

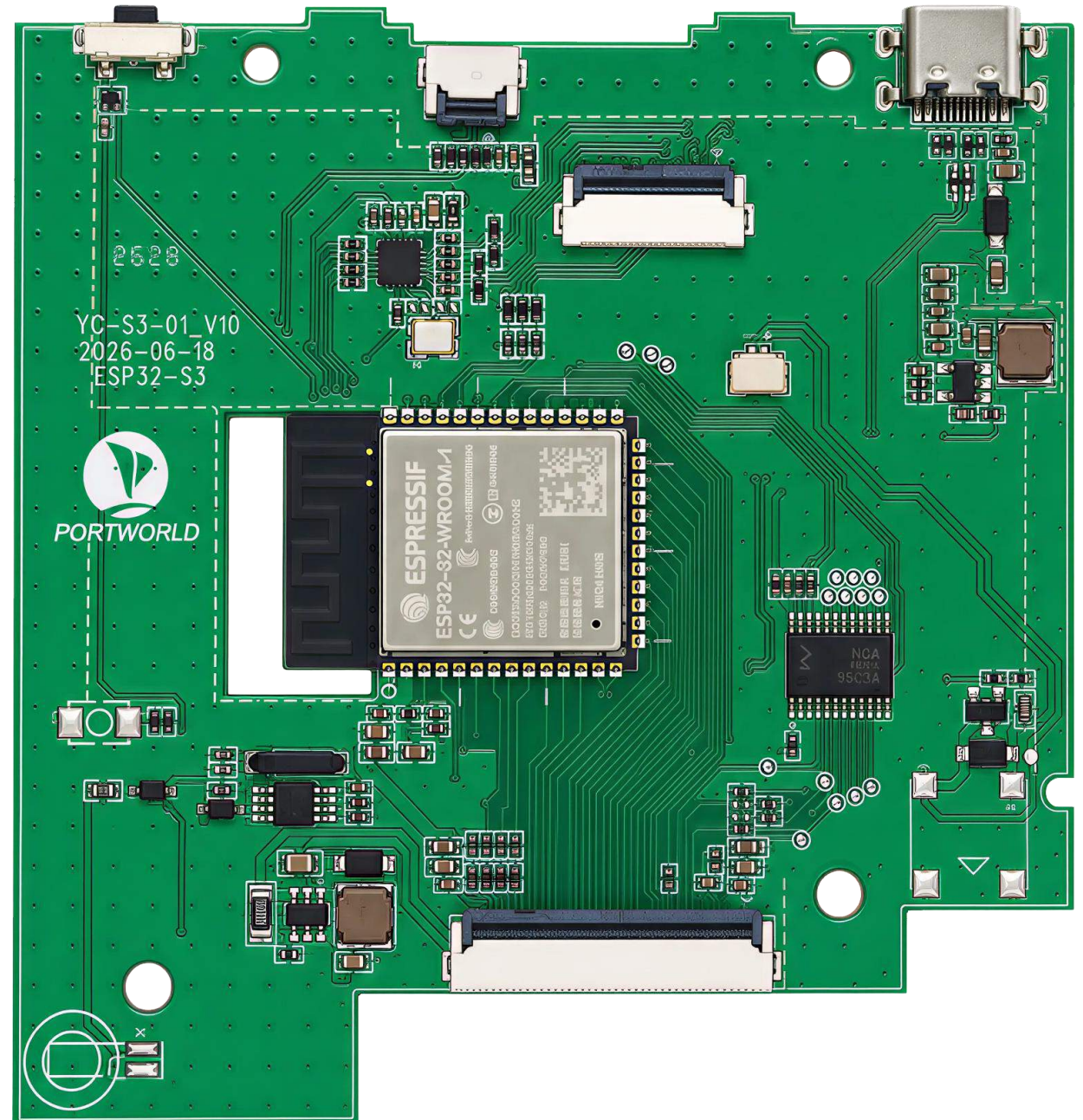


ESP32-YCS3

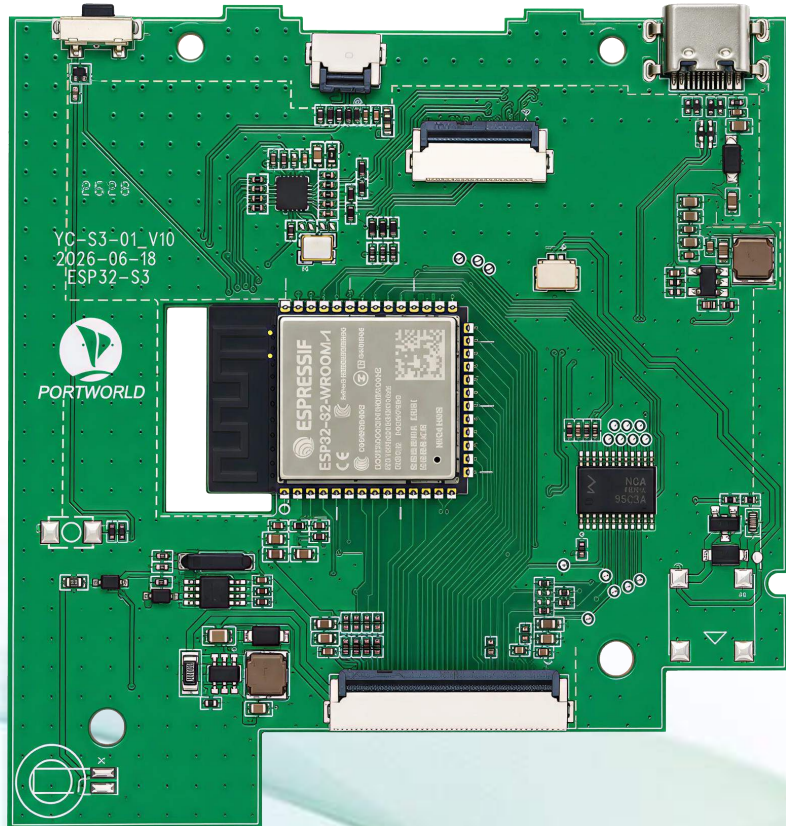
Smart Mainboard

V1.0 2026 -8 -22

PORTWORLD



Product Features



1. Core Processor

- Max CPU frequency: up to 240 MHz.
- Performance: Integrated single-precision Floating-Point Unit (FPU).
- CoreMark® score reaches 1181.60 when running on dual-core at 240 MHz.



2. Light-Weight UI Framework Support

- The ESP32 natively supports the LVGL light-weight UI framework.



3. Multi-OS Compatibility

- It works with the official ESP-IDF development framework, and can also run FreeRTOS and other operating systems.



4. Peripheral Expansion Interfaces

- Supports single-port 100 Mbps Ethernet, MIC, POE, Type-C and more.



5. Wide Application Coverage

- ESP32-S3 is widely deployed in AIoT sectors such as smart home, smart household appliances, smart control panels, smart speakers and industrial IoT.



