CODEC
	Connector	Line-out, Lin-in, Mic-in
Storage	SATA port	4 x SATA Gen 3.0, up to 6Gb/s, * SATA port 4 shared with M.2
Rear I/O	DVI-D	1
	VGA	1
	USB	2x USB3.2 Gen1 Type-A ports, 4xUSB 2.0 Type-A ports
	Ethernet	1
	COM port	1 (RS-232 port)
	P/S2	1 x keyboard port, 1 x mouse port
Internal Connector	Serial Port	1 (RS-232 header)
	USB3.2 Gen1 Type A header	1, support additional 2 x USB3.2 Gen1 connectors
	USB2.0 header	1, support additional 2 x USB2.0 connectors
	Chassis fan header	1
	Chassis intrusion header	1
	Front panel audio header (AAFP)	1
	System panel header	1
	Clear CMOS header	1
	Speaker connector	1
	Parallel connector	1
	LPC Debug header	1
	LPC TPM header	1
	power connector	1 x 24-pin EATX Power connector, 1 x 4-pin EATX 12V Power connector
Security	TPM	LPC TPM header
Power	Power Type	ATX Power
Environment	Operating Temperature	0~60°C
	Non-Operating Temperature	-40~85°C
	Relative Humidity	0%-85%
Dimension	Form Factor	Micro-ATX, 244 x 193 mm
Certification	EMI & Safety	CE, FCC

H310I-IM-B

Mini-ITX, LGA1151 socket for the 9th/8th Gen CPU, H310 chipset, 2*SO-DIMM.
1*PCIe x16, DP, DVI-D, LVDS, eDP, 2*M.2 slot



Specifications

Processor System	CPU	LGA1151 socket for the 9th/8th Generation Intel® Core™ i7/ i5/ i3/ Pentium® /Celeron® processors supports 14nm CPU
	CHIPSET	Intel® H310 chipset
	TDP	65W
Memory	Technology	DDR4 2666/2400/2133 MHz
	Max. Socket	64GB 2 x SO-DIMM
Display	DVI-D	1, Supports up to 1920 X 1200 @ 60 Hz
	Display Port	1, Supports DP 1.2a up to 4096 x 2160 @ 60 Hz
	LVDS	1, Supports up to 1920 x1200 @ 60Hz
	Embedded Display Port	1, 2 lanes supported (co-lay with LVDS), Supports up to 1920 x1200 @ 60Hz
	Multi Display	DVI-D+DP, DVI-D+LVDS, DVI-D+eDP, DP+LVDS, DP+eDP
Expansion Slot	PCIe	1 x PCIe 3.0/2.0 x16 slot
	M.2	1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device (support Intel® CNVi, PCIe) 1 x M.2 Socket 3 with M key, type 2242/2260/2280(PCIe mode)
Ethernet	Speed	10/100/1000Mbps
	Controller	1 x Intel® i219V, 1 x Intel® i211AT
	Connector	2 x RJ-45
Audio	Codec	Realtek ALC887-VD2 High Definition Audio
	Connector	Line-Out, Line-In
Storage	SATA port	4 x SATA Gen 3.0, up to 6Gb/s
Rear I/O	DVI-D	1
	Display Port	1
	USB3.2 Gen1	2
	USB 2.0	3
	Ethernet	2
	Serial Port	1(RS-232/422/485)
	Audio jack	2
	PS/2	1 x Keyboard Port, 1 x Mouse Port
Internal Connector	Serial Port	3 (RS-232)
	USB3.2 Gen1	1 X Header Support Additional 2 X USB3.2 Gen1 Connectors
	USB2.0	1 X Header Support Additional 2 X USB2.0 Connectors
	CPU Fan Connector	1 (PWM Mode)
	Chassis Fan Header	1 (PWM+DC Mode)
	Chassis Intrusion Header	1
	Front Panel Audio Header (AAFP)	1
	System Panel Header	1(10-1 Pin)
	Clear CMOS Jumper	1
	Speaker Connector	1(4-pin)
	LPC Debug Header	1
	S/PDIF Header	1
	I ² C Header	1
	GPIO Header	1 (8 Bit)
	AT/ATX Select Header	1
	Power Connector	1 X 4-pin ATX Power Connector, 1 X 24-pin ATX Power Connector
Security	TPM	1 x SPI TPM header
Power	Power Type	both ATX mode and DC in (need an extra card)
	Voltage	DC in 12V
Dimension	Form Factor	Mini-ITX, 170 x 170 mm

H110A-IM-A

ATX, LGA1151 socket for the 6th/7th Gen CPU, H110 chipset, 2*U-DIMM.
2*PCIe x16, 5*PCI, HDMI, VGA, Dual LAN, M.2 slot

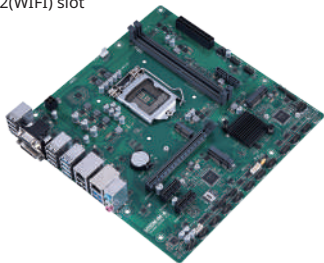


Specifications

Processor System	CPU	Intel® Socket 1151 for 7th/6th Generation Core™ i7/i5/i3/Pentium®/ Celeron® Processors supports Intel® 14 nm CPU, support max. 65W CPU
	CHIPSET	Intel® H110 chipset
Memory	Technology	DDR4 2400/2133 MHz
	Max. Socket	32GB 2 x U-DIMM
Display	VGA	1, Supports up to Up to 1920 x 1200 @60Hz
	HDMI	1, Supports up to 4096 X 2160 @ 24Hz (colay with DP, optional)
	Dual Display	VGA+HDMI(Default) VGA+DP(optional)
Expansion Slot	PCIe	1 x PCIe 3.0/2.0 x16 slot (x16 mode)
	PCI	1 x PCIe 2.0 x16 slot (@x4mode, x4pin)
	PCI	5 x PCI
	M.2	1 x M.2 Socket 3 with M key, type 2242/2260/2280(SATA mode)
Ethernet	Speed	10/100/1000Mbps
	Controller	1 x Intel® i219V, 1 x Intel® I211AT
	Connector	2 x RJ- 45
Audio	Codec	Realtek ALC887/ALC 897*-VD2 High Definition Audio
	Connector	Line-Out, Line-In, Mic in
Storage	SATA port	3 x SATA Gen 3.0, up to 6Gb/s
	mSATA	1 x mSATA 6Gb/s (1 x full/half mSATA)
Rear I/O	VGA	1
	HDMI	1 (colay with DP, optional)
	USB 3.2 Gen1	4
	Ethernet	2
	Serial Port	2(RS232/422/485)
	Audio jack	3
	PS/2	1 x Keyboard Port, 1 x Mouse Port
	Internal Connector	6 (RS232)
Internal Connector	USB2.0	2 x Header Support Additional 4 x USB2.0 Connectors
	CPU Fan Connector	2 x stick socket
	Chassis Fan Header	1 (PWM Mode)
	Chassis Fan Header	1 (PWM+DC Mode)
	Chassis Intrusion Header	1
	Front Panel Audio Connector(AAFP)	1
	System Panel Header	1
	Clear CMOS Jumper	1
	Speaker Connector	1
	LPC Debug Header	1
	I ² C Header	1
	Parallel	1
	GPIO Header	1 (8 Bit)
	AT/ATX Select Header	1
	Power Connector	1 x 4 -pin ATX Power Connector, 1 x 24 -pin ATX Power Connector
Watchdog Timer	H/W	YES
Security	TPM	1 x SPI TPM header
Power	Power Type	AT/ATX mode
Operating System	Microsoft Windows	Windows 7 (32/64bit) / Windows 10 (64bit) / Win10 IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
Environment	Operating Temperature	0~60°C
	Non-Operating Temperature	-40~85
	Relative Humidity	10%~95%, non-coagulation
Dimension	Form Factor	ATX, 305 x 244 mm
Certification	EMI & Safety	CE, FCC

H110M-IM-A

Micro-ATX, LGA1151 socket for the 6th/7th Gen CPU, H110 chipset, 2*U-DIMM,1*mSATA slot, 2*PCIe x1, 1*PCIe x16, 1*Mini-PCIe, VGA+DVI-D, 20*USB,10*RS232, 1*M.2(WIFI) slot



Specifications

Processor System	CPU	Intel® Socket 1151 for 7th/6th Generation Core™ i7/i5/i3/Pentium®/ Celeron® Processors supports Intel® 14 nm CPU, support max. 65W CPU
	CHIPSET	Intel® H110 chipset
Memory	Technology	DDR4 2400/2133 MHz
	Max. Socket	32GB 2 x U-DIMM
Display	VGA	1, Supports up to Up to 1920 x 1200 @60Hz
	DVI-D	1, Supports up to Up to 1920 x 1200 @60Hz
	Dual Display	VGA+DVI-D
Expansion Slot	PCIe	2 x PCIe 2.0 x 1 slot, 1 x PCIe 3.0/2.0 x16 slot (x16 mode)
	Mini PCIe	1 x full mini-PCIe
	M.2	1 x SIM Card Slot (N) 1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device
Ethernet	Speed	10/100/1000Mbps
	Controller	2 x Realtek® 8111H
	Connector	2 x RJ-45
Audio	Codec	Realtek ALC897-VD2 High Definition Audio
	Connector	Line-Out, Line-In, Mic-In
Storage	SATA port	Realtek ALC897-VD2 High Definition Audio
	mSATA	1 x mSATA 6Gb/s (1 x full/half mSATA)
Rear I/O	VGA	1
	DVI-D	1
	USB 3.2 Gen1	6
	USB 2.0	10
	Ethernet	2
	Audio jack	3
	Internal Connector	10* RS232 (Oher 2 coms are reserved and not loaded)
Internal Connector	USB2.0	2 x Header Support Additional 4 x USB2.0 Connectors
	CPU Fan Connector	1 (PWM Mode)
	Chassis Fan Header	1 (PWM+DC Mode)
	Chassis Intrusion Header	1
	Front Panel Audio Header	1 (AAFP)
	System Panel Header	1 (10-1 Pin)
	Clear CMOS Jumper	1
	Speaker Header	1 (4-pin)
	LPC Debug Header	1
	Speaker out Header	1 (With speaker AMP IC, 3W)
	AT/ATX select header	1
	GPIO	1
	SIM Header	1 (8-1pin SIM header, don't use with SIM Card Slot Simultaneously)
	Watchdog	1
	Power Connector	1 X 4-pin ATX 12V Power Connector, 1 X 24-pin EATX Power Connector
Security	TPM	TPM Header
Power	Power Type	AT/ATX mode
Operating System	Microsoft Windows	Windows 7 (32/64bit) / Windows 10 (64bit) / Win10 IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
Environment	Operating Temperature	0~60°C
	Non-Operating Temperature	-40~85°C
	Relative Humidity	10%~95%, non-coagulation
Dimension	Form Factor	Micro-ATX, 244x244mm
Certification	EMI & Safety	CE, FCC

H110T-CM-A R2.0

Thin Mini-ITX, H110T Chipset, 2*SO-DIMM, DP, HDMI, LVDS, 2*M.2 slot
(E Key, M Key)



