Coolboxx II Temperature Monitoring and Control Board, Part No. FB6261CR

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See: https://github.com/fpovoski/CoolboxII_Board

Setup and Configuration

DO NOT ATTEMPT TO POWER FANS FROM USB-C. Supplied power (5v-14V) to PCI-e connector needs to match the voltage of the PWM fans you are driving. **Please verify your 6 pin PCI-e cable supplies "ground" to the 3 pins closest to the connector's TAB and +12v on the 3 pins closest to the board edge.**

With power off, connect your PCI-e connector, your USB cable with a Type-C connector, 4-pin fan connectors, and 2-pin reset (reset side closest to USB connector, ground closest to blue one-wire connector) to the board and power on. When the board is powered the red led will light. The blue led will flash fast until communication is established with HiveOS whereupon it will strobe slowly. From a HiveOS shell run "coolbox --fan_check" to calibrate maximum fan speeds.

To place on WiFi network use 2.4G phone to connect to "Coolboxx2 Fallback Hotspot" with the password "esphome1" within one minute of powering on the controller. Here you will be able to enter your WiFi SSID and WiFi password. Once connected to your WiFi network, to access the webpage of the device browse to http://coolboxx2.local or the DHCP acquired IP address.

The board is flashed with a binary image that communicates with HiveOS over the USB interface and allows either manual control over fans or automatic control based on the maximum GPU temperature of the GPU temperatures sent by HiveOS and the set target temperature setting. This controls all four PWM fan connectors simultaneously. This can be customized to control fans individually using any combinations of temperature sensors or HiveOS provided GPU temperature readings. It also performs a watchdog function based on the timeout provided by HiveOS.

For Home Assistant access use encryption key: "itqzvhZMJj8wuTJX0GTOuL/ffESFROzUlmcO0u2+sfo="

For customization, please contact us. We are happy to help.

Flashing new firmware over USB or over WiFi. To flash the board with new firmware over USB from a Windows or Linux browser use ESPhome Web Flasher https://web.esphome.io/ with the device powered and connected to Windows or Linux PC. Flashing in HiveOS is supported by shell commands. For flashing over WiFi access board's webpage.

Updating Firmware from HiveOS Shell over USB

1. **cd /home/user**
2. **apt install python-pip** (only need to run once on rig)
3. **pip install esptool** (only need to run once on rig)
4. **wget https://raw.githubusercontent.com/fpovoski/CoolboxxII/coolboxx2-factory.bin**
5. **echo "123" > /tmp/coolbox_maintenance**
6. **esptool.py --chip esp32 –port /dev/ttyUSB0 erase_flash**
7. **esptool.py --chip esp32 --port /dev/ttyUSB0 write_flash -z 0x0 /home/user/coolboxx2-factory.bin**
8. While previous command, in a second shell every 30 seconds run: **touch /tmp/coolbox_maintenance**

The bottom of the board is clearly labeled with connector and pin designations.

Reset Header

CONN	PIN1	PIN2
J1	GND	IO26(RESET)

Dallas One-wire Connectors

CONN	PIN1	PIN2	PIN3
J2	+3.3V	IO27	GND
J3	+3.3V	IO27	GND

PWM KK Style Headers: PIN3 - Fan Speed Input, 5V Tolerant, 1K Pullup Resistor
PIN4 - Fan PWM Output, 5V Drive

CONN	PIN1	PIN2	PIN3	PIN4
J4	GND	PWR	IO33(Tach1)	IO13(PWM1)
J5	GND	PWR	IO34(Tach2)	IO14(PWM2)
J6	GND	PWR	IO35(Tach3)	IO25(PWM3)
J7	GND	PWR	IO39(Tach4)	IO32(PWM4)

JST SH (STEMMA QT/QWIIC)*

CONN	PIN1	PIN2	PIN3	PIN4
J10	GND	+3.3/5V	IO21(SDA)	IO22(SCL)

For voltage selection of JST SH connector (J10) use J11 (+5V - J11.1 to J11.2, +3.3V - J11.3 to J11.2)

***1.27MM JUMPER HEADER:** PIN1-2 -> +5V, PIN3-2 -> +3.3V

CONN	PIN1	PIN2	PIN3
J11	+5V	GND	+3.3V

J8 USB2.0 on USB Type-C connector.

J9 +5-12V 16 amps max. to board and fans. PWR on 3 pins closest to board edge.

P1 and **P2:** Standard WEMOS D1 Expansion Header (see PX.X below)

General ESP32 GPIO to Board Connector Mappings

GPIO	PIN	CONNECTOR	Input	Output	Notes
0	25		pulled up	OK	outputs PWM signal at boot,must be LOW to enter flashing mode
1	35	P2.1	TX pin	OK	debug output at boot
2	24		OK	OK	conn. to on-board LED, must be left floating or LOW to enter flashing mode
3	34	P2.2	OK	RX pin	HIGH at boot
4	26		OK	OK	
5	29	P1.7	OK	OK	outputs PWM signal at boot, strapping pin
6	20		x	x	connected to the integrated SPI flash
7	21		x	x	connected to the integrated SPI flash
8	22		x	x	connected to the integrated SPI flash
9	17		x	x	connected to the integrated SPI flash
10	18		x	x	connected to the integrated SPI flash
11	19		x	x	connected to the integrated SPI flash
12	14		OK	OK	boot fails if pulled high, strapping pin
13	16	PWM1-(J4)	OK	OK	
14	13	PWM2-(J5)	OK	OK	outputs PWM signal at boot
15	23		OK	OK	outputs PWM signal at boot, strapping pin
16	27	P2.6	OK	OK	
17	28	P2.5	OK	OK	
18	30	P1.4	OK	OK	
19	31	P1.5	OK	OK	
20					
21	33	P2.4, SDA-(J10)	OK	OK	
22	36	P2.3, SCL-(J10)	OK	OK	
23	37	P1.6	OK	OK	
24					
25	10	PWM3-(J6)	OK	OK	
26	11	P1.3	OK	OK	
27	12	1WIRE	OK	OK	
32	8	PWM4-(J7)	OK	OK	
33	9	RPM1-(J4)	OK	OK	
34	6	RPM2-(J5)	OK		input only
35	7	RPM3-(J6)	OK		input only
36	4	P1.2	OK		input only
39	5	RPM4-(J7)	OK		input only
EN	3	P1.1			
3.3	2	P1.8			
GND	1	P2.7			
GND	15				
GND	38				
NC	32				
+5		P2.8			