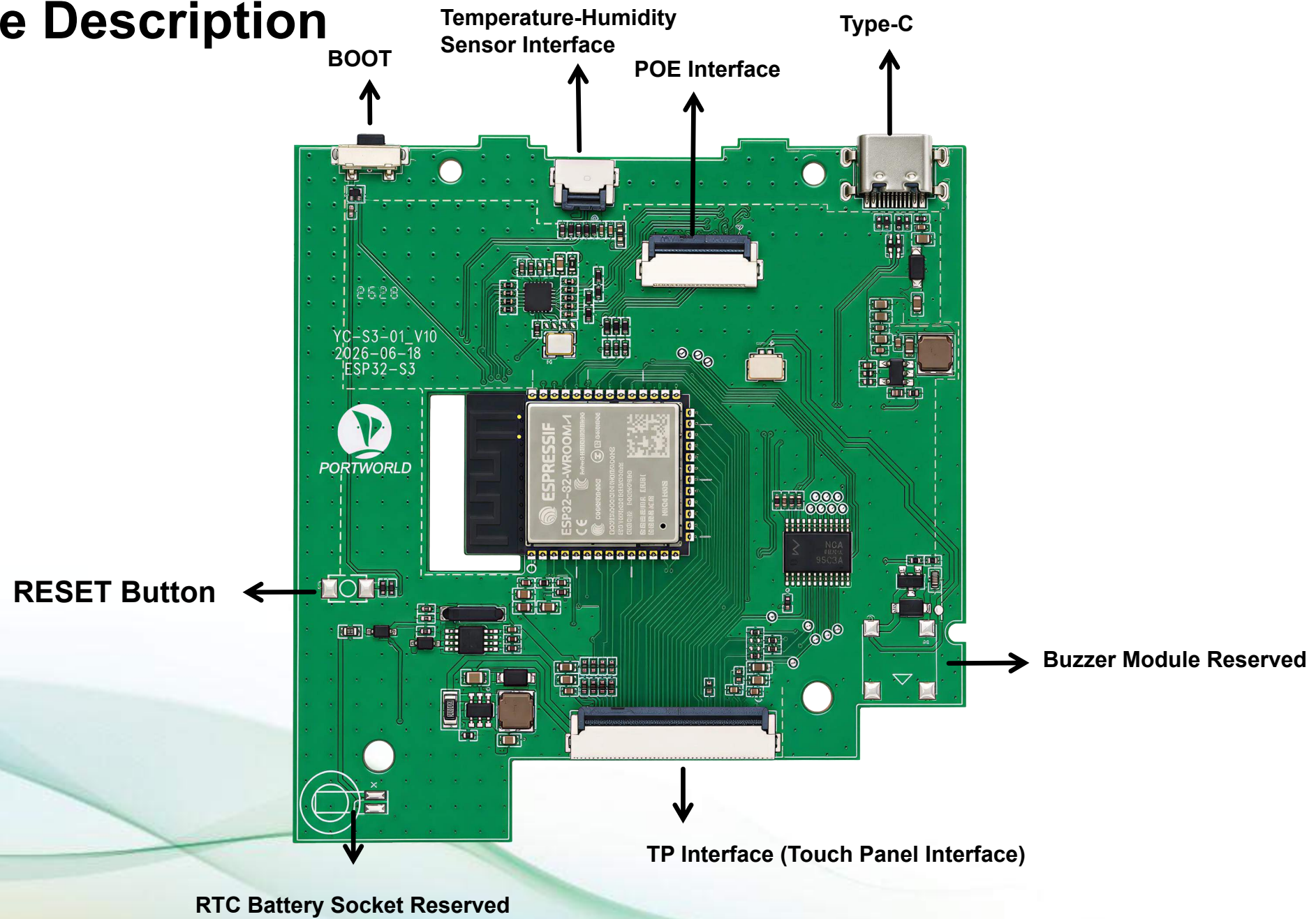
6. Open Resources for Customization

- Complete Software Development Kit (SDK), development documentation and rich sample codes are provided.

