# VT-SBC-3588 Single Board Computer

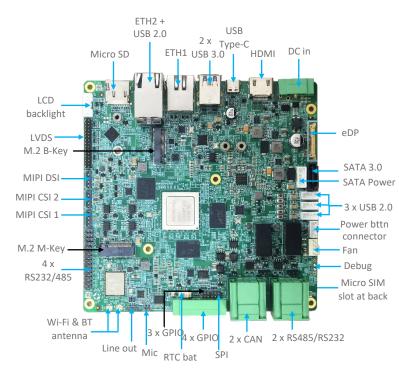


### **Product Brief**

Vantron VT-SBC-3588 Single Board Computer is powered by Rockchip latest flagship RK3588 AIoT chipset that is equipped with an 8-core 64bit CPU, an ARM Mali-G610 MP4 quad-core GPU, and a built-in AI acceleration NPU, capable of providing 6 TOPS computing power and supporting mainstream deep learning frameworks. With the development of the technology, there definitely will be a rising demand for AIbased products from the industrial control market, including but not limited to industrial robots, automated control, drones, etc., and VT-SBC-3588 comes into being.

The single board computer offers two Gigabit Ethernet ports, supports 2.4GHz/5GHz Wi-Fi 6 and Bluetooth 5.0, and provides an M.2 slot for 4G/5G expansion to keep communication uninterrupted. It also supports 8K video decoding and encoding to deliver optimized display performance.

Since the single board computer provides rich interfaces, a wide range of peripherals can be connected for extended applications like ARM PC, edge computing, cloud server, smart NVR, and other fields. Moreover, the different operating systems provide a stable and secure system environment for users.



#### **Exterior and Features**

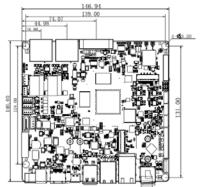
٥	RK3588 Quad-core Cortex-A76 + Quad- core Cortex-A55 processor
	HDMI/eDP/MIPI DSI for high-quality display
₽ <u></u> ₽	Rich interfaces for expansion
Ø	Wi-Fi (6)/BT/4G/5G/ETH for communication
₽	Industrial-grade wide temperature design
 الألى	High computing power
	Deep learning acceleration
	Industrial longevity