Specifications

Processor System	CPU	Intel® for 7th/6th Generation Core™ i7/i5/i3/Pentium®/Celeron® Processors supports Intel® 14 nm CPU, support max. 65W CPU
	Chipset	Intel® H110 chipset
Memory	Technology	DDR4 2133/1866MHz, non-ECC, un-buffered Memory
	Max.	32GB
	Socket	2 x SO-DIMM
Display	DisplayPort	1, Supports up to 4096 x 2160 @ 60 Hz
	HDMI	1, Supports up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz
	LVDS	1, Supports up to 1920 x1200 @ 60Hz
	Multi Display	HDMI/LVDS/DisplayPort ports, supports up to two displays simultaneously
Expansion Slot	M.2	1 x M.2 Socket 3 with M key, type 2242/2260 storage devices (SATA & PCIe mode) 1 x M.2 Socket 1 with E key, type 2230 for Wi-Fi/BT devices (PCIe/USB mode)
Ethernet	Speed	10/100/1000 Mbps
	Controller/PHY	1 x Realtek RTL8111H 1 x Intel I219V, support WOL/PXE
	Connector	2 x RJ-45
Audio	Codec	Realtek ALC897-VA2 High Definition Audio
	Connector	Line-Out, Mic-In
Storage	SATA port	2 x SATA 6Gb/s port(s) 1 x SATA PWR CONN
Rear I/O	DC power input	1
	USB3.0 Port	4
	HDMI	1
	Display Port	1
	Ethernet	2 x RJ45
	Audio jack	2 (1 x LINE OUT, 1 x MIC in)
Internal Connector	Serial Port	1 (RS232)
	USB2.0 Header	3 x Headers Support Additional 5 USB 2.0 Connectors
	CPU Fan Header	1 (PWM Mode)
	Chassis Fan Header	1 (PWM Mode & DC Mode)
	Chassis Intrusion Header	1
	Front Panel Audio Header (AAFP)	1
	System Panel Header	1(10-1 Pin)
	Clear CMOS Jumper	1
	Speaker Header	1 (4 pin)
	Internal Stereo Speaker Header	1 (4 pin)
	DMIC Header	1 (4 pin)
	RTC Battery Header	1 (2 pin)
	LVDS Signal Header	1 (support Dual Channel, 40 pin)
	LCD panel monitor switch Header	1 (2 pin)
	LVDS panel VCC power selection jumper	1 (6 pin)
	LVDS Backlight Panel selection header	1 (8 pin)
	Display Panel Backlight Power selection jumper	1 (3 pin)
	LPC debug header	1 (10 pin)
	DC Power Connector	1 x 2pin ATX 19V/12V
Watchdog Timer	BIOS	YES (SW porting)
Security	TPM	1 x SPI TPM header
	Power Type	DC in mode
Power	Voltage	Choose from either type below, and cannot be used at the same time -DC in 12V/19V -2 pin Internal DC mode 12V / 19
Operating System	Microsoft Windows	Windows 7 / Windows 8.1 / Windows 10 (64bit)
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
Environment	Operating Temperature	0~50°C
	Non-Operating Temperature	-40~85°C
	Relative Humidity	5%~95%
Dimension	Form Factor	Thin Mini-ITX, 170 x 170 mm
Certification	EMC	CE, FCC

J6412T-IM-A

Thin mini ITX, Intel® J6412 SoC onboard Processors, 2*SO-DIMM.
1*PCIe x1, HDMI, LVDS, Dual LAN, M.2 slot



Specifications

Processor System	CPU	Intel® Celeron® Quad-Core J6412 SoC onboard Processors
	Technology	DDR4 3200/3000/2800/2666/2400/2133 MHz, (non-ECC)
Memory	Max.	32 GB
	Socket	2 x SO-DIMM
		1, Supports HDMI 1.4b, up to 3840x2160 @ 30Hz (Default)
Display	HDMI	1, Supports up to 4096x2160 @ 60Hz (Default)
	DP1	1, Supports up to 4096x2160 @ 60Hz (colay with HDMI)
	DP2 (optional by request)	1, Supports up to 1920x1200 @ 60Hz (Default)
	LVDS	1, Supports up to 4096x2160 @ 60Hz (colay with LVDS)
	Edp (optional by request)	1, Supports up to 4096x2160 @ 60Hz (colay with LVDS)
Expansion Slot	Triple Displays	HDMI+ DP+ LVDS, HDMI(Default)+ DP+ eDP, DP+ DP+ LVDS, DP+ DP+ eDP
	PCIe 3.0/2.0 x1	1
	Mini PCIe	1 x Full/Half-size PCIe mini card slot(w/ SIM holder) (PCIe x1 mode)
	M.2	1 x E key, type 2230 for WIFI/BT device (PCIEx1 / USB2.0) 1 x M key, type 2242/2260/2280 (PCIEx2 / SATA mode) supports NVMe
Ethernet	SD card	1 x Full-size SD card slot
	Speed	10/100/1000 Mbps
	Controller	2 x Realtek RTL8111H (Support WOL/PXE)
Audio	Connector	2 x RJ-45
Storage	Codec	Realtek ALC897 High Definition Audio
	Connector	Line-Out, Line-In
Rear I/O	SATA port	1 x SATA Gen 3.0, Up to 6Gb/s
	HDMI	1
Internal I/O Connectors	DP	1
	USB	3*USB 3.2 Gen2 + 1*USB 2.0
	Ethernet	2
	Audio jack	1
	DC-12V Power Input	1
Watchdog Timer	Serial Port	6 COM1 supports RS232/422/485: Ring/5V/12V Select, switch by jumper COM2 supports RS232-Ring/5V/12V Select, switch by jumper COM3~6 supports RS232
	USB2.0	2 (Support Additional 4 x USB2.0 Ports)
	Chassis Fan	1 (PWM)
	Front Panel Audio Header (AAFP)	1
	Front panel as Power/Reset/HDD (F_Panel)	1 (10-1 Pin)
	Chassis Intrusion	1
	Speaker	1 (4 pin)
	Stereo Out	2 (2-pin, 3 watt/channel amplifier)
	Clear CMOS	1
	COM Debug Header	1 (6 pin)
	GPIO	1 (8 Bin)
	LVDS Signal header	1 (support Dual Channel stand type, 40 pin)
	LCD panel monitor switch header	1 (2 pin)
	LVDS panel VCC power selection jumper	1 (6 pin)
	LVDS panel backlight enable signal selection	1 (3 pin)
Power	jumper	1 (5 pin)
	LVDS backlight panel header	1 (2 x 4 Pin)
	PS/2 Keyboard/Mouse	1 (4-pin ATX Power Connector, DC in mode)
	Power in Connector	1 (4-pin ATX Power Connector, DC in mode)
	H/W	Yes
	TPM	1 x SPI TPM Header
	Power Type	12V DC-in (Ex External DC jack: 1 x Internal 4-pin power connector)
	Microsoft Windows	Windows® 10 (64-bit) / Windows® IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
	IoT Suite	☒ HW Monitor ☒ Power Scheduling ☒ Fan Control
OS & Software Support	User Interface	☒ Watch Dog Timer ☒ GPIO ☒ GUI
Environment	Operating Temperature	0 ~ 60°C
	Non-Operating Temperature	-40 ~ 85° C
	Relative Humidity	Operational humidity: 40°C@10%~95%
Mechanical	Dimensions	Thin Mini-ITX, 170 x 170 mm
	EMC	CE, FCC, VCCI, BSMI, RCM
Certification		
	Safety	CE-LVD

J3455T-IM-A R2.0

Thin mini ITX, Intel® J3455 SoC onboard Processors, 2*SO-DIMM.
1*PCIe x1, HDMI, VGA, LVDS, Dual LAN, M.2 slot



Specifications

Processor System	CPU	Build in Intel® J3455 SoC onboard Processors
	Technology	DDR3L 1866 MHz Non-ECC, Un-buffered Memory
	Max. Socket	8GB 2 x SO-DIMM
Memory	VGA	1, Supports up to 1900 X 1200 @ 60 Hz(colay with DP++)
	HDMI	1, Supports up to 3840 X 2160 @ 30Hz
	Display Port++	1, Supports up to 4096 x2160 @ 60Hz(colay with VGA)
	LVDS	1, Supports up to 1920 x1200 @ 60Hz(colay with eDP)
	Embedded Display Port	1, Supports up to 4096 x2160 @ 60Hz(colay with LVDS, optional)
Display	Triple Display	VGA+HDMI+LVDS, VGA+HDMI+eDP, DP+HDMI+LVDS, DP+HDMI+eDP
	PCIe	1 x PCIe 2.0 x1 (colay with M.2 E key)
	Mini-PCIe	1 x Full/Half-size PCIe mini card slot(w/ SIM holder)
Expansion Slot	M.2	1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device(colay with PCIe)
	Speed	10/100/1000Mbps
	Controller	2 x Realtek® 8111H, supports WOL/PXE
Ethernet	Connector	2 x RJ-45
	Codec	Realtek® ALC897
Audio	Connector	Line-Out, line-In
	SATA port	2 x SATA Gen 3.0, up to 6Gb/s
Storage	mSATA	1 x Full/Half-size mSATA slot(shared with Mini PCIe)
	VGA	1
Rear I/O	HDMI	1
	Display Port++	1
	USB3.2 Gen1	4
	Ethernet	2
	Audio jack	1 (Default Line-out, switch to line-in by BIOS)
	DC IN	1
	Serial Header	6 (5 x RS232, 1 x RS232/422/485)
Internal Connector	USB 2.0	2 x Header support additional 4 x USB2.0 connectors
	8-bit GPIO Header	1
	KB/MS Header	1
	CPU Fan Connector	1 (PWM Mode)
	Chassis Fan Header	1 (PWM Mode)
	SATA Power Connector	1
	SATA Gen 3.0 Connector	2
	Front Panel Audio Header (AAFP)	1
	System Panel Header	1
	Speaker Header	1
	AT/ATX select header	1
	ATX Power supply(SVSB) Connector	1
	Chassis intrusion header	1
	Clear CMOS Jumper	1
	I2C Header	1
	LVDS Connector	1
	eDP Connector	1 (optional)
	LPC Debug header	1
	Display Panel Backlight Power Selector	1
	Flat Panel Display Brightness Connector	1
	Display Panel VCC Power Selector	1
	LCD panel monitor switch header	1
	Power Connector	1 x 4-pin ATX Power Connector
Watchdog Timer	H/W	YES
Security	TPM	1 x SPI TPM header
Power	Power Type	AT/ATX mode and DC in
	Voltage	DC in 12V
Operating System	Microsoft Windows	Windows® 10 (64bit) / Win10 IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
Environment	Operating Temperature	0~60°C
	Non-Operating Temperature	-40~85°C
	Relative Humidity	0%~85%
Dimension	Form Factor	Thin Mini-ITX, 170 x 170 mm
Certification	EMC	CE, FCC, VCCI, BSMI, RCM
	Safety	CE-LVD

J3455I-CM-A R2.0

Mini-ITX, Intel® Celeron® Quad-Core J3455 SoC, 2*U-DIMM, 1*PCIe x4, HDMI, VGA, LVDS, 1*M.2 E Key, 6*USB3.2 Gen1, 4*USB2.0, 2*SATA, 2*COM, TPM



Specifications

Processor System	CPU	Build in Intel® Celeron® Quad-Core J3455 SoC onboard Processors
	Technology	DDR3L 1866/1600/1333 MHz Non-ECC, Un-buffered Memory
	Max. Socket	8GB 2 x U-DIMM
Memory	VGA	1, Supports up to 1920 X 1200 @ 60 Hz
	HDMI	1, Supports up to 3840 x 2160 @ 30 Hz
	LVDS	1, Supports up to 1920 X 1200 @ 60Hz
	Multi Display	HDMI+VGA+LVDS
	PCIe	1 x PCIe 2.0 x4 (x1 mode)
Expansion Slot	M.2	1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device
	Speed	10/100/1000Mbps
Ethernet	Controller	1 x Realtek® RTL8111H
	Connector	1 x RJ-45
Audio	Codec	Realtek® ALC897-VD2 8-Channel High Definition Audio
	Connector	Line-Out, Line-In, MIC
Storage	SATA port	2 x SATA Gen 3.0, up to 6Gb/s
	VGA	1
Rear I/O	HDMI	1
	USB3.2 Gen1	4
	Ethernet	1
	Serial Port	1 (RS232)
	Audio jack	3
	PS/2	1 x Keyboard Port, 1 x Mouse Port
	Serial Port	1 (RS232)
Internal Connector	USB3.2 Gen1	1 x Header Support Additional 2 X USB3.2 Gen1 Connectors
	USB2.0	2 x Header Support Additional 4 X USB2.0 Connectors
	CPU Fan Connector	1 (PWM Mode)
	Chassis Fan Header	1 (PWM+DC Mode)
	Chassis Intrusion Header	1
	Parallel Port Connector	1
	Front Panel Audio Header (AAFP)	1
	System Panel Header	1(10-1 Pin)
	Clear CMOS Jumper	1
	Buzzer	1
	LVDS Connector	1
	Display Panel Backlight Power Selector	1
	Flat Panel Display Brightness Connector	1
	Display Panel VCC Power Selector	1
	LCD panel monitor switch header	1
	Power Connector	1 X 4-pin ATX Power Connector, 1 X 24-pin EATX Power Connector
Watchdog Timer	H/W	YES
Security	TPM	1 x LPC TPM header
Power	Power Type	EATX, ATX mode
Operating System	Microsoft Windows	Windows® 10 (64bit)
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
Environment	Operating Temperature	0~50°C
	Non-Operating Temperature	-40~70°C
	Relative Humidity	0%~85%
Dimension	Form Factor	Mini-ITX, 170 x 170 mm
Certification	Safety	CE, FCC

