

# **MiniIR\_B13**

## **Manual**

R0.0

## One. Functions & Features:

- > Rechargeable Battery
- > TFT size : 1.3inch(display resolution: 240x240)
- > Power port : USB Type-C 5V/1A
- > Resolution : 32x24
- > Temperature measurement range :  $-40^{\circ}\text{C} \sim 300^{\circ}\text{C}$
- > Measurement accuracy :  $\pm 2^{\circ}\text{C}$  (Center point,  $25^{\circ}\text{C}$ )
- > Refresh rate : 8HZ(Max)
- > No need to calibrate
- > FOV :  $55^{\circ} \times 35^{\circ}$
- > Display center point , maximum and minimum temperature

- > Make photo (10PCS photos)
- > Communicate with Computer (USB CDC)

## Two. IR interface description



Middle temperature(White tracking cross)

Max temperature(Magenta tracking cross)

Min temperature(Green tracking cross)

## Three. Operate description

1. Charging : Use USB Type-C line, 5V/1A
2. Power ON : **Press Middle Key Long**  
Keep press Middle Key until screen display “START...”.
3. Power OFF: **Press Middle Key Long**  
Press middle Key, until screen display “88”
4. Make photo: **Press Middle Key**
5. Review photo: **Press Left or Right Key**
6. Quit photo: **Press Left or Right Key Long**
7. Delete photo: In viewing photo, **Press Middle Key**(display “YES NO”),  
and **Press Left or Right Key** to select “YES”, **Press Middle Key** confirm.

#### **Four. Copy photo(Windows 10)**

1. Power ON
2. Device connect to computer by USB line
3. Check COM(windows set->device)
4. Open MiniIR\_B13 software
5. Select COM
6. Click "Open COM"
7. Click "Copy Photo", Photos will copy from device to your computer software file/DeviceImage

## **Five. Communicate with Computer**

1. Use USB CDC(No need driver, Windows 10)

2. USART parameter: StopBits = 1; Parity\_No; DataLengths = 8b;baudrate = 115200 or others.

3. Serial port command format

3.1.1. Host read command(6 Bytes)

Frame header (High 8)	Frame header (Low 8)	Read CMD (1byte)	Read register addr (1byte)	Cal (High 8)	Cal (Low 8)
0x5A	0x5A	0x03	0x00-0x09		

Cal is: before Cal bytes adds.

eg. The CMD to read register address 0x00 is as below:

0x5A   0x5A   0x03   0x00   0x00   0xB7

Cal is:  $0x5A+0x5A+0x03+0x00=0x00B7$

### 3.1.2. Device responds (8 Bytes)

Frame header (High 8)	Frame header (Low 8)	Data Lengths (High 8)	Data Lengths (Low 8)	Data (High 8)	Data (Low 8)	Cal (High 8)	Cal (Low 8)
0x5A	0x5A	0x00	0x02				

eg. After host send CMD to read register 0x00, the slave responds:

0x5A   0x5A   0x00   0x02   0x0C   0x83   0x01   0x45

Device return data lengths is 0x0002, data is 0x0C83

### 3.1.3. Host write command(8 Bytes)

Frame header (High 8)	Frame header (Low 8)	Write CMD (1byte)	Register addr (1byte)	Data (High 8)	Data (Low 8)	Cal (High 8)	Cal (Low 8)
0x5A	0x5A	0x06	0x0A-0x09				

eg. Host write data 0x0001 to register 0x09

0x5A   0x5A   0x06   0x09   0x00   0x01   0x00   0xC4

### 3.1.4. Device responds (8 Bytes)

Frame header (High 8)	Frame header (Low 8)	Data Lengths (High 8)	Data Lengths (Low 8)	Data (High 8)	Data (Low 8)	Cal (High 8)	Cal (Low 8)
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0x5A	0x5A	0x00	0x02	Same as host write		
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eg. After host write 0x0001 to register 0x09, the slave responds:

0x5A 0x5A 0x00 0x02 0x00 0x01 0x00 0xB7

Device return data lengths is 0x0002, data is 0x0001

#### 4. Register describe (Register Value is 16bit signed Int)

##### 4.1.

Register No	Register addr	Register Name	Operate
R0	0x00	To (MID temperature)	Only Read

$To = R0/100$ , eg. R0 is 0x0C83(16bit signed Int),  $To(MID Temp) = 0x0C83/100=32.03^{\circ}C$

4.2.

Register No	Register addr	Register Name	Operate
R1	0x01	Ta (Sensor temperature )	Only Read

4.3.

Register No	Register addr	Register Name	Operate
R2	0x02	Tmax (Max temperature )	Only Read

4.4.

Register No	Register addr	Register Name	Operate
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R3	0x03	Tmin (Min temperature )	Only Read
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4.5.

Register No	Register addr	Register Name	Operate
R4	0x04	Taver (768 points average temperature)	Only Read

4.6.

Register No	Register addr	Register Name	Operate
R7	0x07	Emissivity	Read/Write

R7 Value is 1-100, Emissivity=R7/100.

eg. R7 is 0x005F, Emissivity= 0x005F/100=0.95.

R7 system default is 0x005F, Emissivity=0.95.

4.7.

Register No	Register addr	Register Name	Operate
R8	0x08	Mode(Output mode)	Read/Write

R8 register value is 0x0000,0x0001,0x0003

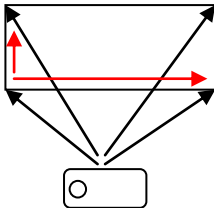
R8 = 0x0000, Auto output 768 points temperature. Frame is below:

Total	Frame	Data	Data	768 points	Ta	Ta	Cal
1544	header	Lengths	Lengths	(1536 Bytes)	(High	(Low	(2 Bytes)
Bytes	(2 Bytes)	(High 8)	(Low 8)		8)	8)	

	0x5A5A	0x06	0x02		Sensor Temp	
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Value is 16bit signed Int/100, eg. 0x0C83/100=32.03 °C

Output rules:



Left to Right and then Down to Up

R8 = 0x0001, Auto output Max,Min,Aver,Mid temp. Frame is below:

Total 14 Bytes	Frame header (2 Bytes)	Data Lengths (2 Bytes)	Max Temp (2 Bytes)	Min Temp (2 Bytes)	Average Temp (2 Bytes)	Middle Temp (2 Bytes)	Cal ( 2 Bytes)
	0x5A5A	0x0008					

eg. 0x5A 0x5A 0x00 0x08 0x0B 0x6D 0x0A 0x41 0x0A 0xB3 0x0A  
0x6C 0x02 0xB2

Max temp is  $0x0B6D/100=29.25^{\circ}\text{C}$

Min temp is  $0x0A41/100=26.25^{\circ}\text{C}$

Aver temp is  $0x0AB3/100=27.39^{\circ}\text{C}$

Mid temp is  $0x0A6C/100=26.68^{\circ}\text{C}$

R8 = 0x0003, Shut down output

4.8.

Register No	Register addr	Register Name	Operate
R9	0x09	IR Refresh Rate	Read/Write

R9 value is 0x0000->1HZ,0x0001->2HZ,0x0002->4HZ,0x0003->8HZ

system default is 0x0003->8HZ

## Six. Questions

1. Can it be used for searching for animals outdoors at night?

→ No

2. The optimal distance for use?

→ Within 2 meters (related to object size)

3. Can it be used to check if the under floor heating is leaking?

→ No. This product has limited accuracy and is not recommended for this requirement.

4. Can it be used to find heat sources for electronic board?

→ This product has limited accuracy and is not recommended for this requirement.