

STM32H7R7L8H6H general



Overview

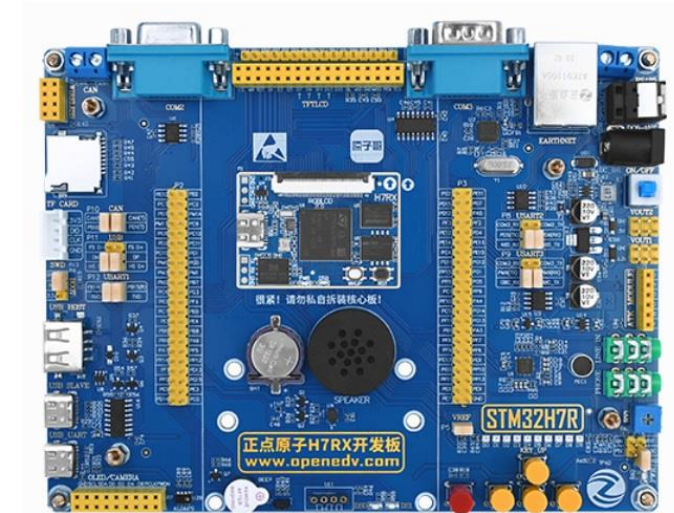
The H7RX development board adopts a core board + baseboard design.

The hardware design of the H7RX baseboard features the following characteristics: The board provides over ten types of standard interfaces. We adopt a core board + baseboard design, allowing one baseboard to support multiple MCUs, reducing redundant investments. A total of 117 I/O ports are exposed, greatly facilitating expansion and application. The board is equipped with a high-performance audio codec chip, a six-axis sensor, a magnetometer, a Gigabit Ethernet port, an ambient light sensor, and various interface chips to meet diverse application requirements. All interfaces are clearly marked with silkscreen labels and outlined with boxes for easy identification. Frequently used peripherals are prominently labeled with large silkscreen text for quick access.

The H7RX core module features the following hardware design characteristics: The core module measures only 30mm × 42mm. The core module comes with built-in interfaces including UART, SWD debugging, RGB LCD display, USB, and 3.3V & 5V power interfaces. It also provides 119 I/O pins through board-to-board connectors, meeting diverse application requirements.

The core module is equipped with:

- Up to 32MB @400MB/s (R) NOR Flash
- Up to 32MB @400MB/s (R/W) HyperRAM
- Up to 16Gb SD NAND
- EEPROM and other memory options