N5105I-IM-A R2.0

Mini-ITX, N5105 SoC, 2*SO-DIMM, VGA, HDMI, LVDS, 6*COM, 8*USB, POS market dedicated



Specifications

Processor System	CPU	Intel® Celeron® Quad-Core N5105 SoC onboard Processors (Jasper Lake)
	Chipset	Integrated
Memory	Technology	DDR4 2933/2666/2400/2133 MHz
	Max.	32 GB
	Socket	2 x SO-DIMM
Display	HDMI	1.Supports HDMI 1.4b up to 4096 X 2160 @ 24 Hz
	VGA	1, Supports up to 1920 X 1200 @ 60 Hz
	LVDS(Colay with eDP)	1, Supports 40 bits up to 1.4b 1920 x1200 @ 60Hz (Optional BOM colay with eDP)
Expansion Slot	PCIe 3.0/2.0 x1	1
	Mini PCIe	1 x mini PCIe (support PCIe1/USB2.0 mode) (w/ SIM holder)
Ethernet	Speed	10/100/1000 Mbps
	Controller	1 x Realtek RTL8111H (Support WOL/PXE)
	Connector	1 x RJ-45
Audio	Codec	Realtek ALC897 High Definition Audio
	Connector	Line-Out, Line-In
Storage	SATA port	2 x SATA Gen 3.0, Up to 6Gb/s
	SATA Power connectors	2
Rear I/O	VGA	1
	HDMI	1
	USB3.2 Gen1	4
	Ethernet	1 x RJ45
	RJ11	1 x RJ11 (For cash drawer 12V/24V, optional)
	Serial Port	3 (1*RS232/422/485, 2*RS232 5/12/Ring, switched by BIOS)
	Audiojack(s)	2
Internal Connector	DC-12V PowerInput	1 (4-pin, Lockable DC Jack 4P connector)
	Serial Port	3 (RS232: Ring/5V/12V Select, switched by jumper) Please keep your device around +/-12V
	USB2.0	2 x Header Support Additional 4 x USB2.0 Ports (stand by power, MOS, switch from BIOS)
	Chassis Fan	1 x Header (PWM)
	Front Panel Audio header (AAFP)	1 x Header (10-1 Pin)
	System panel header	1 x Header (10-1 Pin)
	Chassis Intrusion	1 x Header
	Buzzer	1
	Speaker	1 x Header
	Clear CMOS	1 x Header
	LPT	1 x Header (2 x 13 Pin)
	COM Debug	1 x Header
	DIO	1 x Header (8 Bit)
	Audio Amplifier connector	2 (3 Watt/Channel Amplifier IC)
	LVDS Signal header	1 (support Dual Channel stand type, 40 pin)
	LCD panel monitor switch header (Panel_SW)	1 (2 pin)
	LVDS panel VCC power selection jumper (VCC_PWR_SEZL)	1 (6 pin, support 3V/5V/12V selection)
	LVDS Panel enable signal selection jumper (BKLTEN_SEL)	1 (3 pin, default with high active)
	LVDS backlight panel header (LCD_BLK_PANEL)	1 (5 pin, support 5V/12V)
	MSR Pin Header	1 (6-pin, support both USB and PS/2 mode)
	MSR Definition Change Jumper (MSR_DAT_SEL)	2 (3-pin)
	(MSR_CLK_SEL)	
	RJ11 VCC selection jumper	1 (3-pin, 12V/24)
	PS/2 Keyboard/Mouse header	1 (2 x 4 Pin)
	Power out Connector	1 x 4-pin ATX DC Power Output Connector
	Power in Connector	1 x 4-pin ATX DC Power In Connector (DC in mode)
Watchdog Timer	H/W	Yes
Security	TPM	1 x SPI TPM Header
Power	Power Type	12V DC-IN
Operating System	Microsoft Windows	Windows® 10 (64bit) – version after 20'H1, 20'H2
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
Environment	Operating Temperature	0~60°C
	Non-Operating Temperature	-40~85°C
	Relative Humidity	15%~95%
Dimension	Form Factor	Mini-ITX, 170 x 170 mm

N4200T-IM-A

Thin mini ITX, Intel® N4200E SoC onboard Processors, 2*SO-DIMM. 1*PCIe x1, HDMI, VGA, LVDS, Dual LAN, M.2 slot



Specifications

Processor System	CPU	Build in Intel®N4200E SoC onboard Processors
Memory	Technology	DDR3L 1866 MHz Non-ECC, Un-buffered Memory
	Max.	8GB
	Socket	2 x SO-DIMM
Display	VGA	1, Supports up to 1900 X 1200 @ 60 Hz(colay with DP++)
	HDMI	1, Supports up to 3840 X 2160 @ 30Hz
	Display Port++	1, Supports up to 4096 x2160 @ 60Hz(colay with VGA)
	LVDS	1, Supports up to 1920 x1200 @ 60Hz(colay with eDP)
	Embedded Display Port	1, Supports up to 4096 x2160 @ 60Hz(colay with LVDS, optional)
Expansion Slot	Triple Display	VGA+HDMI+LVDS, VGA+HDMI+eDP, DP+HDMI+LVDS, DP+HDMI+eDP
	PCIe	1 x PCIe 2.0 x1 (colay with M.2 E key)
	Mini-PCIe	1 x Full/Half-size PCIe mini card slot(w/ SIM holder)
	M.2	1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device(colay with PCIe)
Ethernet	Speed	10/100/1000Mbps
	Controller	2 x Realtek® 8111H
	Connector	2 x RJ-45
Audio	Codec	Realtek® ALC887
	Connector	Line-Out, line-In
Storage	SATA port	2 x SATA Gen 3.0, up to 6Gb/s
	mSATA	1 x Full/Half-size mSATA slot(shared with Mini PCIe)
Rear I/O	VGA	1
	HDMI	1
	Display Port++	1
	USB3.2 Gen1	4
	Ethernet	2
	Audio jack	1(Default Line-out, switch to line-in by BIOS)
	DC IN	1
Internal Connector	Serial Header	6 (5 x RS232, 1 x RS232/422/485)
	USB 2.0	2 x Header support additional 4 x USB2.0 connectors
	8-bit GPIO Header	1
	KB/MS Header	1
	CPU Fan Connector	1 (PWM Mode)
	Chassis Fan Header	1 (PWM Mode)
	SATA Power Connector	1
	SATA Gen 3.0 Connector	2
	Front Panel Audio Header (AAFP)	1
	System Panel Header	1
	Speaker Header	1
	AT/ATX select header	1
	ATX Power supply(5VSB) Connector	1
	Chassis intrusion header	1
	Clear CMOS Jumper	1
	i°C Header	1
	LVDS Connector	1
	eDP Connector	1(optional)
	LPC Debug header	1
	Display Panel Backlight Power Selector	1
	Flat Panel Display Brightness Connector	1
	Display Panel VCC Power Selector	1
	LCD panel monitor switch header	1
Security	Power Connector	1 X 4-pin ATX Power Connector
	TPM	1 x SPI TPM header
Power	Power Type	AT/ATX mode and DC in
	Voltage	DC in 12V
Dimension	Form Factor	Thin Mini-ITX, 170 x 170 mm

N3350T-IM-A

Thin mini ITX, Intel® N3350E SoC onboard Processors, 2*SO-DIMM.
1*PCIe x1, HDMI, VGA, LVDS, Dual LAN, M.2 slot



Specifications

Processor System	CPU	Build in Intel®N3350E SoC onboard Processors
Memory	Technology	DDR3L 1866 MHz Non-ECC, Un-buffered Memory
	Max.	8GB
	Socket	2 x SO-DIMM
Display	VGA	1, Supports up to 1900 X 1200 @ 60 Hz(colay with DP++)
	HDMI	1, Supports up to 3840 X 2160 @ 30Hz
	Display Port++	1, Supports up to 4096 x2160 @ 60Hz(colay with VGA)
	LVDS	1, Supports up to 1920 x1200 @ 60Hz(colay with eDP)
	Embedded Display Port Triple Display	1, Supports up to 4096 x2160 @ 60Hz(colay with LVDS, optional) VGA+HDMI+LVDS, VGA+HDMI+eDP, DP+HDMI+LVDS, DP+HDMI+eDP
Expansion Slot	PCIe	1 x PCIe 2.0 x1 (colay with M.2 E key)
	Mini-PCIe	1 x Full/Half-size PCIe mini card slot(w/ SIM holder)
	M.2	1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device(colay with PCIe)
Ethernet	Speed	10/100/1000Mbps
	Controller	2 x Realtek® 8111H
	Connector	2 x RJ-45
Audio	Codec	Realtek® ALC887
	Connector	Line-Out, line-In
Storage	SATA port	2 x SATA Gen 3.0, up to 6Gb/s
	mSATA	1 x Full/Half-size mSATA slot(shared with Mini PCIe)
Rear I/O	VGA	1
	HDMI	1
	Display Port++	1
	USB3.2 Gen1	4
	Ethernet	2
	Audio jack	1(Default Line-out, switch to line-in by BIOS)
	DC IN	1
Internal Connector	Serial Header	6 (5 x RS232, 1 x RS232/422/485)
	USB 2.0	2 x Header support additional 4 x USB2.0 connectors
	8-bit GPIO Header	1
	KB/MS Header	1
	CPU Fan Connector	1 (PWM Mode)
	Chassis Fan Header	1 (PWM Mode)
	SATA Power Connector	1
	SATA Gen 3.0 Connector	2
	Front Panel Audio Header (AAFP)	1
	System Panel Header	1
	Speaker Header	1
	AT/ATX select header	1
	ATX Power supply(5VSB) Connector	1
	Chassis intrusion header	1
	Clear CMOS Jumper	1
	I²C Header	1
	LVDS Connector	1
	eDP Connector	1(optional)
	LPC Debug header	1
	Display Panel Backlight Power Selector	1
	Flat Panel Display Brightness Connector	1
	Display Panel VCC Power Selector	1
	LCD panel monitor switch header	1
	Power Connector	1 X 4-pin ATX Power Connector
Security	TPM	1 x SPI TPM header
Power	Power Type	AT/ATX mode and DC in
	Voltage	DC in 12V
Dimension	Form Factor	Thin Mini-ITX, 170 x 170 mm

C786ES-IM-AA

3.5" form factor, Intel® Core™ i7-8665UE Processor, DDR4 SO-DIMM, DP, HDMI, LVDS, Dual-LAN, Multiple COM, 12-24V DC



Specifications

Processor System	CPU	Intel® Core™ i7-8665UE Processor (SoC) ,non-ECC, un-buffered memory
	Base Frequency	1.7GHz Quad-core
	L2 Cache	8MB
Memory	Chipset	Integrated
	Technology	DDR4 2400/2133 MHz
	Max.	32GB
Display	Socket	1 x SO-DIMM
	Controller	Intel UHD Graphics 620
	HDMI	1, Supports HDMI 1.4 up to 4096 x 2160 @ 24 Hz
	Display Port	1, Supports DP 1.2a up to 4096 x 2304 @ 60 Hz
	LVDS	1, Supports 24 bits up to 1920 x 1200 @ 30Hz (colay with eDP)
Expansion Slot	Embedded Display Port	1, Supports up to 4096 x 2304 @ 60 Hz (co-lay with LVDS)
	Multi Display	DP+HDMI+LVDS, DP+HDMI+eDP
	Mini PCIe	1 x Full-Length Mini PCIe slot with on-board Nano-SIM socket
Ethernet	M.2	1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device and Intel® CNVi
	Speed	10/100/1000Mbps
	Controller	1 x Intel® i219LM, supports vPro/WOL/PXE
Audio	Connector	1 x Intel® i211AT, supports WOL/PXE
	Codec	2 x RJ-45
Storage	SATA port	Realtek ALC897-VA2 High Definition Audio
	M.2	1 x SATA Gen 3.0, up to 6Gb/s
	mSATA	1 x M.2 Socket 3 with M key, type 2242(PCIE & SATA mode)
Rear I/O	Display Port	1 x Full-size (shared with Mini PCIe slot)
	HDMI	1
	USB3.2 gen2	1
	Ethernet	4
	Serial Port	2
Internal Connector	USB2.0	6 x header (2 x RS232/422/485, 4 x RS232)
	Chassis fan header	2 x header support additional 4 x USB2.0 connectors
	Chassis intrusion header	1
	Front panel audio header (AAFP)	1
	Internal speaker header	1
	System panel header	1 (4-pin, w/ 3 Watt/Channel Amplifier IC)
	Clear CMOS jumper	1
	SATA power header	1 (4-pin)
	LPC Debug header	1
	GPIO header	1 (8 bit)
	SMbus header	1
	I²C header	1
	power connector	1 x 4-pin ATX power connector
Watchdog Timer	H/W	yes
Security	TPM	1 x SPI TPM header
Power	Power Type	DC input
	Voltage	12~24V DC input
Operating System	Microsoft Windows	Windows® 10 (64bit) / Win10 IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
Environment	Operating Temperature	-20~60 °C
	Non-Operating Temperature	-40~85 °C
	Relative Humidity	Operational humidity: 40 °C@5%~95%
Dimension	Form Factor	3.5 ", 146 x 105 mm
Certification	EMC	CE, FCC, CCC

