

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

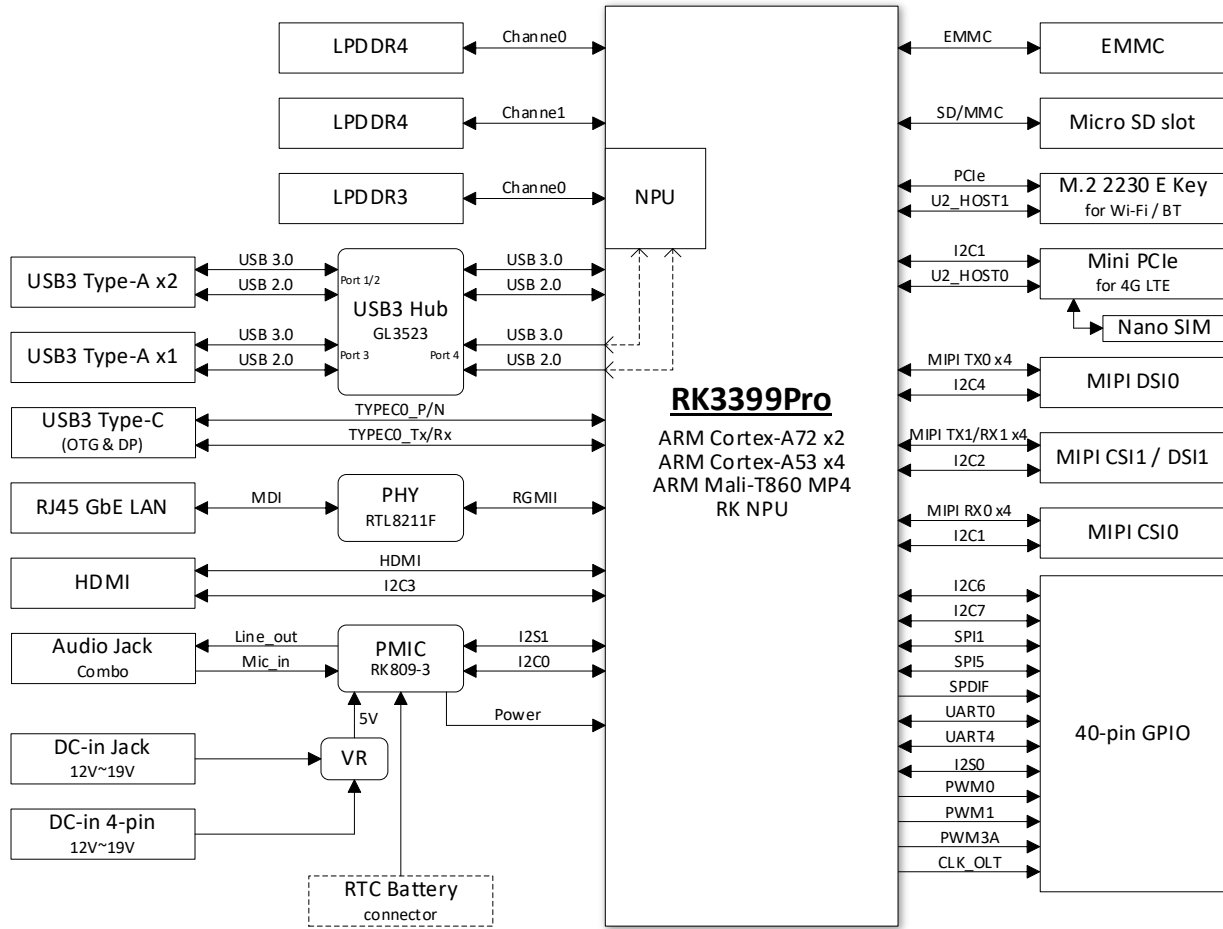
- Arm® big.LITTLE™ A72+A53 Hexa-core SoC
- ML capability with Rockchip NPU
- Multiple MIPI-CSI & DSI / HDMI / Type-C (DP)
- 40-pin GPIOs & mPCIe for multiple expansions
- 12V~19V DC-in offers stable power delivery
- Linux & Android supported