VT-SBC-3588

## VT-SBC-3588 Single Board Computer Datasheet

Big     RX358 Quad-core Cortex-A76 + Quad-core - U-X-S5, Max. 2.4GHz       GPU     RXM All-GG10 MC4, Max. 1GHz       FNP     670F       Memory     681 LPDDR4 (Optional: 1G6B)       Big     2368 eMMCVS.1, up to 1286B     1 x Micro SD slot       Big     2368 eMMCVS.1, up to 1286B     1 x Micro SD slot       Memory     845 EO Supported by an M.2 M-Key/M.2 B-Key U-X-SF     7 Commission       Memory     847 EO Supported by an M.2 M-Key/M.2 B-Key U-X-SF     7 Commission       Memory     847 EO Supported by an M.2 M-Key/M.2 B-Key U-X-SF     7 Commission       Memory     847 EO Supported by an M.2 M-Key/M.2 B-Key U-X-SF     7 Commission       Memory     847 EO Supported by an M.2 M-Key (M.2 M-Key (M.2 M-Key (M.2 M-Key (M.2 M-KEY)))     7 Commission       Memory     847 EO Supported by an M.2 M-Key (M.2 M-Key (M.2 M-Key (M.2 M-KEY))     7 Commission       Media     91S90     1 x MICRI Commission by an M.2 M-Key (M.2 M-Key (M.2 M-KEY))     7 Commission by an M.2 M-Key (M.2 M-KEY)       Media     91S90     2 x MIP (M.2 M-KEY (M.2 M-KEY))     7 Commission by an MAX (M.2 M-KEY)       Memory     2 x MIP (M.2 M-KEY (M.2 M-KEY))     2 x MAX (M.2 M-KEY)     7 Commission by an MAX (M.2 M-KEY)
SystemNPU6 TOPSMemory8 GB LPDR4 (Optional: 16GB)32GB eMMC V5.1, up to 128 GB1 x Micro SD slotStorage32 GB eMMC V5.1, up to 128 GB1 x Micro SD slotKemore2 x RJ45, 1000Mbps4G/5GOptional (expansion by an M.2 B-Key)Wi-Fi & BluetoothWi-Fi 802.11 a/b/g/n/ac/ax + BT 5.0Media1 x HDM1 2.1 (4096 x 2160 @G0H2) 1 x Nulci channel LVDS (1920 x 1200 @G0H2) 1 x NUPI DSI (1920 x 1080 @G0H2) 1 x DSB 2.0 Host runctorIVINFIVINF IVINFIVINFIVINF IVINF IVINFIVINFIVINF IVINF IVINF
Additional system     Memory     8GB LPDDR4 (Optional: 16GB)       1     Memory     32GB eMMC V5.1, up to 128GB     1 x Micro SD slot       Storage     32GB eMMC V5.1, up to 128GB     1 x Micro SD slot       Storage     2 x RJ45, 1000Mbps
Hamiltonia     32GB eMMC V5.1, up to 128GB     1 x Micro SD slot       SD supported by an M.2 M-Key/M.2 B-Key (2556 × 1TB)     SD supported by an M.2 M-Key/M.2 B-Key (2556 × 1TB)       Communication     4G/5G     Optional (expansion by an M.2 B-Key)       Wi-Fi & Bluetooth     Wi-Fi 802.11 a/b/g/n/ac/ax + BT 5.0       Media     Display     1 x HDMI 2.1 (4096 x 2160 @60H2) 1 x Dual-channel LVDS (1920 x 1200 @60H2) 1 x Dual-channel LVDS (1920 x 1200 @60H2) 1 x MIPI DSI (1920 x 1080 @60H2) 1 x MIPI DSI (1920 x 1080 @60H2)     1 x dIP (1920 x 1080 @60H2) 1 x MIPI DSI (1920 x 1080 @60H2)       Media     Oisplay     1 x HDMI 2.1 (4096 x 2160 @60H2) 1 x Dual-channel LVDS (1920 x 1200 @60H2)     1 x eDP (1920 x 1080 @60H2) 1 x MIPI DSI (1920 x 1080 @60H2)       Media     Oisplay     1 x MIC in connector     1 x Line out connector       Audio     1 x Micri Connector     1 x Line out connector       Y USB     2 x USB 3.0 Host, Type-A     3 x USB 2.0 Host connector       Y USB     2 x RS232/RS485 on the Phoenix terminal     4 x RS232/RS485 connector       Y USB     1 x Micro SIM slot     1 x TL, for debugging     1 x TL, for debugging       Y TTL, for debugging     1 x Micro SIM slot     Y     Y       RTC     Supported     Supported     Suported     Y