C583ES-IM-AA

3.5" form factor, Intel® Core™ i5-8365UE Processor, DDR4 SO-DIMM, DP, HDMI, LVDS, Dual-LAN, Multiple COM, 12-24V DC



Specifications

Processor System	CPU	Intel® Core™ i5-8365UE Processor (SoC) ,non-ECC, un-buffered memory
	Base Frequency	1.6GHz Quad-core
	L2 Cache	6MB
	Chipset	Integrated
Memory	Technology	DDR4 2400/2133 MHz
	Max.	32GB
	Socket	1 x SO-DIMM
	Controller	Intel UHD Graphics 620
Display	HDMI	1, Supports HDMI 1.4 up to 4096 x 2160 @ 24 Hz
	Display Port	1, Supports DP 1.2a up to 4096 x 2304 @ 60 Hz
	LVDS	1, Supports 24 bits up to 1920 x 1200 @ 30Hz (colay with eDP)
	Embedded Display Port	1, Supports up to 4096 x 2304 @ 60 Hz (co-lay with LVDS)
	Multi Display	DP+HDMI+LVDS, DP+HDMI+eDP
Expansion Slot	Mini PCIe	1 x Full-Length Mini PCIe slot with on -board Nano-SIM socket
		1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device and Intel® CNVi
		1 x M.2 Socket 3 with M key, type 2242(PCIE & SATA mode)
Ethernet	Speed	10/100/1000Mbps
	Controller	1 x Intel® i219LM, supports vPro/WOL/PXE
	Connector	1 x Intel® i211AT, supports WOL/PXE
Audio	Codec	2 x RJ-45
		Realtek ALC897-VA2 High Definition Audio
Storage	SATA port	1 x SATA Gen 3.0, up to 6Gb/s
	M.2	1 x M.2 Socket 3 with M key, type 2242(PCIE & SATA mode)
	mSATA	1 x Full-size (shared with Mini PCIe slot)
Rear I/O	Display Port	1
	HDMI	1
	USB3.2 gen2	4
	Ethernet	2
Internal Connector	Serial Port	6 x header (2 x RS232/422/485, 4 x RS232)
	USB2.0	2 x header support additional 4 x USB2.0 connectors
	Chassis fan header	1
	Chassis intrusion header	1
	Front panel audio header (AAFP)	1
	Internal speaker header	1 (4-pin, w/ 3 Watt/Channel Amplifier IC)
	System panel header	1
	Clear CMOS jumper	1
	SATA power header	1(4-pin)
	LPC Debug header	1
	GPIO header	1 (8 bit)
	SMBus header	1
	I²C header	1
	power connector	1 x 4-pin ATX power connector
Watchdog Timer	H/W	yes
Security	TPM	1 x SPI TPM header
Power	Power Type	DC input
	Voltage	12-24V DC input
Operating System	Microsoft Windows	Windows® 10 (64bit) / Win10 IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
Environment	Operating Temperature	-20~60 °C
	Non-Operating Temperature	-40~85 °C
	Relative Humidity	Operational humidity: 40 °C@5%~ 95%
Dimension	Form Factor	3.5 ", 146 x 105 mm
Certification	EMC	CE, FCC, CCC

C381ES-IM-AA

3.5" form factor, Intel® Core™ i3-8145UE Processor, DDR4 SO-DIMM, DP, HDMI, LVDS, Dual-LAN, Multiple COM, 12-24V DC



Specifications

Processor System	CPU	Intel® Core™ i3-8145UE Processor (SoC) ,non-ECC, un-buffered memory
	Base Frequency	2.2GHz Dual-core
	L2 Cache	4MB
	Chipset	Integrated
Memory	Technology	DDR4 2400/2133 MHz
	Max.	32GB
	Socket	1 x SO-DIMM
	Controller	Intel UHD Graphics 620
Display	HDMI	1, Supports HDMI 1.4 up to 4096 x 2160 @ 24 Hz
	Display Port	1, Supports DP 1.2a up to 4096 x 2304 @ 60 Hz
	LVDS	1, Supports 24 bits up to 1920 x 1200 @ 60Hz (colay with eDP)
	Embedded Display Port	1, Supports up to 4096 x 2304 @ 60 Hz (co-lay with LVDS)
	Multi Display	DP+HDMI+LVDS, DP+HDMI+eDP
Expansion Slot	Mini PCIe	1 x Full-Length Mini PCIe slot with on -board Nano-SIM socket
		1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device and Intel® CNVi
		1 x M.2 Socket 3 with M key, type 2242(PCIE & SATA mode)
Ethernet	Speed	10/100/1000Mbps
	Controller	1 x Intel® i219LM, supports WOL/PXE
	Connector	1 x Intel® i211AT, supports WOL/PXE
Audio	Codec	2 x RJ-45
		Realtek ALC897-VA2 High Definition Audio
Storage	SATA port	1 x SATA Gen 3.0, up to 6Gb/s
	M.2	1 x M.2 Socket 3 with M key, type 2242(PCIE & SATA mode)
	mSATA	1 x Full-size (shared with Mini PCIe slot)
Rear I/O	Display Port	1
	HDMI	1
	USB3.2 gen2	4
	Ethernet	2
Internal Connector	Serial Port	6 x header (2 x RS232/422/485, 4 x RS232)
	USB2.0	2 x header support additional 4 x USB2.0 connectors
	Chassis fan header	1
	Chassis intrusion header	1
	Front panel audio header (AAFP)	1
	Internal speaker header	1 (4-pin, 3 Watt/Channel Amplifier IC)
	System panel header	1
	Clear CMOS jumper	1
	SATA power header	1 (4-pin)
	LPC Debug header	1
	GPIO header	1 (8 bit)
	SMBus header	1
	I²C header	1
	power connector	1 x 4-pin ATX power connector
Watchdog Timer	H/W	yes
Security	TPM	1 x SPI TPM header
Power	Power Type	DC input
	Voltage	12-24V DC input
Operating System	Microsoft Windows	Windows® 10 (64bit) / Win10 IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
Environment	Operating Temperature	-20~60 °C
	Non-Operating Temperature	-40~85 °C
	Relative Humidity	Operational humidity: 40 °C@5%~ 95%
Dimension	Form Factor	3.5 ", 146 x 105 mm
Certification	EMC	CE, FCC, CCC

E395S-IM-AA R3.0

3.5" form factor, Intel® Atom® x7-E3950, DDR3L 1866, 1*M.2 E-key 2230, 1*M.2 M-key 2242, 2*GbE, 4*USB3.1, 2*USB2.0, 6*COM, 1*SATA3.0, 1*TPM, 12-24V DC

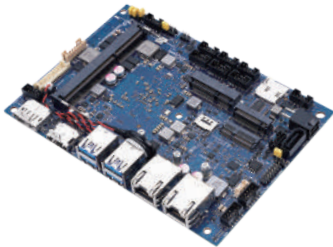


Specifications

Processor System	CPU	Intel®Atom® x7-E3950 Processor (Quad-Core)
Memory	Technology	DDR3L 1866/1600/1333 MHz Non-ECC, un-buffered memory
	Max.	8GB
Display	Socket	1 x SO-DIMM
	Controller	Intel HD Graphics 505
	HDMI	1, Supports HDMI 1.4b up to 3840 x 2160 @ 30 Hz
	Display Port	1, Supports DP 1.2 up to 4096 x 2160 @ 60 Hz
	Embedded DisplayPort	1, Supports eDP1.3 x4 lanes, up to 3840x2160 @ 60 Hz (co-lay with LVDS)
Expansion Slot	LVDS	1, Supports 1920 x 1080 @ 60 Hz (co-lay with eDP)
	Multi Display	HDMI+DP+LVDS
	Mini PCIe	1 x Full-Length Mini PCIe slot with on-board Nano-SIM socket
	M.2	1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device
Ethernet	others	1 x M.2 Socket 3 with M key, type 2242 (SATA mode)
	Speed	1 x Micro SD Card slot (on-board)
	Controller	10/100/1000Mbps
Audio	Connector	2 x Intel® I210IT, supports WOL/PXE
	Connector	2 x RJ-45
Storage	Codec	Realtek® ALC897
	Connector	Line-out, Mic-in
Rear I/O	SATA port	1x SATA Gen 3.0, up to 6Gb/s
Internal Connector	Display Port	1
	HDMI	1
	USB3.1 Gen1	4
	Ethernet	2
	Serial Port	6 (2 x RS-232/422/485, 4 x RS-232)
	USB2.0	1, support additional 2 x USB2.0 connectors
	Chassis fan header	1 (PWM+DC Mode)
	Chassis intrusion header	1
	Front panel audio header (AAFP)	1
	System panel header	1 (10-1 pin)
	Clear CMOS jumper	1
	SATA power header	1
	LPC Debug header	1
	SMBus header	1
	I²C header	1
Watchdog Timer	GPIO Header	1 (8-bit)
	Power connector	1 x 4-pin ATX Power Connector
Security	H/W	YES
Power	TPM	1 x SPI TPM header
Operating System	Power Type	DC power input
	Voltage	12V-24V
Environment	Microsoft Windows	Windows® 10 (64bit) / Windows 10 IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation
Dimension	Operating Temperature	-40~85°C
	Non-Operating Temperature	-40~85°C
Certification	Relative Humidity	0%~85%
	Form Factor	3.5", 146 x 105 mm
	Safety	CE, FCC
	EMC	UL, CCC

E394S-IM-AA R3.0

3.5" form factor, Intel® Atom® x5-E3940, DDR3L 1866, 1*M.2 E-key 2230, 1*M.2 M-key 2242, 2*GbE, 4*USB3.1, 2*USB2.0, 6*COM, 1*SATA3.0, 1*TPM, 12-24V DC



Specifications

Processor System	CPU	Intel®Atom® x5-E3940 Processor (Quad-Core)
Memory	Technology	DDR3L 1866/1600/1333 MHz Non-ECC, un-buffered memory
	Max.	8GB
Display	Socket	1 x SO-DIMM
	Controller	Intel HD Graphics 505
	HDMI	1, Supports HDMI 1.4b up to 3840 x 2160 @ 30 Hz
	Display Port	1, Supports DP 1.2 up to 4096 x 2160 @ 60 Hz
	Embedded DisplayPort	1, Supports eDP1.3 x4 lanes, up to 3840x2160 @ 60 Hz (co-lay with LVDS)
Expansion Slot	LVDS	1, Supports 1920 x 1080 @ 60 Hz (co-lay with eDP)
	Multi Display	HDMI+DP+LVDS, HDMI+DP+eDP
	Mini PCIe	1 x Full-Length Mini PCIe slot with on-board Nano-SIM socket
	M.2	1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device
Ethernet	others	1 x M.2 Socket 3 with M key, type 2242 (SATA mode)
	Speed	1 x Micro SD Card slot (on-board)
	Controller	10/100/1000Mbps
Audio	Connector	2 x Intel® I210IT, supports WOL/PXE
	Connector	2 x RJ-45
Storage	Codec	Realtek® ALC897
	Connector	Line-out, Mic-in
Rear I/O	SATA port	1 x SATA Gen 3.0, up to 6Gb/s
Internal Connector	Display Port	1
	HDMI	1
	USB3.1 Gen1	4
	Ethernet	2
	Serial Port	6 (2 x RS-232/422/485, 4 x RS-232)
	USB2.0	1, support additional 2 x USB2.0 connectors
	Chassis fan header	1 (PWM+DC Mode)
	Chassis intrusion header	1
	Front panel audio header (AAFP)	1
	System panel header	1 (10-1 pin)
	Clear CMOS jumper	1
	SATA power header	1
	LPC Debug header	1
	SMBus header	1
	I²C header	1
Watchdog Timer	GPIO Header	1 (8-bit)
	Power connector	1 x 4-pin ATX Power Connector
Security	H/W	YES
Power	TPM	1 x SPI TPM header
Operating System	Power Type	DC power input
	Voltage	12V-24V
Environment	Microsoft Windows	Windows® 10 (64bit) / Windows 10 IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation
Dimension	Operating Temperature	-40~85°C
	Non-Operating Temperature	-40~85°C
Certification	Relative Humidity	0%~85%
	Form Factor	3.5", 146 x 105 mm
	Safety	CE, FCC
	EMC	UL, CCC

