



X46E45 infrared thermal imager module Technical Specifications



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1 Product Description

X46E45 series infrared thermal imager uses a 12 μ m vanadium oxide uncooled infrared focal plane detector, a high-performance infrared lens, an excellent imaging processing circuit, and is embedded with advanced image processing algorithms. It has the characteristics of small size, low power consumption, fast startup, and excellent imaging quality.

the X46E45 series infrared thermal imager movement fully considers the requirements of high and low temperature working performance to ensure that the whole machine has excellent environmental adaptability.

X46E45 series infrared thermal imager movement features:

1. It has all-weather passive thermal imaging function, has strong smoke penetration performance, and can be used in a wide range of ambient temperature.
2. The high frame rate design enables the operator to observe fast-moving targets.
3. Standard BT656 data output .



Figure 1 X46E45 infrared thermal imager movement renderings

2 Product Specifications

Detector	
Detector Type	Vanadium Oxide Uncooled Detector
Number of pixels	640 × 512
Pixel spacing	12 μ m
Wavelength range	8~14 μ m
Thermal sensitivity (NETD)	< 35 mk (@25° C , F# = 1.0)
Frame rate	50 fps
Image processing and display	
Imaging time	<5 s

Calibration method	Support automatic correction (timing, temperature difference), manual
Non-uniformity	Shutter Correction Technology
False Color Mode	Black hot, white hot, red hot, fusion
Image detail	support
Contrast, brightness	support
AGC Mode	Automatic mode
Noise Reduction	support
Electronic	$\times 1, \times 2, \times 4, \times 8$
Bad pixel repair	support
Mirror	Off, Vertical, Horizontal, Center
Image Output	8-bit BT.656 (720*576)
Parameter	support
cursor	support
menu	support
Electrical Characteristics	
Video Interface	8-bit BT.656
Input power voltage	12VDC
Communication	UART
Steady-state power	$< 2 \text{ W}$
Environmental parameters	
Operating	$-40^{\circ}\text{C} \sim 60^{\circ}\text{C}$
Storage temperature	$-50^{\circ}\text{C} \sim 85^{\circ}\text{C}$
Vibration shock	750g / 1 ms
humidity	$< 90\% \text{ RH}$
Lenses	
focal length	Athermal 45 mm (F# 1.2)
Focus mode	Manual
Field of view	$9.7^{\circ} \times 7.8^{\circ}$ (horizontal field of view $\times$ vertical field of view)
Spatial resolution	0.267 mrad
Physical properties	
Dimensions	$\varnothing 46 \text{ mm} \times 69.5 \text{ mm}$
weight	$< 130 \text{ g}$
Mounting holes	Two M3 $\times$ 5 on the bottom

3 Electrical interface

3.1 Interface Diagram

The infrared thermal imager has two external interfaces , namely 10- pin SH interface (JTAG debugging) and 20 - pin FCC interface (BT656, serial port, power supply) . The interface diagram is shown in the figure below.

- 10- pin SH connector provides FPGA program download and debugging.
- 20 PIN FCC The connector provides BT656 output interface, serial port, power interface

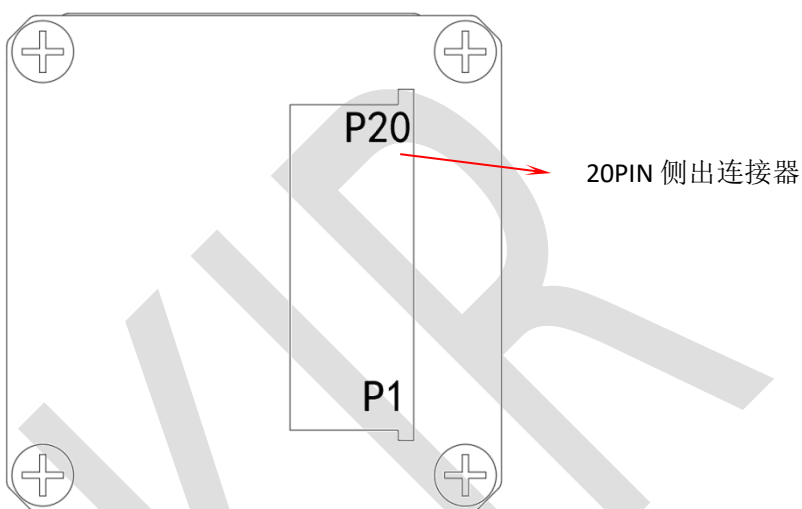


Figure 2 Interface board connector definition

3.2Interface Definition

The infrared thermal imager has two external interfaces : one 10- pin SH connector and one 20 - pin FCC interface . The signal definition of the 10- pin SH connector is shown in Table 1, and the signal definition of the 20- pin FCC connector is shown in Table 2.