Storage     SSD supported by an M.2 M-Key/M.2 B-Key (25GB ~ 1TB)       Ethernet     2 x RJ45, 1000Mbps       Communication     4G/5G     Optional (expansion by an M.2 B-Key)       Wi-Fi & Bluetooth     Wi-Fi 802.11 a/b/g/n/ac/ax + BT 5.0       Media     1 x HDMI 2.1 (4096 x 2160 @60H2) 1 x Dual-channel LVDS (1920 x 1000 @60H2) 1 x Dual-channel LVDS (1920 x 1000 @60H2) 1 x MIPI DSI (1920 x 1080 @60H2)     1 x eDP (1920 x 1080 @60H2) 1 x MIPI DSI (1920 x 1080 @60H2)       Media     2 x MIPI CSI     1 x uDal-channel LVDS (1920 x 1200 @60H2)     1 x Line out connector       Audio     1 x Mic in connector     1 x Line out connector     1 x USB Type-C OTG 3 x USB 2.0 Host, Type-A     1 x USB Type-C OTG 3 x USB 2.0 Host connector       Serial port     2 x RS232/RS485 on the Phoenix terminal     4 x RS232/RS485 connector     2 x RS232/RS485 on the Phoenix terminal     4 x RS232/RS485 connector       Fan     1 x CPU fan connector     2 x RS232/RS485 on the Phoenix terminal     4 x RS232/RS485 connector       Final port     1 x Micro SIM slot     XIII or debugging     XIII or debugging       Final     1 x Micro SIM slot     XIIII or debugging     XIIII or debugging       RTC     Supported     Supported     XIIIII or debugging     XIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
CommunicationAG/SGOptional (expansion by an M.2 B-Key)Wi-Fi & BluetoothWi-Fi & 80.11 a/b/g/n/ac/ax + BT 5.0MediaDisplay1 x HDM1 2.1 (4096 x 2160 @60H2) 1 x Dual-channel LVDS (1920 x 1200 @60H2) 1 x MIPI DSI (1920 x 1080 @60H2) 1 x MIPI DSI (1920 x 1080 @60H2)MediaOptional 2 amera2 x MIPI CSI 2 x USB 3.0 Host, Type-A 1 x USB Type-C OTG 1 x USB 2.0 Host, Type-A 3 x USB 2.0 Host connectorMediaUSB2 x RS232/RS485 on the Phoenix terminal 1 x TL, for debugging4 x RS232/RS485 connectorFan2 x RS232/RS485 on the Phoenix terminal 1 x Micro SIM slot4 x RS232/RS485 connectorSerial port2 x RS232/RS485 on the Phoenix terminal 1 x TL, for debugging4 x RS232/RS485 connectorFan1 x CPU fan connector 1 x Micro SIM slot4 x RS232/RS485 connectorRTCSupportedSupportedMatchdogSupportedSupportedMatchdogSupported1 x Micro SIM slotM2 slot1 x Power button connectorM2 slot1 x M2 M-Key (2260/2280), PCle 3.0 x 4, for SSD
Note
Media     Display     1 x HDMI 2.1 (4096 x 2160 @60Hz) 1 x Dual-channel LVDS (1920 x 1200 @60Hz) 1 x MIPI DSI (1920 x 1080 @60Hz)       Media     2 x MIPI CSI Audio     1 x Line out connector       Mudio     1 x Mic in connector     1 x Line out connector       USB     2 x USB 3.0 Host, Type-A 1 x USB 2.0 Host, Type-A     3 x USB 2.0 Host connector       Serial port     2 x RS232/RS485 on the Phoenix terminal 1 x CPU fan connector     4 x RS232/RS485 connector       Fan     1 x CPU fan connector     4 x RS232/RS485 connector       SiM slot     1 x Micro SIM slot
Media1 x Dual-channel LVDS (1920 x 1200 @60Hz)1 x MIPI DSI (1920 x 1080 @60Hz)MediaCamera2 x MIPI CSIAudio1 x Mic in connector1 x Line out connectorMedia1 x Mic2 x USB 3.0 Host, Type-A1 x USB Type-C OTG3 x USB 2.0 Host2 x USB 3.0 Host, Type-A1 x USB 2.0 Host connector3 x USB 2.0 Host2 x RS232/RS485 on the Phoenix terminal4 x RS232/RS485 connector3 x USB 2.0 Host1 x TLL, for debugging1 x TLL, for debuggingFan1 x CPU fan connector1 x Micro SIM slotSIM slot1 x Micro SIM slot1 x Micro SIM slotRTCSupportedSupportedMutchdogSupported1 x Power button connectorMuton1 x Power button connector1 x M.2 M-Key (2260/2280), PCIe 3.0 x 4, for SSD1 x M.2 B -Key (2242/3052), USB3.0/SATA3.0, tracforSSD1 x M.2 B -Key (2242/3052), USB3.0/SATA3.0, tracforSSD