E393S-IM-AA R3.0

3.5" form factor, Intel® Atom® x5-E3930, DDR3L 1866, 1*M.2 E-key 2230, 1*M.2 M-key 2242, 2*GbE, 4*USB3.1, 2*USB2.0, 6*COM, 1*SATA3.0, 1*TPM, 12-24V DC



Specifications

Processor System	CPU	Intel®Atom® x5-E3930 Processor (Quad-Core)
Memory	Technology	DDR3L 1866/1600/1333 MHz Non-ECC, un-buffered memory
	Max.	8GB
Display	Socket	1 x SO-DIMM
	Controller	Intel HD Graphics 505
	HDMI	1, Supports HDMI 1.4b up to 3840 x 2160 @ 30 Hz
	Display Port	1, Supports DP 1.2 up to 4096 x 2160 @ 60 Hz
	Embedded DisplayPort	1, Supports eDP1.3 x4 lanes, up to 3840x2160 @ 60 Hz (co-lay with LVDS)
	LVDS	1, Supports 1920 x 1080 @ 60 Hz (co-lay with eDP)
Expansion Slot	Multi Display	HDMI+DP+LVDS, HDMI+DP+eDP
	Mini PCIe	1 x Full-Length Mini PCIe slot with on-board Nano-SIM socket
	M.2	1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device
	others	1 x M.2 Socket 3 with M key, type 2242 (SATA mode)
Ethernet	others	1 x Micro SD Card slot (on-board)
	Speed	10/100/1000Mbps
	Controller	2 x Intel® I210IT, supports WOL/PXE
Audio	Connector	2 x RJ-45
	Codec	Realtek® ALC897
Storage	Connector	Line-out, Mic-in
	SATA port	1 x SATA Gen 3.0, up to 6Gb/s
Rear I/O	Display Port	1
	HDMI	1
	USB3.1 Gen1	4
	Ethernet	2
Internal Connector	Serial Port	6 (2 x RS-232/422/485, 4 x RS-232)
	USB2.0	1, support additional 2 x USB2.0 connectors
	Chassis fan header	1 (PWM+DC Mode)
	Chassis intrusion header	1
	Front panel audio header (AAFP)	1
	System panel header	1 (10-1 pin)
	Clear CMOS jumper	1
	SATA power header	1
	LPC Debug header	1
	SMBus header	1
	I²C header	1
	GPIO Header	1 (8-bit)
	Power connector	1 x 4-pin ATX Power Connector
Watchdog Timer	H/W	YES
Security	TPM	1 x SPI TPM header
Power	Power Type	DC power input
	Voltage	12V-24V
Operating System	Microsoft Windows	Windows® 10 (64bit) / Windows 10 IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation
Environment	Operating Temperature	-40~85°C
	Non-Operating Temperature	-40~85°C
	Relative Humidity	0%~85%
Dimension	Form Factor	3.5", 146 x 105 mm
Certification	Safety	CE, FCC
	EMC	UL, CCC

N420S-IM-AA R3.0

3.5" form factor, Intel® Pentium® N4200, DDR3L 1866, 1*M.2 E-key 2230, 1*M.2 M-key 2242,2*GbE, 4*USB3.1, 2*USB2.0, 6*COM, 1*SATA3.0, 1*TPM, 12-24V DC



Specifications

Processor System	CPU	Intel®Pentium® N4200 Processor (Quad-Core)
Memory	Technology	DDR3L 1866/1600/1333 MHz Non-ECC, Un-buffered Memory
	Max.	8GB
Display	Socket	1 x SO -DIMM
	Controller	Intel HD Graphics 505
	HDMI	1, Supports HDMI1.4b up to 3840 x 2160 @ 30 Hz
	Display Port	1, Supports DP1.2 up to 4096 x 2160 @ 60 Hz
	Embedded DisplayPort	1, Supports eDP1.3 x4 lanes, up to 3840x2160 @ 60 Hz (co-lay with LVDS)
	LVDS	1, Supports 1920 x 1080 @ 60 Hz (co-lay with eDP)
Expansion Slot	Multi Display	HDMI+DP+LVDS
	Mini PCIe	1 x Full-Length Mini PCIe slot with on-board Nano-SIM socket
	M.2	1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device
	Others	1 x M.2 Socket 3 with M key, type 2242 (SATA mode)
Ethernet	others	1 x Micro SD Card slot (on-board)
	Speed	10/100/1000Mbps
	Controller	2 x Intel® i210IT, supports WOL/PXE
Audio	Connector	2 x RJ-45
	Codec	Realtek® ALC897
Storage	Connector	Line-Out, Mic-in
	SATA port	1 x SATA Gen 3.0, up to 6Gb/s
Rear I/O	HDMI	1
	Display Port	1
	USB3.1 Gen1	4
	Ethernet	2
Internal Connector	Serial Port	6 (2 x RS -232/422/485, 4 x RS -232)
	USB2.0	1, support additional 2 x USB2.0 connectors
	Chassis Fan Header	1 (PWM+DC Mode)
	Chassis Intrusion Header	1
	Front Panel Audio Header (AAFP)	1
	System Panel Header	1 (10-1 Pin)
	Clear CMOS Jumper	1
	SATA Power Header	1
	LPC Debug Header	1
	SMBus Header	1
	I²C Header	1
	GPIO Header	1 (8-bit)
	Power Connector	1 x 4-pin ATX Power Connector
Watchdog Timer	H/W	YES
Security	TPM	1 x SPI TPM header
Power	Power Type	DC power input
	Voltage	12V -24V
Operating System	Microsoft Windows	Windows® 10 (64bit) / Windows 10 IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation
Environment	Operating Temperature	-20~60 °C
	Non-Operating Temperature	-40~85 °C
	Relative Humidity	0%~85%
Dimension	Form Factor	3.5", 146 x 105 mm
Certification	EMC	UL, CCC
	Safety	CE, FCC

V1605I-IM-B / R1505I-IM-B

Mini-ITX, AMD Ryzen™ Embedded V/R1000-Series V1605/R1505G APU, 2 x SO-DIMM



Specifications

Processor System	APU	AMD Ryzen™ Embedded V1605B/R1505G APUs
	Technology	DDR4 2400MHz, ECC support
Memory	Max.	32GB
	Socket	2 x SO-DIMM
Display	Display Port	3/2, DP++ supports DisplayPort 1.4 with max. resolution 3840x2160 @60Hz (V1605I-IM-B/R1505I-IM-B) 1, DP++ DisplayPort 1.4 with max. resolution 3840x2160 @60Hz (Optional, shared with LVDS and eDP)
	LVDS(default option)	1, LVDS supports LVDS with max. resolution 1920 x1200 @60Hz (Optional, shared with DisplayPort1 and eDP)
	eDP(optional)	1, eDP supports eDP 1.4 with max. resolution 3840 x 2160 @ 60Hz (Optional, shared with DisplayPort1 and LVDS)
	Multi Display	· Default: 3DP+LVDS (V1605I-IM-B) / 2DP+LVDS (R1505I-IM-B) · Optional: 4DP or 3DP+eDP (V1605I-IM-B) / 3DP or 2DP+eDP (R1505I-IM-B) Supports up to 4/3 displays simultaneous under OS (V1605I-IM-B/R1505I-IM-B)
Expansion Slot	PCIe	1 x PCIe 3.0 x8 slot (PCIe x8 mode for V1605I-IM-B/ PCIe x4 mode for R1505I-IM-B)
	M.2	1 x M.2 Socket 1 with E key, type 2230 (PCIe x1, USB 2.0) (V1605I-IM-B only) 1 x M.2 Socket 3 with M key, type 2242/2260/2280 (PCIe x2, SATA)
Ethernet	Speed	10/100/1000Mbps
	Controller	2 x Realtek® 8111H, supports WOL/PXE
Audio	Connector	2 x RJ-45
	Codec	Realtek® ALC897 codec
Storage	Connector	2 x Audio jacks (1 x Mic-in, 1 x Line-out) 2 x 2W Stereo Speaker output 1 x 5.1 channel (internal pin header)
	Default	1 x SATA port Gen 3.0, up to 6Gb/s 1 x M.2 (Key B, 2242 / 2260 / 2280) PCIe x2 and SATA mode* 1 x CFAST*
Rear I/O	Per request	*If CFAST is enabled, M.2 SATA mode will be disabled, and vice versa. You may configure this setting in the BIOS.
	Display Port	2 x SATA port Gen 3.0, up to 6Gb/s 1 x M.2 (Key B, 2242 / 2260 / 2280) PCIe x2
Internal Connector	USB 3.2 Gen2 Type-A ports	· Default: 3DP+LVDS (V1605I-IM-B) / 2DP+LVDS (R1505I-IM-B) · Optional: 4DP or 3DP+eDP (V1605I-IM-B) / 3DP or 2DP+eDP (R1505I-IM-B)
	USB 2.0 Type-A ports	2 x ports
Watchdog Timer	Ethernet	2 x RJ45 ports
	Serial Port	2 x COM connectors (support RS232/422/485)
Security	Audio jack	1 x Mic in, 1 x Line out
	Power	1 x DC Jack (lockable)
Power	Serial Port	4 x header (RS-232); COM3 colay Cctalk & COM4 colay TTL (BOM option)
	USB 3.2 Gen1	1 x Type A vertical connector (V1605I-IM-B)
Operating System	USB 2.0	1 x header support additional 2 x USB2.0 Connectors 1 x Type A vertical connector (R1505I-IM-B)
	CPU Fan	1 x header (PWM mode)
Environment	Chassis Fan	1 x header (PWM mode)
	Chassis Intrusion	1 x header
Dimension	Front Panel Audio (AAFP)	2 x headers
	System Panel Header	1 x header
Certification	Clear CMOS Jumper	1 x header
	SATA power	2 x headers
Form Factor	LPC Debug	1 x header
	I²C	1 x header
Safety	S/PDIF	1 x header
	I²C	1 x header
TPM	GPIO	1 x header
	AT/ATX Select	1 x header
TPM	Power Connector	1 (4 pin)
	TPM	1 x SPI TPM header
TPM	Power Type	DC-in (ATX and AT mode supported)
	Voltage	DC-in 12V ~ 24V
TPM	Operating System	Microsoft Windows Linux
	Operating System	Windows® 10 (64bit) / Win10 IoT Enterprise Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
TPM	Operating Temperature	0~60°C
	Non-Operating Temperature	-40~85°C
TPM	Relative Humidity	0%~85%
	Form Factor	Mini-ITX, 170 x 170 mm
TPM	Certification	CE, FCC
	Safety	CE, FCC

W480EI-IM-A / Q470EI-IM-A

Mini-ITX, LGA1200 socket for the 10th Gen CPU, Q470E chipset, 2*SO-DIMM. 1*PCIe x16, 2*DP, DVI-D, LVDS/ eDP, 2*M.2 slot, USB 3.2 Gen2, USB Type C

