640×512 Series Uncooled Infrared Modules

Product Manual

Table of Contents

5.4 SDI Expansion

5.5 CVBS Expansion

Version History

Version	Date	Note
V0.1	2024-3-10	Initial version；

1. Product Description

The 640×512 series of uncooled infrared modules utilize low-power FPGA image processing chips and incorporate proprietary high-performance image processing algorithms. They offer a variety of digital interfaces, enabling flexible integration with various intelligent processing platforms. These modules feature high performance, compact size, lightweight design, low power consumption, and low cost. Their industrial-grade quality meets the demanding requirements of numerous application environments.

2. Applications

. UAV reconnaissance and search and rescue
. Life detection devices
. Industrial endoscopes
. Robotics
. Visual augmentation systems for assisted driving in automobiles and vessels
. Unmanned ground systems
. Infrared detection
. Handheld cameras for firefighting
. Portable wearable platforms
. Security surveillance

3. Lens Selection

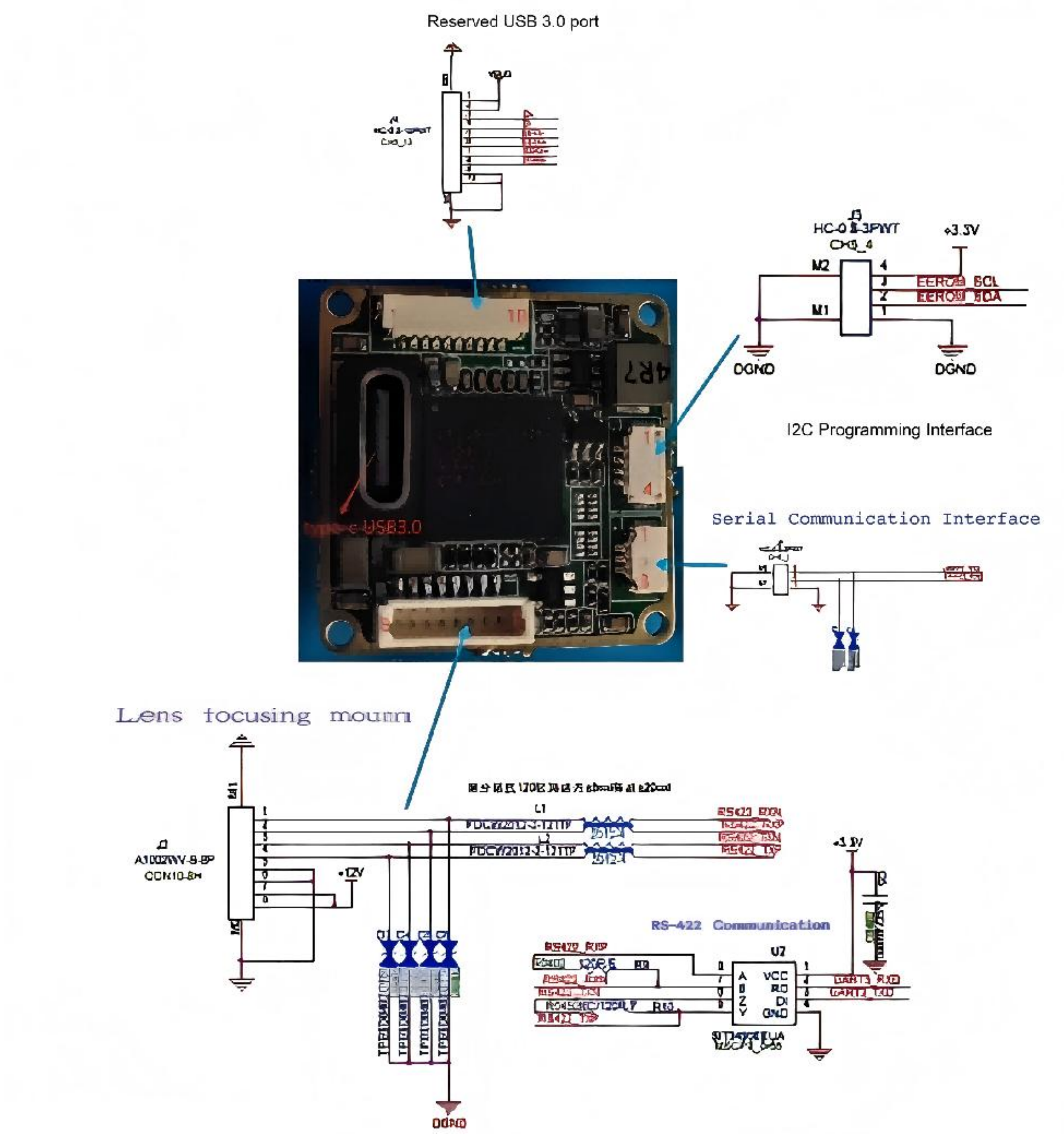