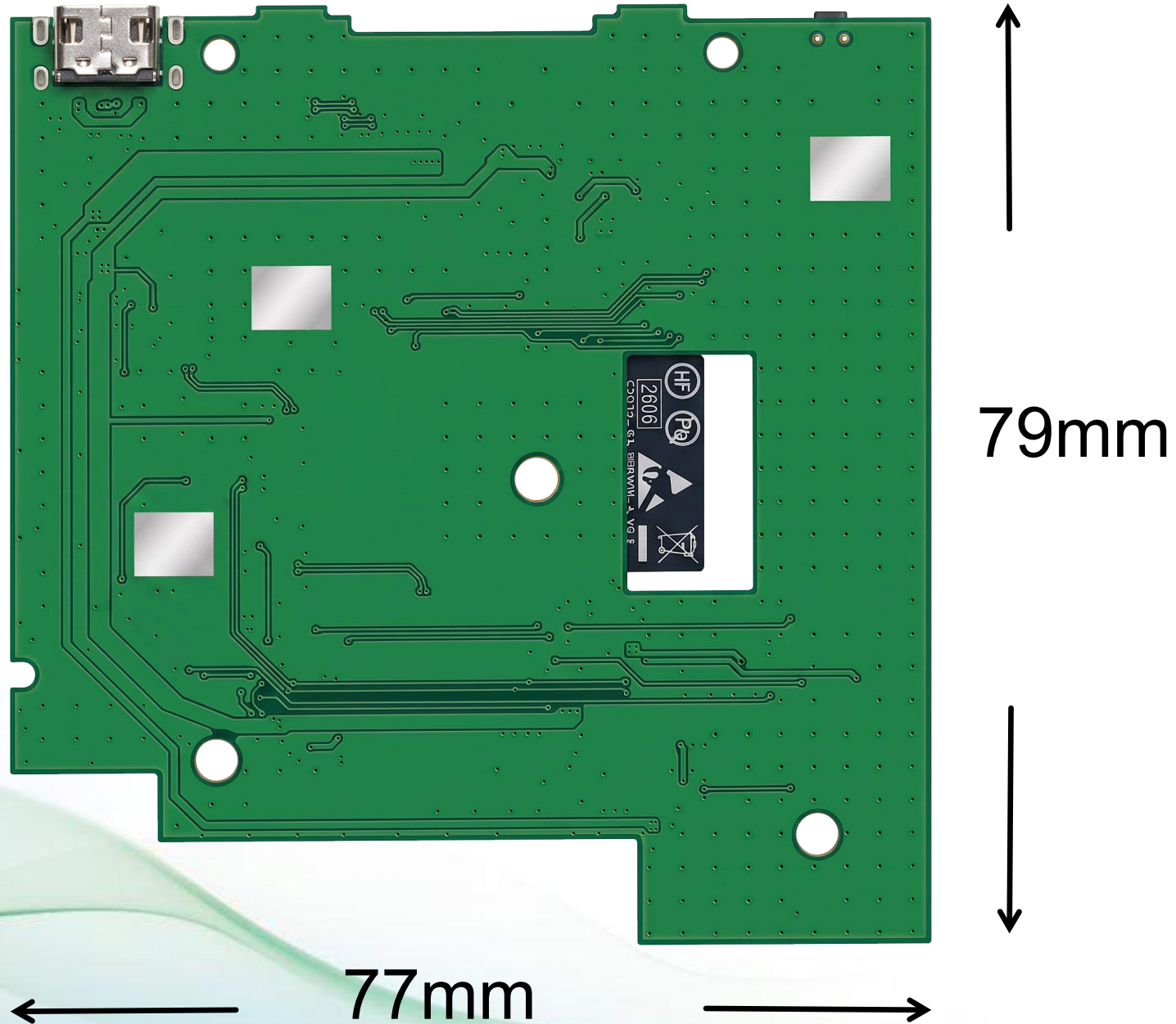
Specifications

Specifications		
Basic Parameters	SOC	ESP32-S3
	CPU	Dual-core 32-bit Xtensa LX7 processor, max CPU frequency up to 240 MHz. Overclocking is supported but exceeding 240 MHz is not recommended for general use.
	Image Processing	Built-in vector instruction set for accelerating neural-network and graphic computation; no dedicated GPU.
	Video Decoding	No hardware video decoder. Only software decoding is available (e.g. MJPG software decoding, limited to very low resolution).
	Memory	512 KB on-chip SRAM; typically equipped with 8 MB on-board PSRAM.
	Storage	Typically equipped with 16 MB on-board Flash.
	OS	Supports FreeRTOS operating system.
	Power Supply	3.3 V / 5 V (voltage tolerance $\pm 5\%$). POE, DC power supply and AC power supply are expandable.
	Dimension	79 mm $\times$ 77 mm
	Power Consumption	Max. power consumption: approx. 1.5 W (5 V / 300 mA). Deep-sleep mode supported for ultra-low power consumption.
	Operating Environment	Operating temperature: - 40 $^{\circ}$ C ~ 85 $^{\circ}$ C
Interface Parameters	Ethernet	1 $\times$ 100 Mbps Ethernet (RJ45, 100 Mbps) with POE power supply
	Wireless Connectivity	Wi-Fi 4 (2.4 GHz, 802.11 b/g/n), Bluetooth 5.0 LE
	Display	1 $\times$ RGB parallel interface (RGB565 / RGB666, max. resolution 800 $\times$ 480), 8080 parallel interface, SPI. MIPI-DSI is not supported (external MIPI bridge IC is required).
	USB	1 $\times$ USB OTG (Type-C connector, supports USB 1.1 full-speed & high-speed)
	Touch	Supports I2C touch interface
	Buttons	1 $\times$ Reset button, 1 $\times$ Boot button
	Other Interfaces	Interface for temperature-humidity sensor module, POE interface
	Expansion Ports	RS485, Relay, etc.