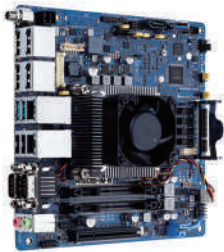


Specifications

Processor System	CPU	LGA1200 Socket for The 10th Generation Intel® Core™ i9/ i7/ i5/ i3/ Pentium®/ Celeron® Processors Supports 14nm CPU
	CHIPSET	Intel® W480E/Q470E Chipset
Memory	TDP	Max. 65W
	Technology	DDR4 2933/2666/2400/2133 MHz (W480EI-IM-A: ECC support)
Display	Max. Socket	Overall: 64GB, Per Module: 32GB
	Display Port	2, Supports DP 1.4
Expansion Slot	DVI-D	1
	eDP/LVDS	1 x Header (Support either eDP or LVDS ; switched by BIOS)
Ethernet	PCIe	1 x PCIe 3.0/2.0 x16 Slot (Bifurcation Support: 16x to 8x+8x or 8x+4x+4x)
	M.2	1 x M.2 Socket 1 with E key, Type 2230 for WIFI/BT device (PCIe & CNVI) 1 x M.2 Socket 3 with M key, Type 2242/2260/2280 (PCIe x4 & SATA mode)
Audio	Speed Controller	10/100/1000Mbps
	Teaming Connector	1 x Intel® I210AT, 1 x Intel® I219LM
Storage	Codec	Yes
	Connector	2 x RJ-45
Rear I/O	Audio	Realtek ALC887-VD2 High Definition Audio
	Storage	Line-Out, Line-In
Internal Connector	SATA port	3 x SATA Gen 3.0, up to 6Gb/s
	M.2	1 x M.2 Socket 3 with M key, Type 2242/2260/2280 (PCIe x4 & SATA mode)
Watchdog Timer	Display Port	2
	DVI-D	1
Security	USB 3.2 Gen2	3 (2*Type A, 1*Type C)
	USB 3.2 Gen1	1 (Type A)
Power	USB 2.0	4 (Type A)
	Ethernet	2 x RJ45
Operating System	Serial Port	1 (RS232/422/485)
	Audio jack	2
Environment	PS/2	1 x Keyboard, 1 x Mouse
	Serial Port	4 x COM Header (1 x RS232/422/485, 3 x RS232)
Dimension	USB3.2 Gen1	1 x USB3.2 Gen1 Stick Connector
	Form Factor	1 x Header Support Additional 2 x USB3.2 Gen1 Ports
Certification	USB2.0	1 x Header Support Additional 2 x USB2.0 Ports
	CPU Fan Connector	1 (PWM Mode)
Safety	Chassis Fan Header	1 (PWM+DC Mode)
	Chassis Intrusion	1
TPM	Disable ME	1
	Front Panel Audio Header (AAFP)	1
TPM	System Panel Header	1(10-1 Pin)
	Clear CMOS Jumper	1
TPM	Speaker Connector	1(4-pin)
	LVDS/ eDP selection	1
TPM	Panel SW	1
	LPC Debug Header	1
TPM	S/PDIF Header	1
	I²C Header	1
TPM	GPIO Header	1 (8 Bit)
	AT/ATX Select Header	1
TPM	Power Connector	1 x 8-pin ATX Power Connector, 1 x 24-pin ATX Power Connector
TPM	Watchdog Timer	H/W
	Security	Yes
Power	TPM	1 x SPI TPM header
	Power Type	IAMT/vPRO
Operating System	Power Type	Yes
	Operating System	ATX / 12V DC-IN (Supported by additional cable)
Environment	Operating Temperature	0~60°C
	Non-Operating Temperature	-40~85°C
Dimension	Relative Humidity	0%~85%
	Form Factor	Mini-ITX, 170 x 170 mm
Certification	Certification	CE, FCC
	Safety	CE, FCC

R1606I-IM-B

Mini-ITX, AMD Ryzen™ Embedded R1606G APU, 2 x SO-DIMM



Specifications

Processor System	APU	AMD Ryzen™ Embedded R1606G APU
	Technology	DDR4 2400MHz, ECC support
	Max. Socket	32GB 2 x SO-DIMM
Memory	Display Port	2, DP++ supports DisplayPort 1.4 with max. resolution 3840x2160 @60Hz 1, DP++ DisplayPort 1.4 (Optional, shared with LVDS and eDP) with max. resolution 3840x2160 @60Hz
	LVDS (default option)	1, LVDS supports LVDS with max. resolution 1920 x1200 @60Hz (Optional, shared with DisplayPort1 and eDP)
	eDP (optional)	1, eDP supports eDP 1.3 with max. resolution 3840 x 2160 @ 60Hz (Optional, shared with DisplayPort1 and LVDS)
Display	Multi Display	• Default: 2DP+LVDS • Optional: 3DP or 2DP+eDP Supports up to 3 displays simultaneous under OS
	Expansion Slot	PCIe M.2 1x PCIe 3.0 x8 slot (x4 mode) 1 x M.2 Socket 3 with M key, type 2242/2260/2280 (PCIe x2, SATA)
	Ethernet	Speed Controller Connector 10/100/1000Mbps 2 x Realtek® 8111H, supports WOL/PXE 2 x RJ-45
Audio	Codec	Realtek® ALC897 codec
	Connector	2 x Audio jacks (1 x Mic-in, 1 x Line-out) 2 x 2W Stereo Speaker output 1 x 5.1 channel (internal pin header)
	Storage	Default Per request 1 x SATA port Gen 3.0, up to 6Gb/s 1 x M.2 (Key B, 2242 / 2260 / 2280) PCIe x2 and SATA mode* 1 x CFAST* *If CFAST is enabled, M.2 SATA mode will be disabled, and vice versa. You may configure this setting in the BIOS. 2 x SATA port Gen 3.0, up to 6Gb/s 1 x M.2 (Key B, 2242 / 2260 / 2280) PCIe x2
Rear I/O	Display Port	• Default: 2DP+LVDS • Optional: 3DP or 2DP+eDP
	USB 3.2 Gen2 Type-A ports	2 x ports
	USB 2.0 Type-A ports	2 x ports
Internal Connector	Ethernet	2 x RJ45 ports
	Serial Port	2 x COM connectors (support RS232/422/485)
	Audio jack	1 x Mic in , 1 x Line out
Power	Power	1 x DC jack (lockable)
	Serial Port	4 x header (RS-232); COM3 colay C2kalt & COM4 colay TTL (BOM option)
	USB 2.0	1 x header support additional 2 x USB2.0 Connectors 1 x type A vertical connector
CPU Fan	CPU Fan	1 x header (PWM mode)
	Chassis Fan	1 x header (PWM mode)
	Chassis Intrusion	1 x header
Front Panel Audio (AAFP)	System Panel Header	2 x headers
	Clear CMOS Jumper	1 x header
	SATA power	2 x headers
LPC Debug	S/PDIF	1 x header
	I ² C	1 x header
	GPIO	1 x header
AT/ATX Select	Power Connector	1 x header 1 (4 pin)
	Watchdog Timer	H/W Yes
Security	TPM	1 x SPI TPM header
	Power Type	DC-in (ATX and AT mode supported)
	Voltage	DC-in 12V ~ 24V
Operating System	Microsoft Windows	Windows® 10 (64bit) / Win10 IoT Enterprise
	Linux	Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
Environment	Operating Temperature	0~60°C
	Non-Operating Temperature	-40~85°C
	Relative Humidity	0%~85%
Dimension	Form Factor	Mini-ITX, 170 x 170 mm
	Certification	Safety CE (Class B), FCC (Class B)

IMX8P-IM-A

NXP® i.MX 8M ARM Cortex-A53 core, 4GB LPDDR4, HDMI, Dual LAN, 16G eMMC, 1*M.2 E Key slot, 1*Micro SD Card, 3*USB 3.2 Gen 1



Specifications

Processor System	CPU	NXP® i.MX 8 M ARM Cortex-A53 core
	Max.Speed	1.3 GHz
	L2 Cache	1MB
Memory	Integrated	Integrated
	Technology	LPDDR4
	Max.	4GB on board memory
Display	HDMI	1, Supports HDMI 2.0 up to 3840 x 2160@60Hz
	MIPI DSI	1, Supports MIPI DSI (4 lane) up to 1920 x 1080@60Hz
Expansion Slot	M.2	1 x M.2 2230 E Key for BT/WiFi module (cooperate with Google EdgeTPU Module)
	Others	1 x Micro-SD Card connector
Ethernet	Speed	10/100/1000Mbps
	Controller	1 x Realtek® RTL8211, 1 x Intel I211-AT
	Connector	2 x RJ-45
Storage	eMMC	1 x 16GB onboard eMMC
	HDMI	1
Front I/O	USB3.2 Gen1	2@Type A, 5V/2A 1@Type C OTG, 5V/1.5A
	Ethernet	2
	Power Button	1
Rear I/O	Reset Button	1
	Power Connector	DC Power input
Internal Connector	GPIO Header	1 x 40-pin headers includes: - up to 6 x GPIO pins - up to 2 x I ² C bus - up to 1 x UART - up to 2 x PWM - up to 1 x PCM/I2S - 2 x 5V power pins - 2 x 3.3V power pins - 8 x ground pins
		1 Slot
		1 (14-1 pin)
Security Module	Micro-SD Card	1, Supports MIPI DSI (4 lane) up to 1920 x 1080@60Hz
	TPM Header	2, support two MIPI-CSI camera inputs (4-lane each)
	MIPI DSI	1 (5-1 pin)
Power	MIPI CSI	TPM 2.0 power by Nuvoton NCPT 750 (Optional)
	I ² C Header	Crypto Module
	Cloud security power by Microchip ATECC608A/ NXP SE050 (Optional)	
Environment	Power Type	DC power input
	Voltage	12-24V DC input
	Operating Temperature	-20~70°C
Dimension	Non-Operating Temperature	-40~85°C
	Relative Humidity	10~95%
	Form Factor	100mm x 72mm x 21mm

TINKER BOARD シリーズ

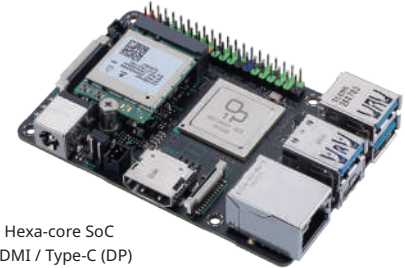
TINKER BOARDシリーズは、あらゆる分野のDIY愛好家やメーカーに、クラス最高のパフォーマンス、高い耐久性、優れた安定性、および総合的なユーザーエクスペリエンスを提供する、小型のシングルボードコンピュータ(SBC)です。

オーダーメイドのソリューションをお探しの方に、ASUS IoTは既存のハードウェアを変更したり、特定の要求に応じた完全に新しいソリューションを生み出すといったカスタムデザインサービスを提供しています。設計、製造、試験、サポートのすべてに適確なスキルを持つASUS IoTは、効果的でコストを抑えた、ビジネスの管理に役立つワンストップサービスを提供しています。



Tinker Board 2 / Tinker Board 2S

ARM SBC, Rockchip RK3399 Hexa-core, LPDDR4 RAM, eMMC, HDMI, MIPI-DSI, MIPI-CSI, 12-19V DC in



Features

- Arm® big.LITTLE™ A72+A53 Hexa-core SoC
- Multiple MIPI-CSI & DSI / HDMI / Type-C (DP)
- USB 3.0 / Wi-Fi 802.11ac / BT 5.0 / GPIO
- 12V~19V DC-in offers stable power delivery
- Linux & Android supported

Specifications

SoC	Rockchip RK3399
CPU	Dual-core Arm® Cortex®-A72 @ 2.0 GHz + Quad-core Arm® Cortex®-A53 @ 1.5 GHz
GPU	Arm® Mali™-T860 MP4 GPU @ 800 MHz
Memory	Dual-CH LPDDR4 2/4GB
Storage	16GB eMMC* (* Only available on S model) 1 x Micro SD (TF) card slot (push & push)
Display	1 x HDMI with CEC hardware ready 1 x Type-C (DP) 1 x 22-pin MIPI DSI (4 lane)
USB	3 x USB3.2 Gen1 Type-A ports 1 x USB3.2 Gen1 Type-C OTG port
Camera Interface	1 x 15-pin MIPI CSI-2 (2 lane)
Connectivity	1 x RTL8211E/F GbE LAN 1 x 802.11 a/b/g/n/ac & Bluetooth 5.0 (2T2R) 1 x HDMI audio, 1 x I2S (40-pin), 1 x S/PDIF (40-pin)
Audio	
Internal I/O	1 x 40-pin header includes: - up to 28 x GPIO pins - up to 2 x SPI bus - up to 2 x I²C bus - up to 2 x UART - up to 3 x PWM - up to 1 x PCM/I2S - up to 1 x S/PDIF TX - 2 x 5V power pins - 2 x 3.3V power pins - 8 x ground pins 1 x 2-pin Recovery header 1 x 2-pin Power-on header 1 x 2-pin Reset header 1 x 2-pin Debug UART header 1 x 2-pin DC Fan header 1 x 2-pin RTC Battery header
Power requirement	1 x 12~19V DC input (5.5/2.5 mm)
Operation Temperature	0~60°C
Non-Operation Temperature	-40~85°C
Relative Humidity	10~85%
Operating System Support	Debian 10 / Android 11
Form Factor	3.37" x 2.125" (85 x 56 mm)