Specifications

Processor	SoC	Rockchip RK3399Pro
	CPU	2 x Arm® Cortex®-A72 @ 1.8 GHz + 4 x Arm® Cortex®-A53 @ 1.4 GHz
	GPU	Arm® Mali™-T860 MP4 GPU @ 800 MHz
	NPU	Rockchip NPU
Memory	Technology	Dual-CH LPDDR4 (SYSTEM) + LPDDR3 (NPU) On-board
	Size	4GB (SYSTEM) + 2GB (NPU) / 2GB (SYSTEM) + 1GB (NPU)*
Storage	eMMC	16GB On-board
	Memory Card	1 x Micro SD (TF) card slot (push & pull)
Ethernet	Speed	10/100/1000Mbps
	Controller	1 x Realtek RTL8211F
Wireless	Speed	802.11 a/b/g/n/ac & Bluetooth 5.0
	Module	1 x Realtek RTL8822CE (M.2 Socket 1 with E key, type 2230)
	Antenna Connector	2 x I-PEX MHF® 4 (extendable, 2T2R)
Display	HDMI	1 x Supports up to 4096 x 2160 @ 60 Hz
	Type-C (DP)	1 x Supports DP 1.2 up to 4096 x 2160 @ 60 Hz
	MIPI DSI	1 x 22-pin DSI (4 lane), Supports up to 6 Gbps, 1920 x 1080 @ 60 Hz
	Multi Display	HDMI+Type-C, HDMI+MIPI DSI, Type-C+MIPI DSI
Camera	MIPI CSI-2	1 x 22-pin CSI-2 (4 lane), Supports up to 6 Gbps 1 x 22-pin CSI-2/DSI (4 lane), Supports up to 6 Gbps
	3.5 Audio Jack	1 x with Mic & plug-in detection
Audio	I2S	1 x in 40-pin header
	S/PDIF	1 x in 40-pin header
	Expansions	1 x Full-Length with nano-SIM socket, for 4G/LTE
Rear I/O	Ethernet	1
	3.5 Audio Jack	1
	USB 3.2 Gen1 Type-A	3
	USB 3.2 Gen1 Type-C OTG	1
	HDMI	1
Internal I/O	40-pin GPIO Header	- 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 (master/slave) - up to 1 x S/PDIF TX - 2 x 5V Power pins - 2 x 3.3V Power pins - 8 x Ground pins
	Power-on Header	1 (2-pin)
	Reset Header	1 (2-pin)
	Recovery Header	1 (2-pin)
	Debug UART Header	1 (2-pin)
	DC Fan Header	1 (2-pin)
	RTC Battery Header	1 (2-pin)
Power	Power Input	1 x 12 to 19 VDC, Barrel jack (5.5/2.5 mm) 1 x 12 to 19 VDC, Input 4-pin header
	Environment	Operating Temperature
Storage Temperature		-40~85°C
Relative Humidity		0 to 85% (non-condensing)
Others	Operating System	Linux Debian 10, Android (AOSP) 9
	Dimensions	Pico-ITX, 3.9" x 2.8" (100 x 72 mm)

*Spec by SKU

Block Diagram



Ordering Information

PN	Model Name	Description
90ME00M0-*	TINKER EDGE R	Pico-ITX SBC, RK3399Pro, NPU, 4GB SYS & 2GB NPU RAM, 16GB eMMC, HDMI, MIPI-CSI/DSI, 12-19V DC in
90ME00M1-*	TINKER EDGE R/65W	Pico-ITX SBC, RK3399Pro, NPU, 4GB SYS & 2GB NPU RAM, 16GB eMMC, HDMI, MIPI-CSI/DSI, 12-19V DC in + 65W ADAPTER
90ME00M2-*	TINKER EDGE R/2G/1G/16G	Pico-ITX SBC, RK3399Pro, NPU, 2GB SYS & 1GB NPU RAM, 16GB eMMC, HDMI, MIPI-CSI/DSI, 12-19V DC in

Packing List

Item#	Description
1.	2 x Wi-Fi/BT antenna cable
2.	1 x Heatsink
3.	1 x Quick Start Guide

Optional Accessories

Item#	Description
Power Adapter 45W	DC 19V/2.37A or 19.5V/3.33A (5.5/2.5mm)
Power Adapter 65W	DC 19V/3.42A or 19.5V/2.31A (5.5/2.5mm)
Fanless Case	Aluminum Fanless Case
MIPI Convert Board	MIPI to LVDS/eDP converter board

*Accessories will be shipped separately

Rich configurations, multi-platform APIs, flexible framework for smart edge

ASUS has created OmniEdge middleware to simplify application development and offer exclusive services with ASUS IoT platforms.