9.1mm/F1.0	FOV: 28.4 (H) × 21.5 (V)	FOV: 45.8 (H) × 37.3 (V)
	Detection: 1,100 m	Detection: 1,100 m
	Identification: 250 m	Identification: 250 m
	Recognition: 170 m	Recognition: 170 m
13mm/F1.0	FOV: 20.1 (H) × 15.1 (V)	FOV: 32.9 (H) × 26.5 (V)
	Detection: 1,300 m	Detection: 1,300 m
	Identification: 320 m	Identification: 325 m
	Identification: 190 m	Identification: 190 m
19mm/F1.1	FOV: 13.8 (H) × 10.3 (V)	FOV: 22.8 (H) × 18.3 (V)
	Detection: 2000 m	Detection: 2000 m
	Recognition: 500 m	Recognition: 500 m
	Identification: 250 m	Identification: 250 m
25mm/F1.0	FOV: 10.5 (H) × 7.9 (V)	FOV: 17.5 (H) × 14.0 (V)
	Detection: 2800 m	Detection: 2800 m
	Recognition: 700 m	Recognition: 700 m
	Identification: 350 m	Identification: 350 m
35mm/F1.0	FOV: 7.5 (H) × 5.7 (V)	FOV: 12.5 (H) × 10.0 (V)
	Detection: 3,900 m	Detection: 3900 m
	Recognition: 970 m	Identification: 970 m
	Identification: 490 m	Recognition: 490 m
50mm/F1.0	FOV: 5.2 (H) × 3.9 (V)	FOV: 8.7 (H) × 7.0 (V)
	Detection: 6,100 m	Detection: 6100 m
	Recognition: 1,500 m	Identification: 1500 m
	Identification: 760 m	Recognition: 760 m

