

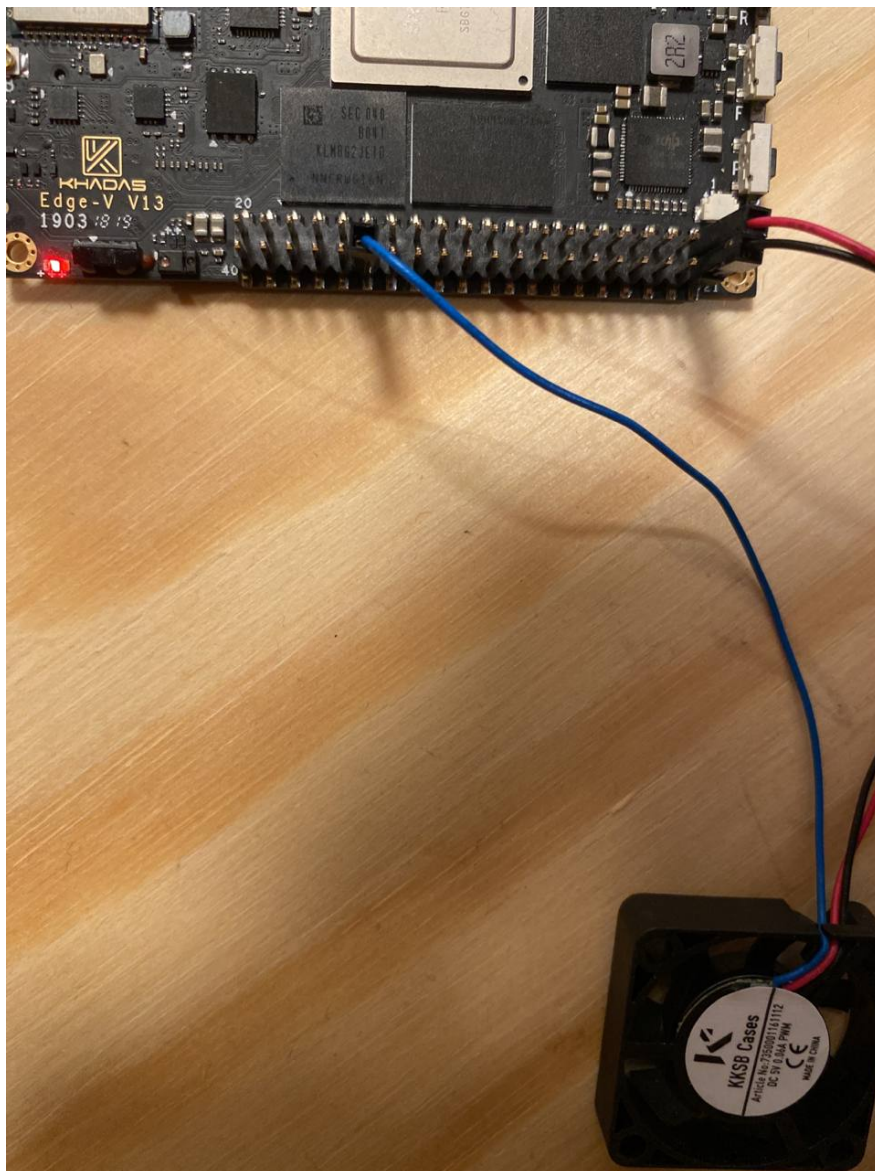
Temperature controlled KKSB PWM fan on Khadas Android

In this KKSB Fan wiring guide, we are taking Khadas Edge-V V13 GPIO as an example running the Official Android 11 OS. But you can use this fan and instruction with other Khadas as well with smaller tweaks.

Connection diagram

The KKSB 30mm 5V PWM Fan has 3 wires. Red for 5V, Black for GND and Blue for the PWM signal.

