QUICK REFERENCE · TK64

Infrared Receiver

Measures how much infrared arrives. More infrared, higher SIGNAL. Not a remote decoder.

VCC is your board's logic voltage

Strong infrared takes SIGNAL to about 0.4 V under VCC. **On an ESP32, ESP32-S3 or Pico wire VCC to 3V3**: 5 V there can put about 4.6 V on a 3.3 V pin in sunlight. Only an Uno takes 5V.

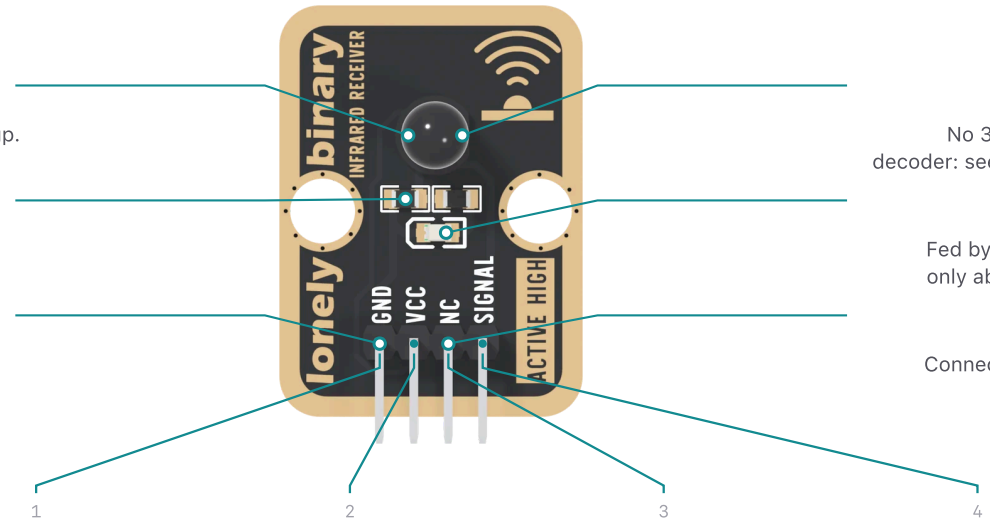
Pins, and which to wire

Parts up, header at the bottom. Wire GND, VCC and SIGNAL; NC is connected to nothing on the board. Read SIGNAL with analogRead.

PT334-6B phototransistor
Black 5 mm, looks straight up. Peak 940 nm, infrared only.

10 kΩ load to GND
Current into volts: 0.1 mA makes 1 V.

GND is the square pad
Count from it. The back prints no pin names.



Not the TK15
No 38 kHz filter, no decoder: sees steady light.

Red LED, 1 kΩ
Fed by the sensor. Lit only above about 2 V.

NC
Connected to nothing on the board.

Front	GND	VCC	NC	SIGNAL
Read it	GND	VCC	●	SIGNAL

It sees every infrared source in view

Sunlight and filament bulbs read high; a white LED lamp barely registers. For a beam with the TK63, read with the emitter off, then on, and use the difference: the room cancels.

Where SIGNAL tops out

Covered

0 V, about

Under 100 nA of dark current: under 1 mV across 10 kΩ.

VCC on 3V3

2.9 V ceiling, worked out

Reached at about 1.2 mA of photocurrent; about 3822 on an ESP32-S3.

VCC on 5V

4.6 V ceiling, worked out

Uno only. Reached at about 3.1 mA; about 941 of 1023.

Below about 2 V the reading is the current times 10 kΩ, 10 mV per microamp. Above it the LED takes most of any extra current, and the reading climbs eleven times more slowly.

Worked out from the net list, a red LED's usual 2 V drop and Everlight's PT334-6B sheet (DPT-0000263 Rev 4): 0.7 mA minimum and 2 mA typical at 1 mW/cm² of 940 nm, VCE(sat) 0.4 V, 15 µs into 1 kΩ. digitalRead calls it HIGH only past about 0.7 mA on an S3. The sketch compiles for an ESP32-S3 and an Uno; the block has not been bench-tested for this sheet.

The first reading, on an ESP32-S3

Arduino IDE · Board: ESP32S3 Dev Module · USB CDC On Boot: Enabled · No library

```
// The analog pin SIGNAL is wired to.
// Uno: A0. ESP32: 34. ESP32-S3: 4. Pico: 26.
const int IR_PIN = 4;

void setup() {
  Serial.begin(115200);
}

void loop() {
  // The mean of 16 reads, to steady the number.
  long sum = 0;
  for (int i = 0; i < 16; i++) {
    sum += analogRead(IR_PIN);     // more infrared, higher
  }
  Serial.println(sum / 16);
  delay(200);
}
```

```
0
0
0
```

Serial Monitor at 115200, five numbers a second: 0 or near it with the dome covered, higher as infrared arrives, and jumping while a TV remote button is pressed at it.

Wiring

	FRONT	S3	UNO	ESP32	PICO
1	GND	GND	GND	GND	GND
2	VCC	3V3	5V	3V3	3V3
3	NC				
4	SIGNAL	GPIO 4	A0	GPIO 34	GP26

Hole 1 is the square pad. VCC is each board's own logic voltage: 3V3 on the ESP32 boards and the Pico, 5V on the Uno. SIGNAL goes to an analog pin, on ADC1 on the ESP32 boards so Wi-Fi does not block it.

A break-beam with the TK63

Stand the TK63 and TK64 domes facing each other. Each round: TK63 off, wait 2 ms, read; TK63 on, wait 2 ms, read; keep on minus off, which is the beam alone. Learn it at start-up with the path clear, and call the beam broken under half of that. TK63 SIGNAL: GPIO 6 on an S3, GPIO 22 on an ESP32, D3 on an Uno, GP17 on a Pico.

When it does not work

Reads 0 whatever you do

VCC missing looks like darkness. Then check the pin, and test with a TV remote.

A phone torch does nothing

A white LED has almost no infrared. Use a remote or the TK63.

Wanders or jitters

It reads every infrared source in view. Average, and subtract the room.

Stuck at the top, LED lit

Sunlight or a filament lamp on it. Shade the dome with a short black tube.

ESP32 reads 0 with Wi-Fi on

SIGNAL is on an ADC2 pin. Use GPIO 34, or GPIO 4 on an S3.

Cannot read my remote's buttons

By design: no decoder. The TK15 reads remotes.

Specifications

Sensor	Everlight PT334-6B phototransistor	**Sees**	760 to 1100 nm, peak 940 nm
Photocurrent	0.7 mA min at 1 mW/cm²	**SIGNAL**	Emitter, 10 kΩ to GND: 1 V per 0.1 mA
Dark	About 0 V	**Ceiling**	About VCC – 0.4 V
Indicator	Red LED on SIGNAL, above about 2 V	**Supply**	Your board's logic voltage