Camera   2 x MIPI CSI     Audio   1 x Mic in connector   1 x Line out connector     Audio   1 x Mic in connector   1 x Line out connector     USB   2 x USB 3.0 Host, Type-A 1 x USB 2.0 Host, Type-A 1 x USB 2.0 Host connector   1 x USB Type-C OTG 3 x USB 2.0 Host connector     Berial port   2 x RS232/RS485 on the Phoenix terminal   4 x RS232/RS485 connector     Fan   1 x CPU fan connector   4 x RS232/RS485 connector     SIM slot   1 x Micro SIM slot   1 x Micro SIM slot     RTC   Supported   Supported     Watchdog   Supported   1 x M:2 M-Key (2260/2280), PCle 3.0 x 4, for SSD     M.2 slot   1 x M.2 B-Key (2242/3052), USB3.0/SATA3.0, T4G/5G/SSD
USB     2 x USB 3.0 Host, Type-A 1 x USB 2.0 Host, Type-A     1 x USB Type-C OTG 3 x USB 2.0 Host connector       Serial port     2 x R5232/RS485 on the Phoenix terminal     4 x R5232/RS485 connector       1 x TL, for debugging     1 x TL, for debugging     1 x TL, for debugging       SIM slot     1 x Micro SIM slot
Ivos 1 x USB 2.0 Host, Type-A 3 x USB 2.0 Host connector   2 x R5232/R5485 on the Phoenix terminal 4 x R5232/R5485 connector   1 x TL, for debugging 1 x TL, for debugging   Fan 1 x CPU fan connector   SIM slot 1 x Micro SIM slot   RTC Supported   Watchdog Supported   Button 1 x Power button connector   M.2 slot 1 x M.2 M-Key (2260/2280), PCle 3.0 x 4, for SSD   1 x M.2 B-Key (2242/3052), USB3.0/SATA3.0, FG/SSD
Serial port     1x TTL, for debugging       1/Os     Fan     1 x CPU fan connector       SIM slot     1 x Micro SIM slot       RTC     Supported       Watchdog     Supported       Button     1 x Power button connector       M.2 slot     1 x M.2 M-Key (2260/2280), PCIe 3.0 x 4, for SSD       1 x M.2 B-Key (2242/3052), USB3.0/SATA3.0, for 4G/5G/SSD
I/Os   Fan   1 x CPU fan connector     SIM slot   1 x Micro SIM slot     RTC   Supported     Watchdog   Supported     Button   1 x Power button connector     M.2 slot   1 x M.2 M-Key (2260/2280), PCIe 3.0 x 4, for SSD     1 x M.2 B-Key (2242/3052), USB3.0/SATA3.0, for 4G/5G/SSD
I/Os SIM slot 1 x Micro SIM slot   RTC Supported   Watchdog Supported   Button 1 x Power button connector   M.2 slot 1 x M.2 M-Key (2260/2280), PCle 3.0 x 4, for SSD   1 x M.2 B-Key (2242/3052), USB3.0/SATA3.0, for 4G/5G/SSD
RTC Supported   Watchdog Supported   Button 1 x Power button connector   M.2 slot 1 x M.2 M-Key (2260/2280), PCIe 3.0 x 4, for SSD   1 x M.2 B-Key (2242/3052), USB3.0/SATA3.0, for 4G/5G/SSD
Watchdog Supported   Button 1 x Power button connector   M.2 slot 1 x M.2 M-Key (2260/2280), PCIe 3.0 x 4, for SSD   1 x M.2 B-Key (2242/3052), USB3.0/SATA3.0, for 4G/5G/SSD
Button     1 x Power button connector       M.2 slot     1 x M.2 M-Key (2260/2280), PCIe 3.0 x 4, for SSD       1 x M.2 B-Key (2242/3052), USB3.0/SATA3.0, for 4G/5G/SSD
M.2 slot 1 x M.2 M-Key (2260/2280), PCIe 3.0 x 4, for SSD 1 x M.2 B-Key (2242/3052), USB3.0/SATA3.0, for 4G/5G/SSD
M.2 slot 1 x M.2 B-Key (2242/3052), USB3.0/SATA3.0, for 4G/5G/SSD
1 x M.2 B-Key (2242/3052), USB3.0/SATA3.0, for 4G/5G/SSD
Expansion GPIO 4 x GPIO on the Phoenix terminal 3 x GPIO connector
SPI 1 x SPI
CAN 2 x CAN on the Phoenix terminal
OS Debian, Android, Ubuntu
Software Device management platform BlueSphere MDM (Android version optional)
OTA tool BlueSphere OTA (optional)
PowerInput12V/5A, 24V/3A1 x Power terminal
Mechanical     Dimensions     146.94mm x 140mm x 24.34mm
TemperatureOperating: $0^{\circ}C \sim +60^{\circ}C$ Storage: $-40^{\circ}C \sim +85^{\circ}C$
Condition Humidity RH 0~95% (non-condensing)
Certification FCC, CCC