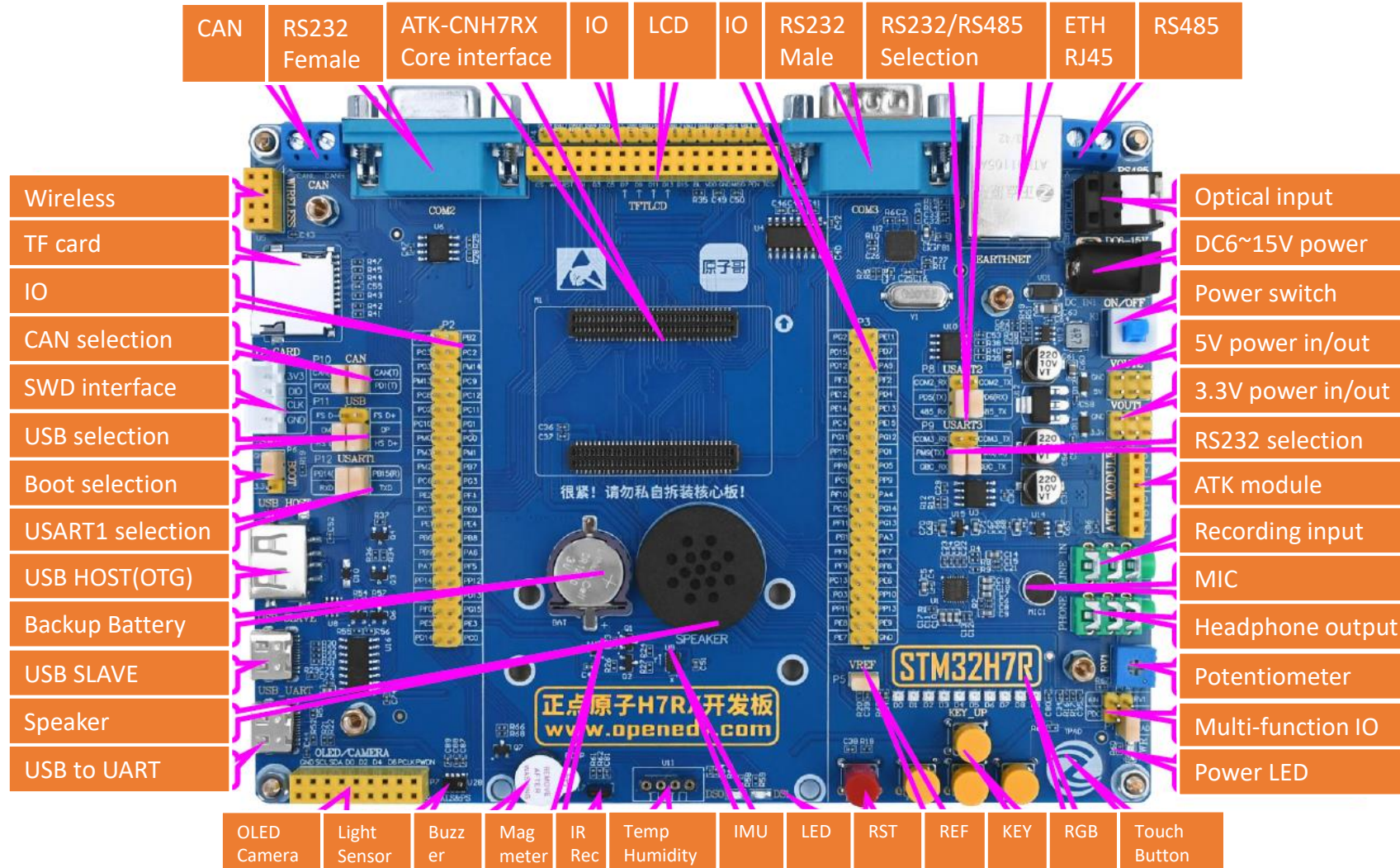


Order Code

Order Code	Brand	Description
E02024-001	ALIENTEK	STM32H7R7L8H6H general

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Base board hardware resource



Base board hardware resource

Pin	Hardware	Description
1	ATK-CNH7RX Core interface	Used for connect core board
2	Power LED	Blue
3	LED	2, red (DS0), green (DS1)
4	RST	For MCU and LCD reset
5	KEY	KEY0、 KEY1、 KEY2、 KEY_UP (can wakeup)
6	Touch button	TPAD
7	Power switch	For control power of board
8	Potentiometer	Used for set RV1 power supply and for ADC test
9	Buzzer	Active buzzer
10	Speaker	For sound generate
11	IR receiver	Used for infrared reception, equipped with an infrared remote control
12	Light sensor	Used to measure light intensity, proximity distance, infrared light intensity, etc.
13	IMU	QMI8658A, a three-axis gyroscope + three-axis accelerometer, is used for attitude detection.
14	Magnet meter	QMC6308 is used to detect the direction of a magnetic field
15	Wireless	Used for interface wireless module, such as NRF24L01
16	Optical input	It can achieve fiber optic reception of SPDIF audio signals.
17	CAN	For CAN communication, with 120ohm terminal resistor