Function	Pin#	Pin#	Function
+5V	1	21	GND
+5V	2	22	GPIO1_C0
HOST1_DM	3	23	GPIO1_B7
HOST1_DP	4	24	GND
GND	5	25	IGPIO2_A1
MCU_TX	6	26	GPIO2_A0
MCU_TX	7	27	3.3V
MCU_SWIM	8	28	GND
GND	9	29	GPIO3_D0
ADC_IN2	10	30	GPIO4_A0
1.8V	11	31	GPIO3_D7
ADC_IN3	12	32	GPIO3_D2
GPIO3_C0	13	33	GPIO3_D3
GND	14	34	GND
GPIO1_C2	15	35	GPIO3_D6
GPIO1_C1	16	36	GPIO3_D5
GND	17	37	GPIO3_D4
Linux_RX	18	38	GPIO3_D1
Linux_TX	19	39	MCU_PA1
3.3V	20	40	GND



Connect Red to pin 1
Connect Black to pin 21
Connect Blue to pin 35

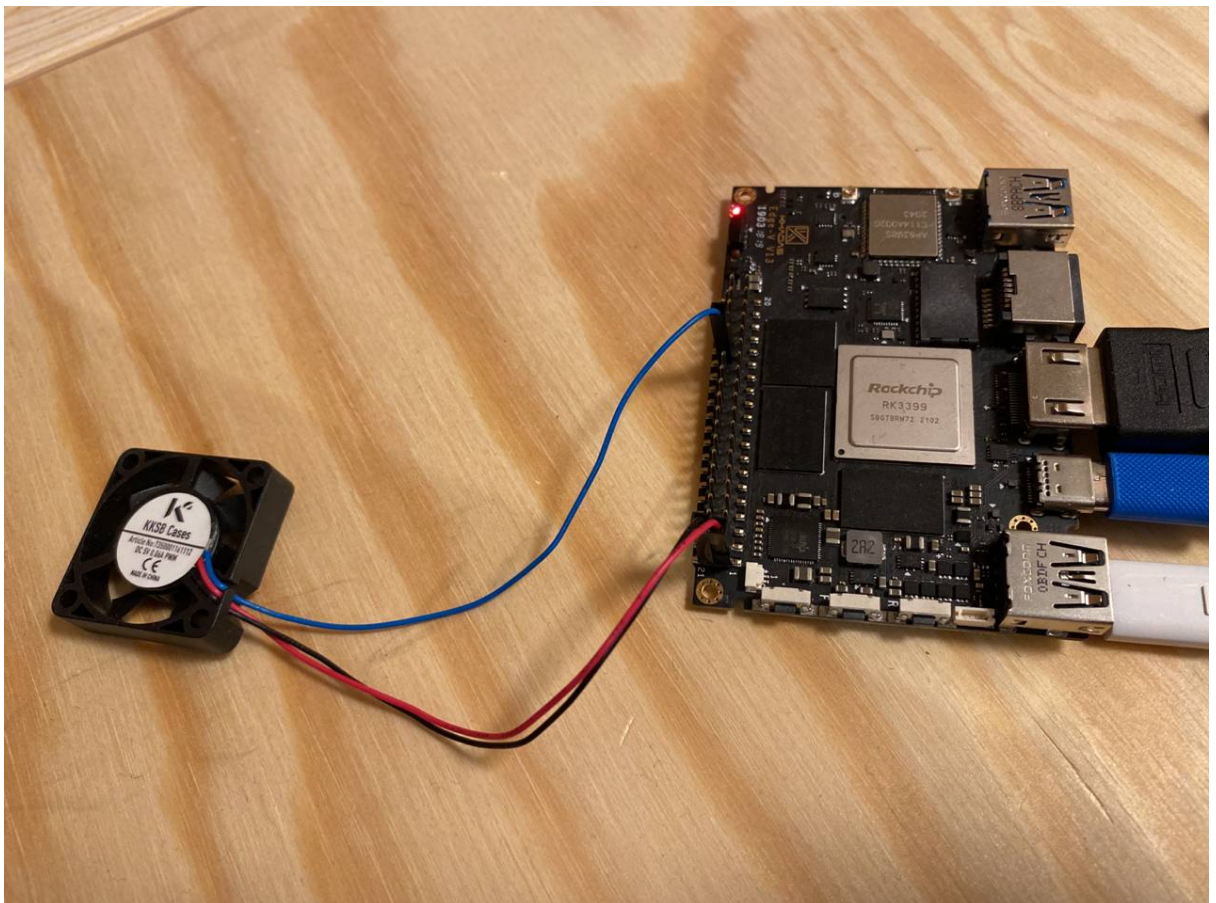
Connect with ADB (Android Debug Bridge) (OPTIONAL)

We will use ADB to transfer the fan control script and install the script runner, but there are many other ways to do it on Android itself.

