

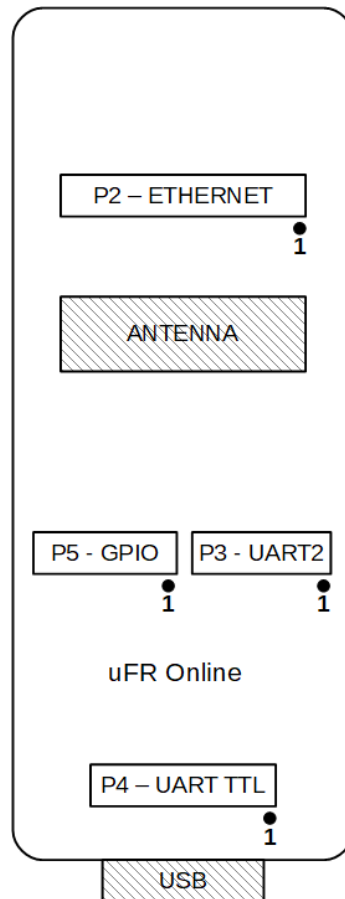


uFR Online pins and connectors description Version 1.3

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Connectors location



Available pins

In the table below is a list of available pins on uFR Online.

| User available uFR Online pins | | |
|----------------------------------------------------------|----------|------------------------------------|
| WROOM-32 | WROVER-E | Description |
| GPIO36 | GPIO36 | External input pin 1 |
| GPIO39 | GPIO39 | External input pin 2 |
| GPIO34 | GPIO34 | Connected to uFR reader TX |
| GPIO35 | GPIO35 | Connected to external UART TX |
| GPIO32 | GPIO32 | Connected to uFR reader reset |
| GPIO33 | GPIO5 | External input/output pin 3 |
| GPIO13 | GPIO13 | Connected to internal RGB LED |
| GPIO2 | X | External output pin 6 |
| GPIO16 | GPIO33 | Connected to uFR reader RX |
| GPIO5 | GPIO18 | External input/output pin 4 |
| GPIO18 | X | External input/output pin 5 |
| GPIO3 | GPIO3 | Connected to Serial to USB FTDI RX |
| GPIO1 | GPIO1 | Connected to Serial to USB FTDI TX |
| GPIO23 | GPIO23 | Connected to external UART RX |
| *WROOM-32 has 6 and WROVER-E has 4 external pins. | | |

User programmable pins

In the table below is a list of user programmable pins on OEM unlocked uFR Online.

January 2021 update: We upgraded the ESP32 SoC on Nano Online from ESP32-WROOM-32 to ESP32-WROVER-E

| UART 1 - Internally connected to uFR Reader | | |
|---------------------------------------------|----------|-------------------------------|
| WROOM-32 | WROVER-E | Description |
| GPIO34 | GPIO34 | Connected to uFR Reader TX |
| GPIO32 | GPIO32 | Connected to uFR Reader reset |
| GPIO16 | GPIO33 | Connected to uFR reader RX |

| UART 2 - connected external P3 connector | | | |
|------------------------------------------|----------|----------|--------------------------------|
| P3 Pin number | WROOM-32 | WROVER-E | Description |
| 1 | X | X | Connected to 3.3V power supply |
| 2 | GPIO35 | GPIO35 | Connected to external UART TX |
| 3 | GPIO23 | GPIO23 | Connected to external UART RX |
| 4 | GPIO32 | GPIO32 | Connected to uFR Reader reset |
| 5 | X | X | Connected to GND |

| Input/Output pins - connected external P5 connector | | | |
|----------------------------------------------------------|----------|----------|-----------------------------|
| P5 Pin number | WROOM-32 | WROVER-E | Description |
| 1 | GPIO36 | GPIO36 | External input pin 1 |
| 2 | GPIO39 | GPIO39 | External input pin 2 |
| 3 | GPIO33 | GPIO5 | External input/output pin 3 |
| 4 | GPIO5 | GPIO18 | External input/output pin 4 |
| 5 | GPIO18 | X | External input/output pin 5 |
| 6 | GPIO2 | X | External output pin 6 |
| *WROOM-32 has 6 and WROVER-E has 4 external pins. | | | |

Input/Output pins additional features

In the table below is a list of additional features available for Input/Output pins on OEM unlocked uFR Online.