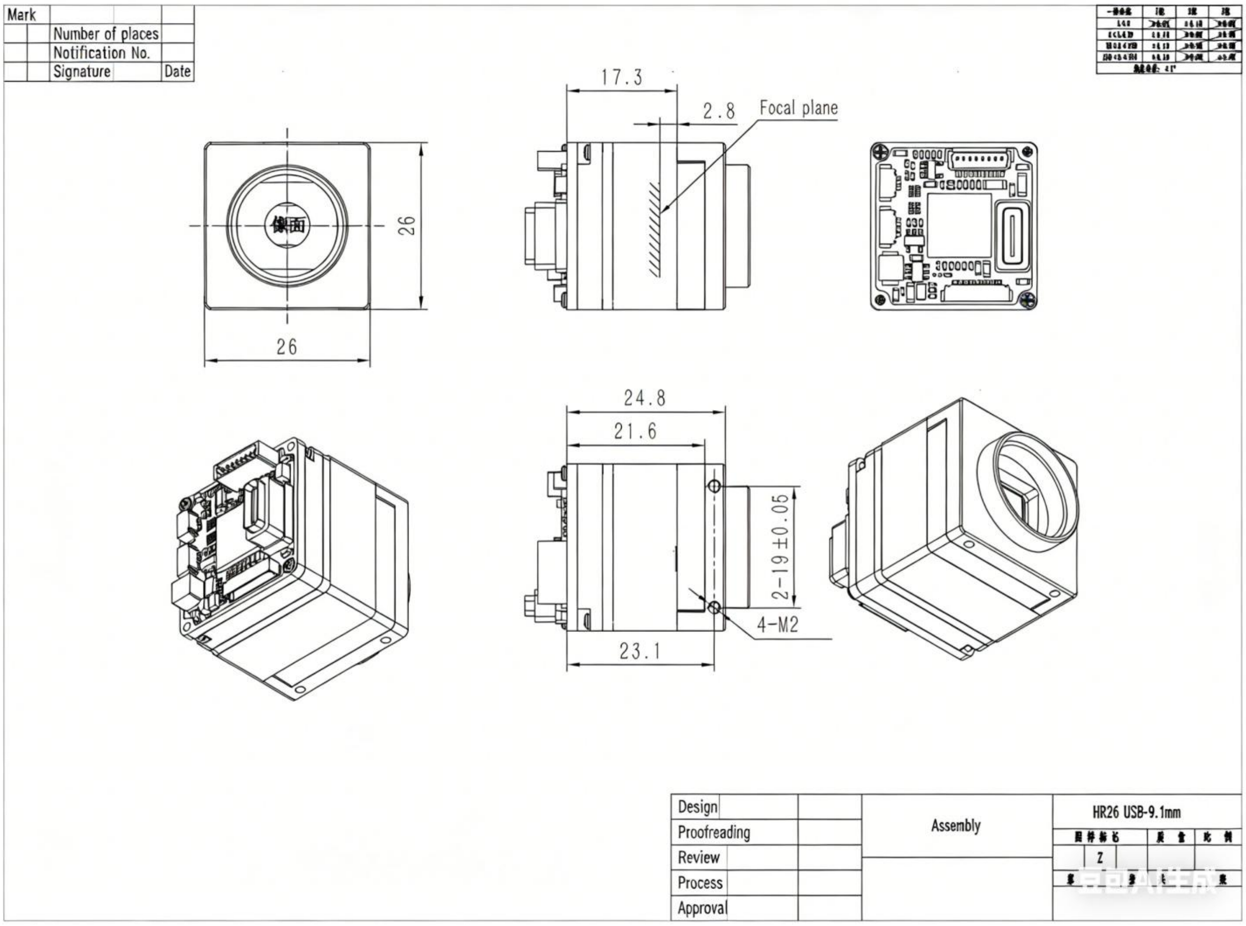
4. Product Specifications

Component Model	
Detector Type	Uncooled vanadium oxide infrared focal plane array detector
Resolution	640×512
Detector Frame Rate	50Hz
Pixel Pitch	12um
Operating Wavelength Range	8~14um
Noise-Equivalent Temperature Difference (NETD)	≤35mK@25℃,F#1.0
Image Adjustment	
Brightness Adjustment	0–10 levels available
Contrast Adjustment	0–10 levels available
Enhancement	0–10 levels available
False Color	Multiple color palettes, including black-and-white, white-and-black, iron red, and red-hot
Image Processing	Non-uniformity correction
	Time-domain filtering
	Spatial filtering and noise reduction
	Digital detail enhancement
	Histogram-based exposure adjustment
Power Supply	
Supply Voltage	5V±0.5
Typical Power Consumption @ 25°C	<0.85 W (without expansion pack) <1.2 W (with expansion pack)
Module Interface	
Digital Video	BT656/Camerlink/MIPI/USB/SDI etc.（Replace the interface board)
Communication Interface	UART*2/RS232*2
Physical Characteristics of the Module (excluding lens and flange)	
Weight	<25g
Dimensions	26mm×26mm×25mm
Environmental adaptability	
Operating Temperature	-40℃~+60℃
Storage Temperature	-40℃~+80℃
Humidity	5%–95%, non-condensing
Vibration	6.06 g, random vibration, all axes
Shock	80 g @ 4 ms, sawtooth waveform, 3 axes, 6 directions