OmniEdge provides rich and stable Application Programming Interface (API) functions with modular design and multi-OS consideration. System integrators and customers can easily leverage the API to connect to peripherals, make best use of hardware capabilities. OmniEdge API is backward compatible on multi-OS platforms. It takes minimal effort to upgrade or migrate existing application to a new hardware platform.

For no-code low-code system integrators and customers, OmniEdge provides series of configuration tools and scripts, to protect and configure systems while integrating solutions. Customers can easily configure hardware monitors, connectivity, thermal protection, system throttling, and brightness levels...etc.

OmniEdge delivers an SDK of tools, scripts, libraries, and flexible application framework, to assist customers to accelerate application development and solution integration.

HIGHLIGHTS

Configuration	APIs	IOT Framework	Connectivity	Monitor & Protect	IoT Protocols
Shell scripts (CLI) Tinker config tools, x86 IPC tools	EAPI compliant ASUS extended API for full control Cross platforms (Windows, Linux, Android)	Quick response time Local decision Automation by multiple data sources Reliability under intermittent network	LTE keep alive & auto recover Automatic backup between networks	Watchdog timer Thermal protect customization Fan control Power on/off scheduling	MQTT Modbus, BACNET

DELIVERABLES (SDK)

Category	A (x86)	B (Tinker Series)	C (ARM IPC)
Windows	1. API library, header files, sample code 2. API Programming Guide 3. Driver (32 bit and 64 bit)	N/A	N/A
Linux	By request	1. API library, header files, sample code 2. API Programming Guide 3. Connectivity Manager User Manual	1. API library, header files, sample code 2. API Programming Guide 3. Connectivity Manager User Manual
Android	N/A	1. API library, sample code 2. API Programming Guide	N/A

OmniEdge API



DATASHEET

Features	Functions ⁽²⁾	Category A		Category B		Category C
		Windows	Linux	Linux	Android	Linux
Operation & Protection	Hardware monitor API	V				
	Thermal protect API	V				
	Fan control API ⁽³⁾	V				
	Scheduled Power on/off API ⁽³⁾	V				
	Watchdog timer API	V		V ⁽⁴⁾		V
Peripheral	GPIO API	V		V ⁽⁴⁾	V ⁽⁵⁾	V
	I2C API			V ⁽⁴⁾	V ⁽⁵⁾	V
	SPI API				V ⁽⁵⁾	
	UART API				V ⁽⁵⁾	
	PWM API				V ⁽⁵⁾	
Connectivity	Connection auto-recover			V ⁽⁴⁾	O ⁽⁶⁾	V
	High availability network			V ⁽⁴⁾	O ⁽⁶⁾	V
IoT framework	Cloud/on-prem adapter				x	V
	IOT gateway framework & services				x	V
	Protocols (MQTT, Modbus, REST)				x	V

Category	A (x86)	B (Tinker Series)	C (ARM IPC)
Models ⁽¹⁾	E395S-IM-AA H110M-IM-A H310I-IM-A R3.0 H610M-IM-A J3455T-IM-A J3455T-IM-A R2.0 J6412T-IM-A N3350T-IM-A N420S-IM-AA N4200T-IM-A N5105I-IM-A R2.0 Q370I-IM-A Q370I-IM-A R2.0 Q470EI-IM-A Q470EA-IM-A Q470EI-IM-A R3.0 Q670EI-IM-A (SHINE) R680EI-IM-A(SKY) W480E-IM-A R3.0 W480EI-IM-A	Tinkerboard 2 Tinkerboard 2S Tinker Edge R	PE100A

1. Not listed models can be supported by request
2. Not checked features can be supported by request
3. Some models may not support this function. Please refer API document
4. Available on Tinker Edge R. Further models by request
5. Available on Tinker 2. Further models by request
6. Native support by Android