

# SM20

Embedded

Intelligence

Training Equipment for Android Embedded  
Artificial Intelligence Convergence



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Android



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# SM20

Training equipment for Android embedded artificial intelligence convergence

Adopts the latest application processor from AMLogic USA, which includes 5TOPS (Artificial Intelligence Computing Capability) NPU (Neural Processing Unit) as the main module

ARM processor combines four 2.2GHz Cortex-A73 cores and two 1.8GHz Cortex-A53 cores in a big-little structure, providing the best performance in Android environment

Provides 4GB LPDDR4 and 32GB eMMC suitable for large-capacity application development and equipped with SD Card slot for storage expansion

Supports acceleration of the latest AI frameworks such as TensorFlow, Caffe, and Darknet through NPU

Equipped with LG Electronics Display with 800x1280 pixel resolution that prevents diffuse reflection and provides a wide viewing angle of 170/170 degrees up/down/left/right, providing sufficient brightness (450 nits) and rich colors (800 :1 contrast ratio)

Provides an integrated development environment that builds and installs on a target the ARM embedded Linux (Android) project in Windows 10

Android NDK or Arduino-based hardware control possible through the peripheral device sub-module

Supports Arduino-based firmware learning through ATmega2560 microcontroller sub-module

Supports Android SDK multimedia learning through touch screen, camera, microphone, speaker

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## Software Specifications

### Main Module

bootloader	Uboot
Operating System	Linux Kernel 4.9.113
Platform	Android Pie 9.0
Display	MIPI base display driver
Touch Screen	Touch screen driver
Audio	Audio driver, ALSA
Bluetooth	Bluetooth driver, bluetooth
Wi-Fi	Wi-Fi driver, wpa_supplicant, iwconfig, libnetutils, Connection Manager
Network Server	SSH Server, SFTP Server
USB	USB gadget driver
Ethernet Device	Ethernet Driver Connection Manager

### Main Module

CPU	Amlogic A311D 2.2GHz Quad core ARM cortex-A73 and 1.8GHz Dual core Cortex-A53 CPU
GPU	Mali G52 MP4 at 800MHz
Decoding	Multi-video decoder 4k x 2k@60fps + 1080p@60fps
Encoding	H.265/H.264 1080P@60fps
RAM	4GB LPDDR4
eMMC	32GB
Storage	Micro SD Card, 8GB
SPI Flash	16MB
MCU	STM8S003 with Programmable EEPROM
Wi-Fi	2T2R 802.11 ac with RSDB
Bluetooth	V5.0
Ethernet	1Gbps
Sound	MEMS Microphone Speaker 2W Standard 3.5mm headphone jack
Display	HDMI 2.1a MIPI-DSI, 7inch 800x1280 Pixel IPS LCD
Touch screen	7inch 10point Capacitive Multi-Touch Screen Capacitive Touch Key 4EA
Camera	Image Sensor : OV2710 2.0M Pixel, 1280x720@30fps MJPEG Lens size : 2.7inch Angle of view : 92 degree
USB	USB-C : USB PD USB2.0 OTG USB Host : USB3.0 2EA, USB2.0 2EA
UART	Serial to USB Port 1EA(BType Debugging UART)
Power	5V/4A AC/DC Adaptor
Size	315x209mm

## Hardware Specifications

### Peripheral Module

Input Device	Button Switch Linux Device Driver/Linux Native Application/Android Application
Display Device	Text LCD/ 7-Segment Linux Device Driver/ Linux Native Application/ Android Application
Output Device	LED/ Buzzer Linux Device Driver/Linux Native Application/Android Application
Actuator Device	Vibrator/StepMotor Linux Device Driver/ Linux Native Application/ Android Application
Sensor	Humidity and Temperature Sensor Linux Device Driver/ Linux Native Application/ Android Application
ADC Device	Cds/VR(Variable Resister) Linux Device Driver/Linux Native Application/ Android Application

### ADK-2560 Module

Input Device	Button Switch Firmware
Display Device	Text LCD/ 7-Segment Firmware
Output Device	LED/ Buzzer Firmware
Actuator Device	Vibrator/StepMotor Firmware
Sensor	Humidity and Temperature Sensor Firmware
ADC Device	Cds/VR(Variable Resister) Firmware

### Peripheral Module

Input Device	Button Switch 5EA
Display Device	2x16 Text LCD 1EA 6-Digit Seven Segment 1EA
Output Device	LED 8EA, Buzzer
Actuator	Step Motor, Vibrator
Sensor	Humidity and Temperature measure
ADC Device	CdS, VR(Variable Resister)
Size	122x112mm

### ADK-2560 Module

MCU	ATmega2560
Clock	7.3728MHz
USB Controller	ATmega8U2
GPIO Socket	2x18(1EA), 1x10(1EA), 1x8(5EA)
Size	122x77mm