Table 1 Signal definition of 10 -pin SH connector

Pin	Signal Name	Function	Description
1	UART_TXD	Communication	UART_TXD
2	UART_RXD	Communication	UART_RXD
3	3.3V	POWER	POWER
4	TDI	JTAG_TDI	JTAG_TDI
5	GND	GND	GND
6	TCK	JTAG_TCK	JTAG_TCK
7	GND	GND	GND
8	TMS	JTAG_TMS	JTAG_TMS
9	GND	GND	GND
10	TDO	JTAG_TDO	JTAG_TDO

Table 2 Signal definitions of 20 PIN FCC connector (52745-2097)

Pin	Signal Name	Function	Description
1	DATA_CLK	LVCMOS_3.3V	CLK



2	DATA0	LVC MOS_3.3V	RAW_BIT0
3	DATA1	LVC MOS_3.3V	RAW_BIT1
4	DATA2	LVC MOS_3.3V	RAW_BIT2
5	DATA3	LVC MOS_3.3V	RAW_BIT3
6	DATA4	LVC MOS_3.3V	RAW_BIT4
7	DATA5	LVC MOS_3.3V	RAW_BIT5
8	DATA6	LVC MOS_3.3V	RAW_BIT6
9	DATA7	LVC MOS_3.3V	RAW_BIT7
10	GND	GND	GND
11	GND	GND	
12	GND	GND	
13	GND	GND	
14	/	/	/
15	VIN	VIN	POWER(12V)
16	VIN	VIN	
17	VIN	VIN	
18	VIN	VIN	
19	UART_TXD	Communication	UART_TXD
20	UART_RXD	Communication	UART_RXD

4 Mechanical interface

4.1 Overall size

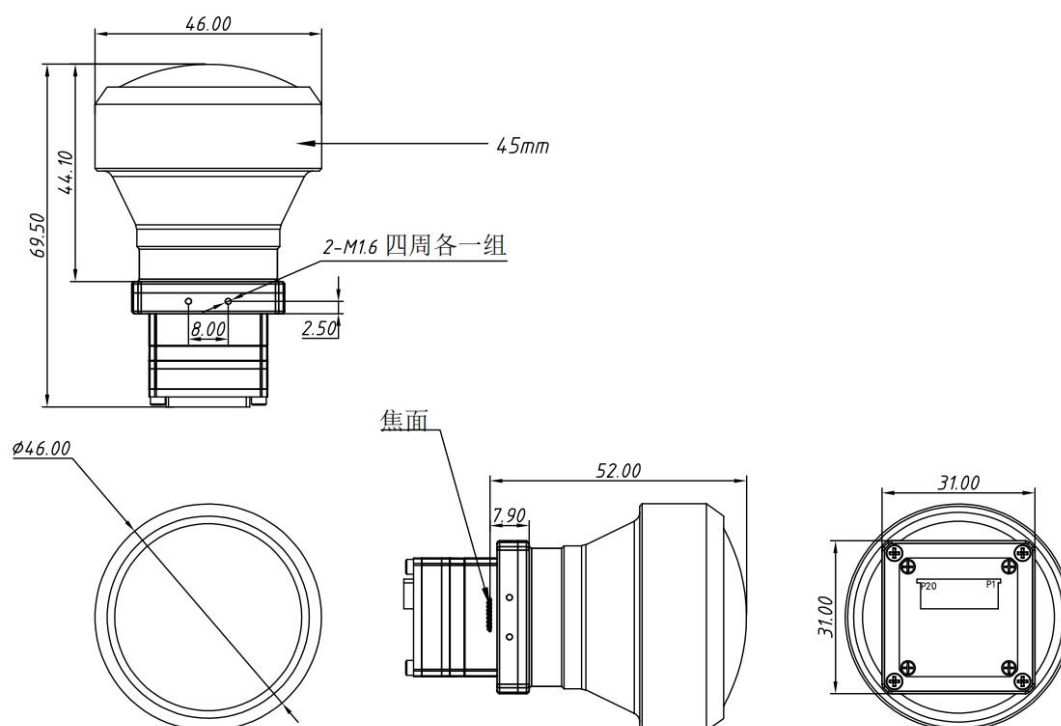


Figure 3 Structural dimensions



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