1. Install adb on a PC and enable USB debugging in Khadas settings. Follow this excellent guide on how to get it up and running:

<https://www.xda-developers.com/install-adb-windows-macos-linux/>

2. Connect with a USB C cable to the USB device port, blue connector in picture:



3. Test if the device is recognised by running “adb devices” in a terminal, a list of connected devices should be shown.

Shell script

This script will run indefinitely measuring the temperature and react by setting the GPIO high or low to turn the fan on or off.

Unfortunately Khadas official Android does not support PWM without recompiling the firmware.

Feel free to change the LEVEL to temperature limits that suit you.

Create a file on your PC named *“fan.sh”* with the following code inside it. Save the file.

Script:

```
#!/bin/sh

LEVEL=75000 # Turn on if temperature is over and off if its is under
LOOP_TIME=10 # Seconds between temperature check

# Initialize GPIO 126(Pin number 35)
echo "126" > /sys/class/gpio/export
echo "out" > /sys/class/gpio/gpio126/direction

# Main loop
while true; do
    # Read Temperature
    cpu=$(cat /sys/class/thermal/thermal_zone0/temp)

    # Control fan speed
    if [ $cpu -lt $LEVEL ]; then
        echo "0" > /sys/class/gpio/gpio126/value
    else
        echo "1" > /sys/class/gpio/gpio126/value
    fi
    sleep $LOOP_TIME
done
```

In a command window, navigate to the script directory and transfer the file to Khadas by running:

```
adb push fan.sh /sdcard/Download/
```

This will transfer the file to */sdcard/Download/* folder on the Khadas. You could use other methods to transfer the file.

To test if the script works by writing the code below in a command window:

```
adb root  
adb shell sh /sdcard/Download/fan.sh
```

And the fan should spin up.

Autostart script

We will be using *SManager* to autostart the script:

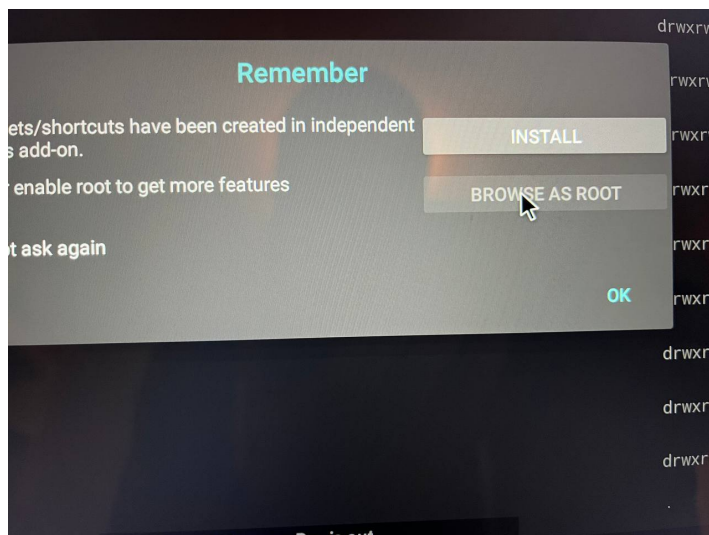
<https://apkpure.com/script-manager-smanager/os.tools.scriptmanager> or

<https://play.google.com/store/apps/details?id=os.tools.scriptmanager>

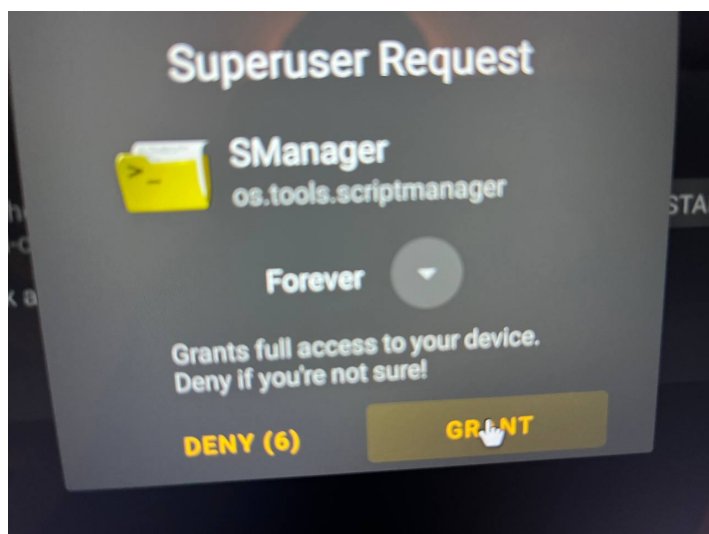
To install *SManager* without Google Play(replace <package.apk> with the name of the SManager package you downloaded.

```
adb install <package.apk>
```