Tinker Board R2.0/ Tinker Board S R2.0

Card size SBC, Quad-core Arm processor, 2/4GB onboard memory & 16/32GB eMMC, HDMI, GbE LAN, Multiple USB



Features

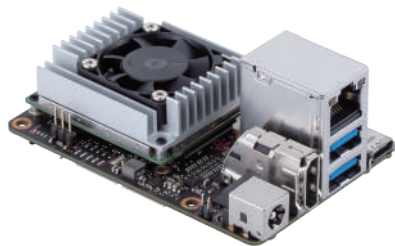
- Ultra-small form factor
- Onboard 16/32G eMMC for durability
- 40-pin GPIOs for multiple purposes
- Linux & Android supported

Specifications

SoC	Rockchip RK3288-CG.W
CPU	Quad-core Arm® Cortex®-A17 @ 1.8 GHz
GPU	Arm® Mali™-T760 MP4 GPU @ 600 MHz
Memory	Dual-CH LPDDR3 2/4GB
Storage	16/32GB eMMC 1 x Micro SD (TF) card slot (push & pull)
Display	1 x HDMI with CEC hardware ready 1 x 15-pin MIPI DSI (2 lane)
USB	4 x USB2.0 Type-A ports
Camera Interface	1 x 15-pin MIPI CSI-2 (2 lane)
Connectivity	1 x RTL8211E/F GbE LAN 1 x 802.11 b/g/n & BT 4.0 + EDR (extendable antenna header)
Audio	1 x RTL ALC4030U codec with 3.5mm audio jack (with Mic & plug-in detecton)
Internal I/O	1 x 40-pin header includes: - up to 28 x GPIO pins - up to 2 x SPI bus - up to 2 x I²C bus - up to 2 x UART - up to 3 x PWM - up to 1 x PCM/I2S - up to 1 x S/PDIF TX - 2 x 5V power pins - 2 x 3.3V power pins - 8 x ground pins 1 x 2-pin Recovery header 1 x 2-pin Power-on header 1 x 2-pin Contact Point - 1 x PWM signal - 1 x S/PDIF signal
Power requirement	5V/3A DC, Micro-USB
Operation Temperature	0~60°C
Non-Operation Temperature	-40~85°C
Relative Humidity	10~85%
Operating System Support	Debian 10/ Android 11
Form Factor	3.37" x 2.125" (85 x 56 mm)

Tinker Edge T

Card size SBC, NXP i.MX 8M Quad-core SoC, Google Edge TPU, 1GB RAM, 8GB eMMC, HDMI, MIPI-DSI, MIPI-CSI, 12-19V DC in



Features

- ML capability with Google Edge TPU
- 2 x MIPI-CSI / MIPI-DSI / HDMI
- 40-pin GPIOs for multiple purposes
- 12V~19V DC-in offers stable power delivery

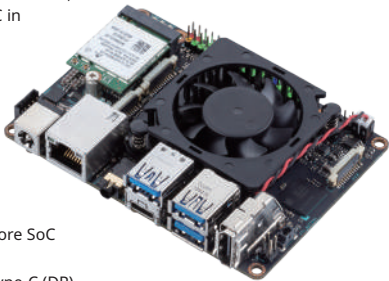


Specifications

SoC	NXP i.MX 8M
CPU	Quad-core Arm® Cortex®-A53 @ 1.5GHz, Coretex-M4
GPU	GC7000 Lite
NN Processor	Google Edge TPU ML accelerator coprocessor
Memory	LPDDR4 1GB
Storage	8GB eMMC 1 x Micro SD (TF) card slot (push & pull)
Display	1 x HDMI with CEC hardware ready 1 x 22-pin MIPI DSI
USB	2 x USB3.2 Gen1 Type-A ports 1 x USB3.2 Gen1 Type-C OTG port
Camera Interface	2 x 24-pin MIPI CSI-2
Internet	1 x RTL8211F-CG GbE LAN 1 x 802.11 a/b/g/n/ac & Bluetooth 4.2
Internal I/O	1 x 40-pin headers includes: - up to 28 x GPIO pins - up to 1 x SPI bus - up to 2 x I²C bus - up to 2 x UART - up to 3 x PWM - up to 1 x PCM/I2S - 2 x 5V power pins - 2 x 3.3V power pins - 8 x ground pins 1 x Boot mode switch 1 x 2-pin Reset header 1 x 2-pin DC Fan header
Power requirement	12~19V DC input (5.5/2.5 mm)
Operation Temperature	0~50°C
Non-Operation Temperature	-40~85°C
Relative Humidity	10~85%
Operating System Support	Mendel
Form Factor	3.37" x 2.125" (85 x 56 mm)

Tinker Edge R

Pico-ITX SBC, Rockchip RK3399Pro Hexa-core, NPU for AI, 4GB SYS & 2GB NPU RAM, 16GB eMMC, HDMI, MIPI-DSI, MIPI-CSI, 12-19V DC in



Features

- Arm® big.LITTLE™ A72+A53 Hexa-core SoC
- ML capability with Rockchip NPU
- Multiple MIPI-CSI & DSI / HDMI / Type-C (DP)
- 40-pin GPIOs & mPCIe for multiple expansions
- 12V~19V DC-in offers stable power delivery
- Linux & Android supported

Specifications

SoC	Rockchip RK3399Pro
CPU	Dual-core Arm® Cortex®-A72 @ 1.8 GHz + Quad-core Arm® Cortex®-A53 @ 1.4 GHz
GPU	Arm® Mali™-T860 MP4 GPU @ 800 MHz
NN Processor	Rockchip NPU
Memory	Dual-CH LPDDR4 4GB (SYSTEM) + LDPPR3 2GB (NPU) or Dual-CH LPDDR4 2GB (SYSTEM) + LDPPR3 1GB (NPU)Memory
Storage	16GB eMMC
Display	1 x Micro SD (TF) card slot (push & pull) 1 x HDMI with CEC hardware ready 1 x Type-C (DP)
USB	1 x 22-pin MIPI DSI (4 lane) 3 x USB3.2 Gen1 Type-A ports 1 x USB3.2 Gen1 Type-C OTG port
Camera Interface	1 x 22-pin MIPI CSI-2 (4 lane) 1 x 22-pin MIPI CSI-2/DSI (4 lane)
Connectivity	1 x RTL8211F-CG GbE LAN 1 x 802.11 a/b/g/n/ac & Bluetooth 5.0 (2T2R)
Expansions	1 x Mini PCIe slot (Full-length, nano-SIM socket, for 4G/LTE)
Audio	1 x 3.5mm audio jack (with Mic & plug-in detection)
Internal I/O	1 x 40-pin headers includes: - up to 28 x GPIO pins - up to 2 x SPI bus - up to 2 x I²C bus - up to 2 x UART - up to 3 x PWM - up to 1 x PCM/I2S - up to 1 x S/PDIF TX - 2 x 5V power pins - 2 x 3.3V power pins - 8 x ground pins 1 x 2-pin Recovery header 1 x 2-pin Power-on header 1 x 2-pin Reset header 1 x 2-pin DC Fan header 1 x 2-pin RTC Battery header
Power requirement	Dual 12-19V DC input (5.5/2.5 mm Barrel jack, 4-Pin header)
Operation Temperature	0~60°C
Non-Operation Temperature	-40~85°C
Relative Humidity	10~85%
Operating System Support	Debian 10 / Android 9
Form Factor	Pico-ITX, 3.9" x 2.8" (100 x 72 mm)

Tinker System 2

Arm SBC with Aluminum Case, Rockchip RK3399 Hexa-core, LPDDR4 RAM, eMMC, HDMI, 12-19V DC in



Features

- Fanless design: Great heat conductive with fanless support
- Certified with RF Regulation: Wi-Fi (CE, FCC, VCCI, BSMI)
- High peripheral extensibility: Reserved I/O for antenna and accessory extension
- +12-19.5V DC-in offers stable power delivery
- Linux & Android supported

Specifications

SoC	Rockchip RK3399
CPU	Dual-core Arm® Cortex®-A72 @ 2.0 GHz + Quad-core Arm® Cortex®-A53 @ 1.5 GHz
GPU	Arm® Mali™-T860 MP4 GPU @ 800 MHz
Memory	Dual-CH LPDDR4 2/4GB
Storage	16/32GB eMMC
Display	1 x HDMI with CEC hardware ready 1 x Type-C (DP) 1 x 22-pin MIPI DSI (4 lane)
USB	3 x USB3.2 Gen1 Type-A ports 1 x USB3.2 Gen1 Type-C OTG port
Camera Interface	1 x 15-pin MIPI CSI-2 (2 lane)
Connectivity	1 x RTL8211F-CG GbE LAN 1 x 802.11 a/b/g/n/ac & Bluetooth 5.0 (2T2R)
Audio	1 x HDMI audio, 1 x I2S (40-pin), 1 x S/PDIF (40-pin)
Internal I/O	1 x 2-pin Recovery header 1 x 2-pin Power-on header 1 x 2-pin Reset header 1 x 2-pin Debug UART header 1 x 2-pin DC Fan header 1 x 2-pin RTC Battery header
Power requirement	12V~19.5V DC input (5.5/2.5 mm)
Operation Temperature	0~40°C
Non-Operation Temperature	-40~85°C
Relative Humidity	10~85%
Operating System Support	Debian 10 / Android 11
Form Factor	3.583" x 2.638" x 1.772" (91 x 67 x 45 mm)



ALPR エッジAI開発キット

ASUS IoT ALPR 開発キットは、包括的な自動ナンバープレート認識 (ALPR) ソリューションです。システムインテグレーター (SI) が既存のALPRインフラとシームレスに連携するエッジアプリケーションを構築するために必要なハードウェアとソフトウェアの両方を備えています。AIアプリケーション向けのシングルボードコンピューターASUS IoT Tinker Board Edge Rを搭載したALPR開発キットは、最高99%の精度で100msの高性能な推論を実現します。ALPR開発キットは、既存のUSBカメラまたはIPカメラと簡単に接続できます。また、機械学習 (ML) を搭載しており、推論のたびに学習することで、検出の精度を継続的に向上させます。ASUS IoTは、特定のニーズや需要に対応するためにALPRソフトウェアを細かく調整し、ALPR開発キットの性能を高めることで、ほとんどのシーンに最適な正確で迅速なオーダーメイド検出システムを提供します。



幅広い場所に取り付け可能



ノベルティナンバープレートの
ノイズを低減



エッジAIがALPRの精度を向上

活用事例



駐車場

- ・アクセス管理
- ・車両追跡
- ・EV充電の監視
- ・車両タグのカスタマイズ
- ・駐車場分析レポート



官公庁/ セキュリティサービス

- ・アクセス管理
- ・潜在的な脅威の監視
- ・法執行体制の強化
- ・スマートホームへの接続
- ・リアルタイム通知



小売業/サービス業

- ・自動洗車または自動車サービス
- ・ドライブスルーのレストラン
- ・店舗の既存のカメラをAIカメラにアップグレード

ソリューションポートフォリオ

ASUS IoT Tinker Edge R

Rockchip RK3399Pro
CPU : Dual-core 1.8 GHz ARM Cortex A72
+ Quad-core 1.4 GHz ARM Cortex A53
GPU : 800 MHz ARM Mali T860 MP4
Rockchip NPU processor
Memory : 4 GB dual-channel LPDDR4 for system + 2 GB LPDDR3 for NPU
Operating system : Debian 9 / Android 9



ASUS IoT ALPR Software

Supported car-plate regions :
Taiwan, United Kingdom
Supported OS : Debian 9 on Tinker Edge R
Inference performance : 60 ms
Accuracy : 99% within 3- to 5-meter range,
with custom retraining service available
Supported cameras : USB webcams, and
IP cameras on a project-by-project basis.