### **Product Outlines**

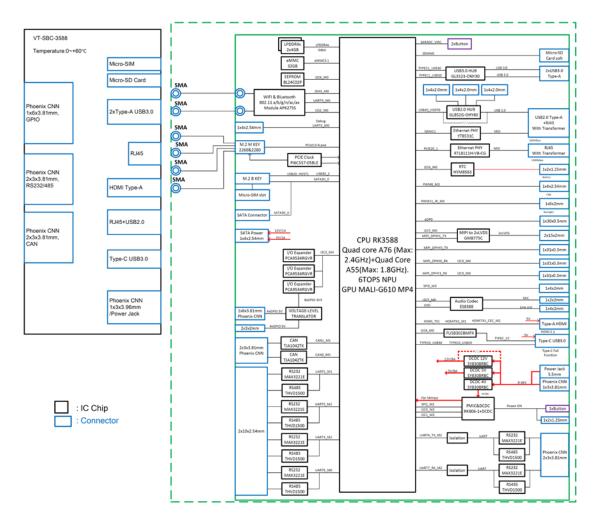






Vantron | Embedded in your success, Embedded in your better life World-leading provider of embedded/IoT products and solutions

#### **Block Diagram**



### **Company Profile**

Since 2002 established by two Silicon Valley entrepreneurs, Vantron Technology has been a pioneer in connected IoT devices and IoT platform solutions. Today, Vantron serves countless customers all over the world, some of them are Fortune 500 companies. Products lines cover edge intelligent hardware, IoT communication devices, industrial displays and BlueSphere cloud device management platform.

Vantron has 20 years of experience in R&D of embedded edge intelligent hardware like SOM board and motherboard, and provided users with various embedded solutions with ARM and X86 architecture. From Linux to Windows, from embedded to desktop level, from gateway to server. At the same time, we provide our users with system clipping, driver transplantation and other services.

Vantron IoT communication devices support multi-protocol connection of industrial equipment, edge computing of local data. Abundant wired and wireless connectivity make remote operations and maintenance possible. From electricity and transportation to smart retail, medical and warehousing, Vantron IoT communication device can be deployed anywhere in any business section. Vantron believes its IoT solution to help many companies finish their digital transformation, efficiency of manufacturing and productivities have been improved significantly.

Vantron industrial display systems, ARM and X86 series, are equipped with Rockchip, NXP, MediaTek, Intel and other high-performance processors. It supports various operating systems such as Windows, Linux, and Android. Diverse wireless communications keep your device online all the time. Multiple installation methods make it suitable for a variety of application scenarios. Features like waterproof, dustproof, shatter resistant guarantee the best performance in any environment.

Vantron BlueSphere device management platform, a software product, is playing a big role in Vantron overall IoT solution. Today, Vantron puts more focus on offering complete cost effective, leading-edge yet reliable solutions to help customers carry out their visions.

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