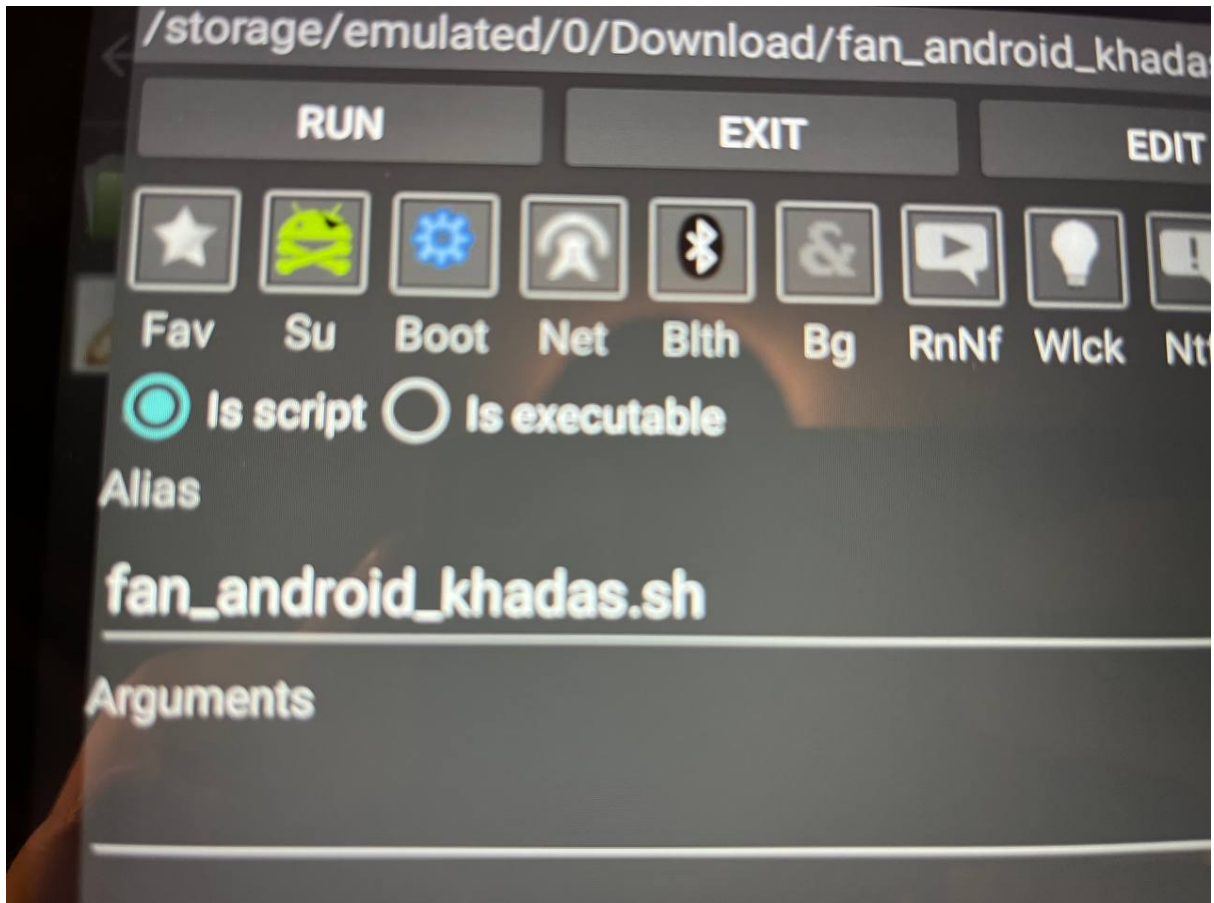
On first start enable root browsing.



And grant superuser privilege to SManager so the script can be started as root.



Navigate to the script, press the Boot icon so it turns blue to autostart the script on boot and set the script to run as root(Su) by turning the pirate android green.



Press Save.

Turn off the Khadas and start it again to test that the fan start