Base board hardware resource

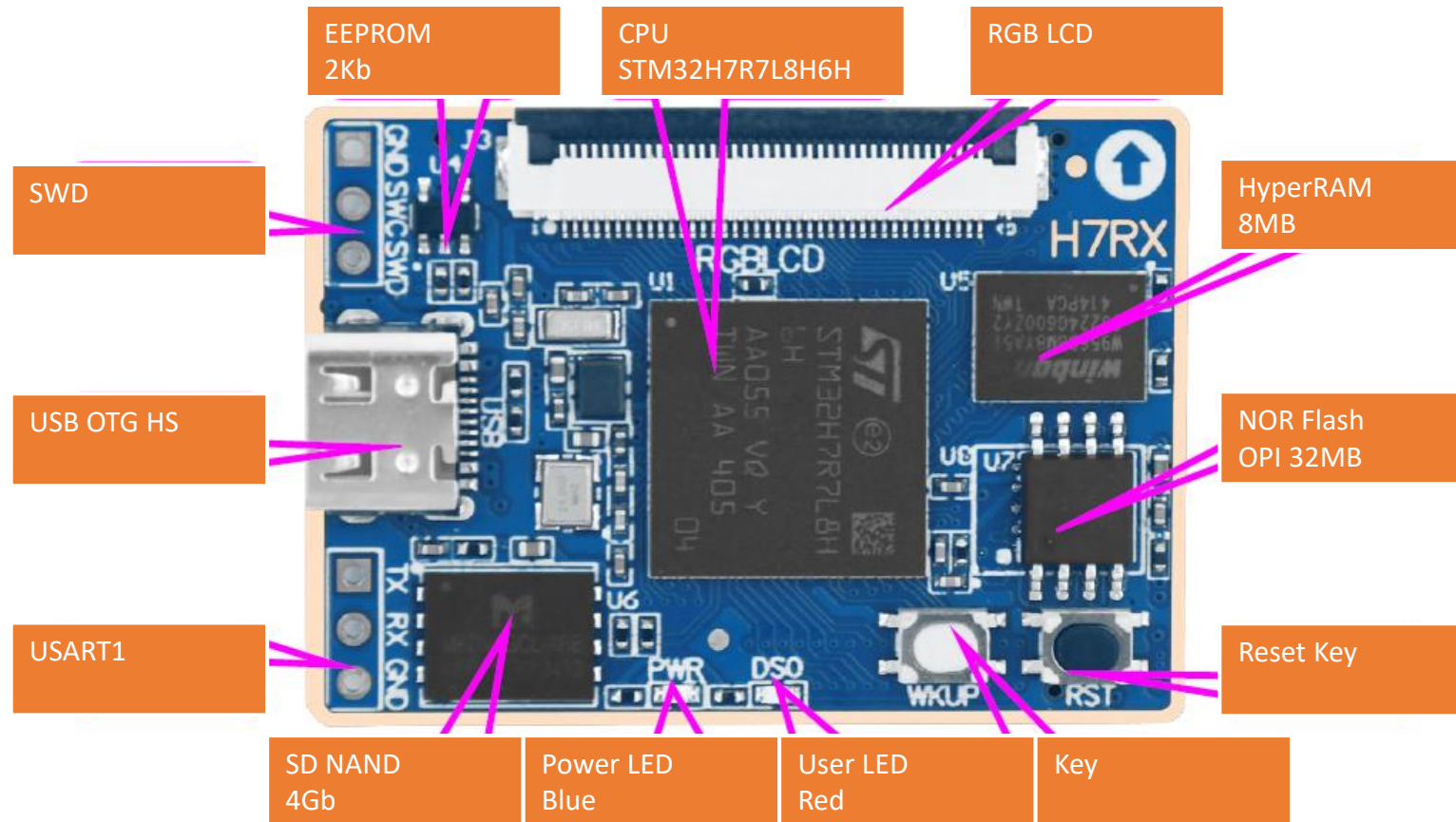
Pin	Hardware	Description
18	RS485	For RS485 communication, with 120ohm terminal resistor
19	RS232	For RS232 communication, with 120ohm terminal resistor
20	Temp humidity	Support DS18B20, DHT11 temperature and humidity sensor
21	ATK module	Support ALIENTEK modules, such as Bluetooth/GPS/MPU6050
22	LCD	Support ALIENTEK 2.8/3.5/4.3/7 inch TRTLCD
23	OLED Camera	OLED and camera shares the same interface, support ALIENTEK modules
24	USB to UART	Used for USB to TTL UART communication
25	USB SLAVE	Used for USB slave communication
26	USB HOST	Used for USB host communication
27	RS232/RS484 selection	Used for selection USART2 for RS232 or RS485
28	RS232 selection	Used for selection UART7 for RS232 or ATK module
29	CAN selection	Used for FDCAN as CAN communication
30	USB selection	Used for selection USB communication FS or HS
31	USART1 selection	Used for selection UASART1 as serial port communication
32	TF card	For TF card connection
33	ETH RJ45	For 10M/100M ethernet communication
34	SWD	For debug, download software

Base board hardware resource

Pin	Hardware	Description
35	MIC	For recording
36	Headphone output	For connecting external headphones, amplifiers, etc.
37	Recording input	For external audio input
38	Multi-function IO	Used for interconnection of DAC/ADC/PWM DAC/TPAD, etc.
39	5V power in/out	Used for 5V power supply input/external supply of 5V voltage
40	3.3V power in/out	Used for 3.3V power supply input/external supply of 3.3V voltage
41	REF	Used for selection ADC reference voltage
42	DC6~15 Power	Supports DC 6V~15V DC power input, using DC005 interface.
43	Boot selection	Used for setting boot mode of STM32
44	Backup battery	Battery used for RTC
45	IO	It provides 117 I/O ports for easy user expansion and use.

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Core board hardware resource



Core board hardware resource

Pin	Hardware	Description
1	MCU	STM32H7R7L8H6H, Flash: 64KB, SRAM: 620KB
2	HyperRAM	8MB
3	NOR Flash	32MB
4	SD NAND	4Gb

Hardware Comparison

Item	STM32H7R3L8H6H general	STM32H7R3L8H6H high	STM32H7R7L8H6H general	STM32H7R7L8H6H high
MCU	STM32H7R3L8H6H	STM32H7R3L8H6H	STM32H7R7L8H6H	STM32H7R7L8H6H
HyperRAM	8MB	32MB	8MB	32MB
NOR Flash	32MB	32MB	32MB	32MB
SD NAND	4Gb	32Gb	4Gb	32Gb

Revision History

Date	Revision	Change description
30/10/2025	1.0	Initial release