すぐに導入
できるソリューション



顔認識エッジAI開発キット

ASUS IoTの顔認識エッジAI開発キットは、顔やその他の重要なパーソナルマーカを識別する最新のAI技術を搭載したワンストップソリューションです。正確で安定したセキュリティ監視、セキュリティプロセスの簡素化、運用の効率化を実現します。

高く評価されているASUS IoT Tinker Board 2とCyberLinkのFaceMe® SDKを組み合わせた顔認識エッジAI開発キットは、最高99%の認識率を達成し、154msの高速推論を可能にする強力なパッケージを提供します。また、年齢や性別、頭の向きなどの属性の評価・推測も可能なため企業、小売業、サービス業、公共の場など、さまざまな事業用途に対応する強力なプラットフォームを構築することができます。



活用事例

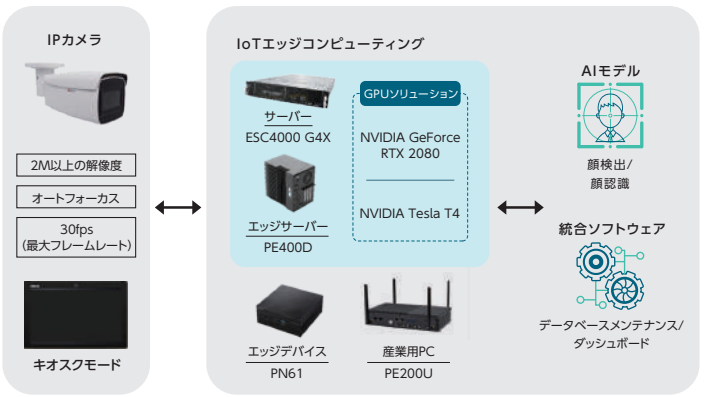


ソリューションポートフォリオ



AIセキュリティソリューション

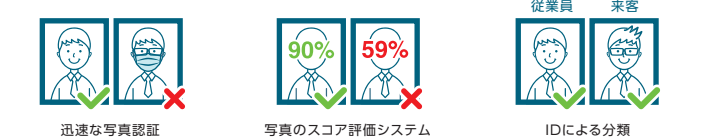
ASUS IoT AIセキュリティソリューションは、正確で安定したセキュリティ監視を可能にする人工知能を搭載した顔認識システムです。学校やあらゆる職場に最適なAIセキュリティソリューションは、セキュリティプロセスを簡素化するとともに運用効率を高め、包括的でありながら管理しやすいセキュリティパッケージを提供します。



活用事例



製品のメリット





ASUS IoT Cloud Console



ダッシュボードメニュー

可視化チャート

使用例

スマートトラフィック:



スマートリテール:



スマートファーム:

製品のメリット

直感的な インターフェース



信頼性と
安全性

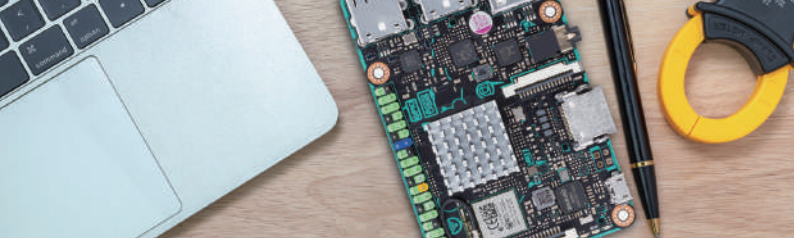


データ監視

レスポンス
Webデザイン

最大30日無料

ソフトウェア＆サービス



ASUS IoT Industrial Android FOTA

Androidは、そのオープン性、タッチパネル対応、Googleがサポートするエコシステムとして、最も急成長しているIoT標準OSの1つです。ただし、厳密なAndroidアーキテクチャでは、専門家の支援なしでソフトウェアの更新を継続すると、システムリスクが高くなります。ASUS IoT Industrial Android FOTAサービスでは、1つの画面でより効率的にOTAアップデートを行うことができます。



スマートカメラ/IPカメラ:

ほとんどの組み込みシステムのカメラは、コンピュータビジョン機能を備えています。ASUS Industrial Android FOTA更新システムを使用すると、カメラはAIとコンピュータビジョン アルゴリズムの安定した更新を受信できるため、さまざまなシーンのニーズに応じてインタラクティブな映像コンテンツを更新できます。



スマート自動販売機:

スマート自動販売機には、環境の認識、ユーザーの識別、個々のユーザーや環境の特性に基づくさまざまな応答の提供などのタスクを実行できるBIエンジンが搭載されている場合があります。スマート自動販売機が新しい決済サービスをサポートする必要がある場合、BIエンジンはASUS Industrial Android FOTAからリモートでファームウェアとソフトウェアを同時に更新できるため、メンテナンスの効率が高まります。



ロボット:

関節の動きや環境認識を向上させるため、ロボットには数十または数百のセンサーが組み込まれています。各センサーはソフトウェアドライバーによって操作されます。ASUS Industrial Android FOTAは、必要に応じてすべてのセンサーのドライバーをリモートで更新し、ロボットの動きを最適化します。

製品のメリット



ASUSはAndroid FOTAサービスの経験があり、スマートフォン市場で2,000万台を超えるデバイスをサポートしています。



ASUS IoTは、単一のインターフェースを提供し、中国本土を含むグローバルなコンテンツ配信ネットワーク(CDN)をサポートします。



更新後のリモート拡張機能、バグ修正、長期的なメンテナンス要件に対する柔軟性を維持しながら、直ぐに商用段階に入ることができます。



開発者はデバイスの更新の進捗状況や数量、問題レポートをいつでも追跡できます。

AI
ソリューション

ASUS IoT AISDetector

AI技術を搭載したAISDetectorは、ほんの少しの良品データをもとに最短1分で検出モデルを確立することができます。これまでの手作業による検品経路に代わって、さまざまな製造工程に対応します。また、追跡可能な製造記録を電子データで作成することで、製造業のデジタルトランスフォーメーションにも貢献します。

主な機能



ディープラーニング
(深層学習)



エッジAI



AIモデルを1分で



追跡可能な記録

システム構成

現在 — 手作業



- 電子化されたデータがない
- 手作業による検品で品質にばらつきがある
- 人件費が高い



ASUS IoT を活用



- 製造履歴を即座に表示
- 自動検品による一貫した品質基準
- 情報をわかりやすく表示



主な特徴



1分でAIモデルを構築*

良品のデータの学習を30秒×3回行うだけで、異常検出に対応できる完全なAIモデルを構築します。GPUアクセラレーションが必要です。

*CPU:
インテル® Core™ i9、RAM:32GB



即時解析AI

良品のデータを学習することで、人間の欠陥を見分ける能力を素早く模倣して、不良品が流出するのを防ぐことができます。



波形解析

振動、声紋、電圧、電流といったアナログ信号に対して、異常信号を検出することができます。オンライン測定と後でデータをインポートする方法の両方に対応しています。



使いやすい

学習モードでは、わずか4ステップでAIモデルを構築することができます。また、推論モードでは、作業者が誤って管理インターフェースに触れてしまうのを防ぎます。

ASUS IoT AISVision

AISVisionは、AIを活用したマシンビジョンやAIモデルの生成に最適なツールキットです。「AIモデルの学習」「AI推論のランタイム」「バッチトレーニングのスケジューリング」で構成されています。

手順は事前設定済み：ラベリング、モデルトレーニング、検証をすぐに行えます。

ノーコード：専門的な知識がなくても、即座にAIモデルを構築できます。

統合・導入しやすい：知識の集約が容易、各分野のニーズに基づいた再トレーニング、継続的なデータ分析、可視化、データベース管理。

主な機能



ディープラーニング
(深層学習)



エッジAI



AIモデル

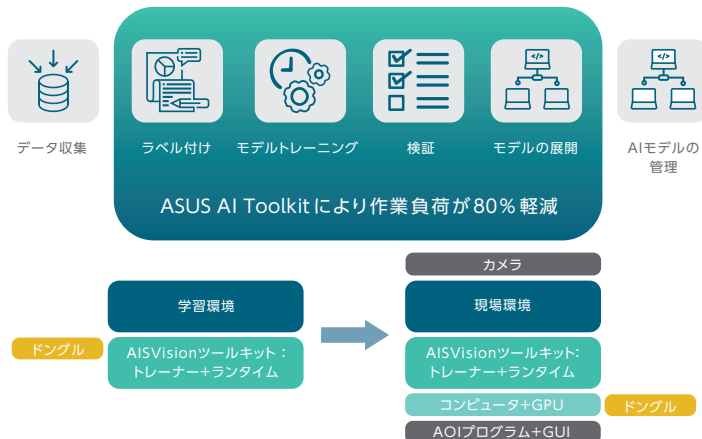


異常検出



モデル管理

システム構成



主な特徴

4ステップのノーコード開発



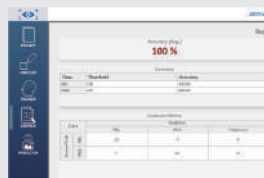
独自のAIコンピュータビジョン技術により、精密検査を行うAIモデルをほんのわずかなサンプルデータで構築できます。

多様なAI機能



セグメンテーション、クラス分け、物体検出、異常検出では、教師あり・教師なし学習を組み合わせて行います。

検証、結果のエクスポートが容易



AIモデルの効率性の検証では、自分で選択したレポートをHTMLで作成することも可能です。

二次開発に最適な設計

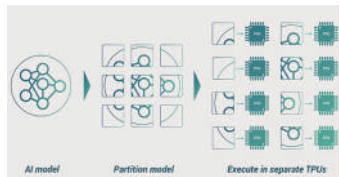


データプライバシーに配慮したオンプレミスでの再トレーニング機能、さらに今後の開発も考慮した汎用性の高いAPI、C、C++、C#をサポート。



ASUS IoT AI Accelerator PCIe Card

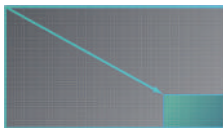
AI推論用のCoral Edge TPUを複数搭載した初めてのPCI Express® 拡張カードです。エッジでの推論を想定し、モデルの最適化を事前に学習したモデルからAPIベースの転移学習で行えるようになっています。迅速な応答、簡単な操作、複数のAIモデルの並列実行に対応しています。



パイプライン処理で機械学習の性能を強化することができます。AI Accelerator PCIe Cardは、パイプライン処理でモデルをいくつかの小さなモデルに分割することができ、高速応答や大規模モデルの実行が必要な用途に最適です。



ML (機械学習) 推論を
並列化することで低遅延を実現

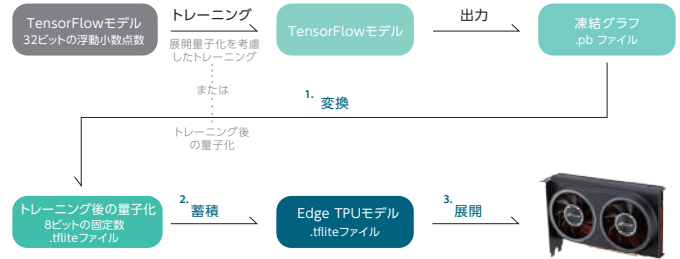


小規模なデータセットで
機械学習の成果を最大化



AIアプリケーションの
プロトタイプを数分で作成

ワークフロー



豊富な用途



製造業



小売業



交通



監視

仕様

メインチップ	コア	Google® Coral Edge TPUプロセッサ
PCIeインターフェース	テクノロジー	PCI Express 3.0 x16
ソフトウェア	対応フレームワーク	TensorFlow Lite
	精度	INT8
	性能	CRL-G18U-P3DF : 32 TOPS CRL-G116U-P3DF : 64 TOPS
熱対策	ファン設計	Active Fan
電力	電源コネクタ	1 x 6 ピン 12V 外部電源
	消費電力	CRL-G18U-P3DF : 36W CRL-G116U-P3DF : 52W
OS	Linux	Ubuntu 18.04, Debian 10 *最新の対応OS一覧は https://iot.asus.com/ をご確認ください。
使用環境	動作温度範囲	0~55°C
	非動作時温度	-40~85°C
	相対湿度	0%~85%
寸法	幅	42.1mm
	高さ	126.3mm
	奥行き	186.3mm
重量	重量	CRL-G18U-P3DF : 516g CRL-G116U-P3DF : 530g

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