January 2021 update: We upgraded the ESP32 SoC on Nano Online from ESP32-WROOM-32 to ESP32-WROVER-E

| Input/Output pins - additional features | | |
|----------------------------------------------------------|-------------------------------------------------|-----------------------------|
| P5 Pin number | List of features - WROOM-32 | List of features - WROVER-E |
| 1 | Deep sleep wake-up, ADC | Deep sleep wake-up, ADC |
| 2 | Deep sleep wake-up, ADC | Deep sleep wake-up, ADC |
| 3 | Deep sleep wake-up, ADC, Touch sensor, PWM, I2C | PWM, I2C |
| 4 | PWM, I2C | PWM, I2C |
| 5 | PWM, I2C | X |
| 6 | Deep sleep wake-up, ADC, Touch sensor, PWM, I2C | X |
| *WROOM-32 has 6 and WROVER-E has 4 external pins. | | |

Non-programmable pins

In the table below is a list of pins that are internally connected and not user programmable pins on OEM unlocked uFR Online.

| External P4 connector. Only available on UART TTL version without USB connector | |
|----------------------------------------------------------------------------------------|--------------------------|
| P4 Pin number | Description |
| 1 | External 5V power supply |
| 2 | UART TX Pin |
| 3 | UART RX Pin |
| 4 | UART RTS Pin |
| 5 | GND |
| 6 | UART DTR Pin |

| External P2 connector. Only available on Ethernet version with dedicated LAN adapter. | |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| P2 Pin Number | Description |
| 1 | Ethernet TX/ RX Positive Channel 1 |
| 2 | Connected to 3.3V power supply |
| 3 | Ethernet TX/ RX Negative Channel 1 |
| 4 | Ethernet TX/ RX Positive Channel 2 |
| 5 | Ethernet TX/ RX Negative Channel 2 |
| 6 | LED1. Active when a valid link is detected and blinks when activity is detected |
| 7 | LED2. Active when the speed is 100Mbps. Inactive when the speed is 10Mbps |
| 8 | External 5V power supply |
| 9 | External 5V power supply |
| 10 | Connected to GND |

Unlocked device GPIOs description

In the table below is a list of internal connected GPIOs on OEM unlocked uFR Online.

January 2021 update: We upgraded the ESP32 SoC on Nano Online from ESP32-WROOM-32 to ESP32-WROVER-E

| Unlocked device internal pins | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------|
| Connected to | WROOM-32 GPIO | WROVER-E GPIO |
| RGB LED | GPIO13 | GPIO13 |
| UART1 TX/RX (internal spring connector) | GPIO34/GPIO16 | GPIO34/GPIO33 |
| UART2 TX/RX (P3 connector) | GPIO35/GPIO23 | GPIO35/GPIO23 |
| External IO (P5 connector) | GPIOs 36, 39, 33, 5, 18, 2 | GPIOs 36, 39, 5, 18 |
| I2C bus SDA/SCL | GPIO12/GPIO14 | GPIO12/GPIO14 |
| *Ethernet MDC/MDIO/Oscillator enable | **GPIO15/GPIO4/x | ***GPIO15/GPIO4/GPIO2 |
| <p>*uFR Online uses LAN8720 PHY IC **WROOM-32 uses GPIO17 to generate clock for LAN8720 ***WROVER-32 uses external 50MHz oscillator and GPIO0 for clock input</p> | | |

Revision history

| Date | Version | Comment |
|------------|---------|--------------------------------------------|
| 2019-07-15 | 1.0 | Base document |
| 2021-03-12 | 1.1 | WROVER-E version pins description added |
| 2021-05-06 | 1.2 | Ethernet connector pinout added |
| 2021-08-25 | 1.3 | Unlocked device internal GPIOs description |