Interface Description



Interface Description



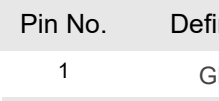
Interface Definition



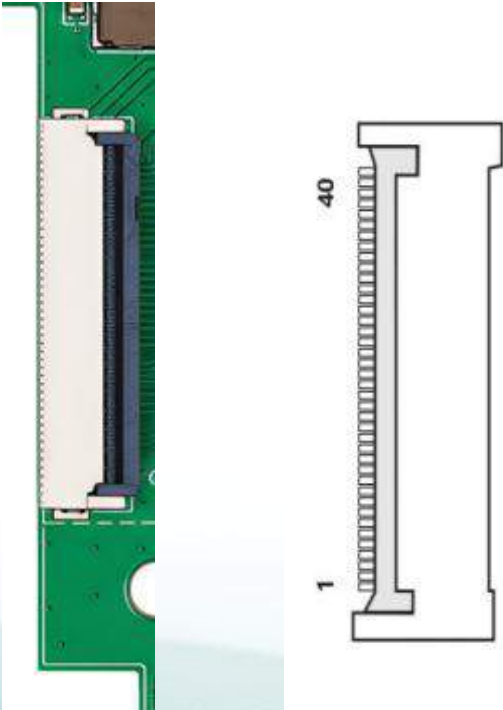
1、T/H Sensor (FPC0.5*4P)

Appearance	Pin No.	Definition	Description
	1	VCC(3.3V)	Power Positive
	2	VCC(3.3V)	LED Power Positive
	3	SDA	I2C Data Line
	4	SCL	I2C Clock Line
	5	GND	Ground
	6	GND	Ground

2、POE (0.8mm*20P)

Appearance	Pin No.	Definition	Description
	1	GND	Ground
	2	PHY_TX+	Transmit differential signal pair
	3	PHY_TX-	Transmit differential signal pair
	4	GND	Ground
	5	PHY_RX+	Receive differential signal pair
	6	PHY_RX-	Receive differential signal pair
	7	GND	Ground
	8	GND	Ground
	9	UART_RX	UART Receive
	10	UART_TX	UART Transmit
	11	GPIO	
	12	GND	Ground
	13	GND	Ground
	14	GND	Ground
	15	NC	
	16	POE+12V	Power Supply
	17	POE+12V	Power Supply
	18	POE+12V	Power Supply
	19	POE+12V	Power Supply
	20	POE+12V	Power Supply

Interface Definition

3、RGB Display (FPC 0.5-mm, 40-Pin)						
Appearance	Pin No.	Definition	Description	Pin No.	Definition	Description
	1	VLED_A	Backlight Anode	21	D5(B5)	Data 0, Blue Bit 5
	2	VLED_K	Backlight Cathode	22	D6(G0)	Data 6, Green Bit 0
	3	VLED_K	Backlight Cathode	23	D7(G1)	Data 7, Green Bit 1
	4	GND	Ground	24	D8(G2)	Data 8, Green Bit 2
	5	VCC	Power Supply	25	D9(G3)	Data 9, Green Bit 3
	6	RST	Reset	26	D10(G4)	Data 10, Green Bit 4
	7	NC	/	27	D11(G5)	Data 11, Green Bit 5
	8	NC	/	28	D12(R0)	Data 12, Red Bit 0
	9	SDA	I2C Data Line	29	D13(R1)	Data 13, Red Bit 1
	10	SCL	I2C Clock Line	30	D14(R2)	Data 14, Red Bit 2
	11	CS	Chip Select	31	D15(R3)	Data 15, Red Bit 3
	12	DE	Data Enable	32	D16(R4)	Data 16, Red Bit 4
	13	VS	Vertical Sync	33	D17(R5)	Data 17, Red Bit 5
	14	HS	Horizontal Sync	34	GND	Ground
	15	PCLK	Pixel Clock	35	TP_INT	Touch Interrupt
	16	D0(B0)	Data 0, Blue Bit 0	36	TP_SDA	Touch I2C Data
	17	D1(B1)	Data 1, Blue Bit 1	37	TP_SCL	Touch I2C Clock
	18	D2(B2)	Data 2, Blue Bit 2	38	TP_RST	Touch Reset
	19	D3(B3)	Data 3, Blue Bit 3	39	TP_VCC	Touch Power Supply
	20	D4(B4)	Data 4, Blue Bit 4	40	GND	Ground



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