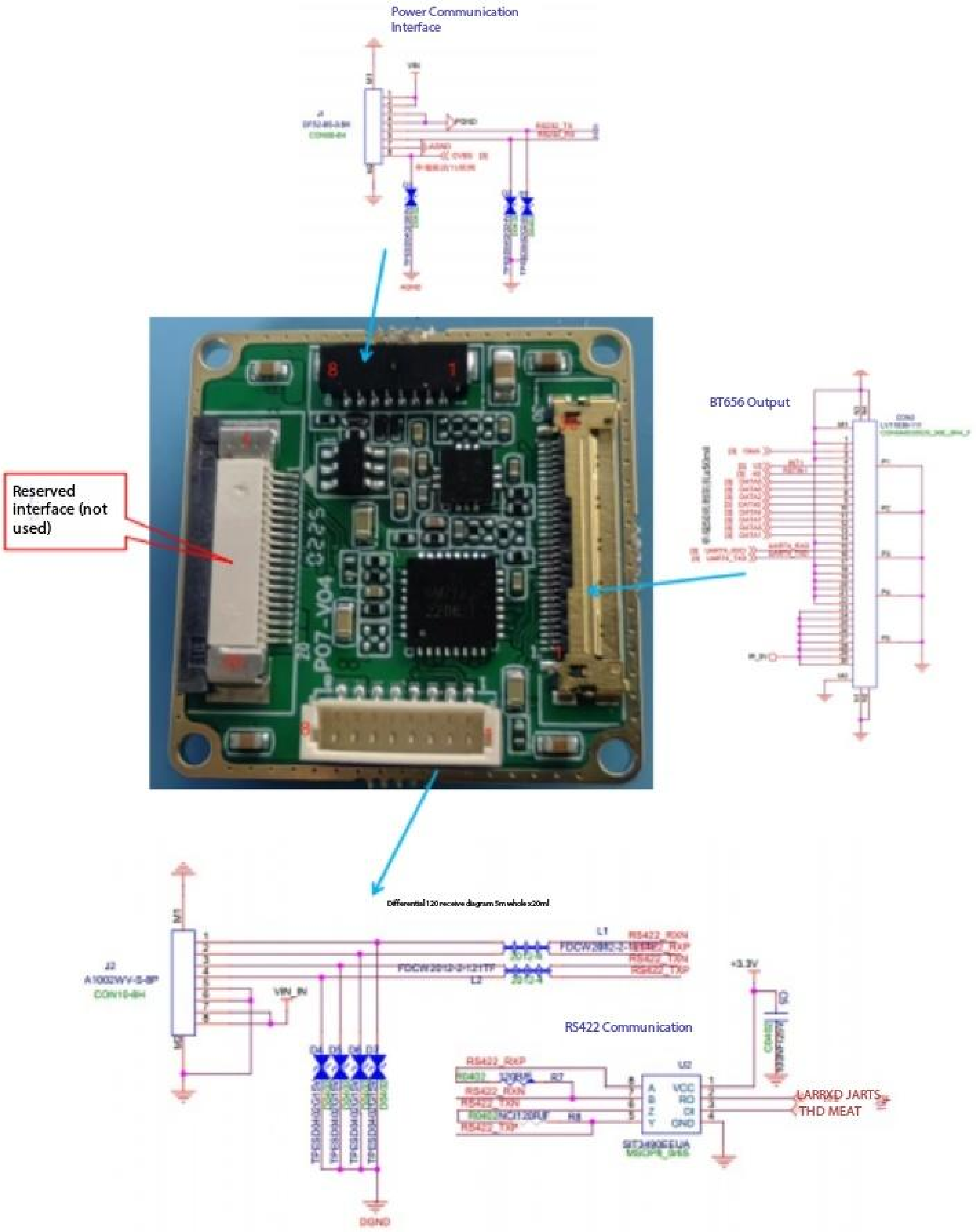
5. Extension Interface Description

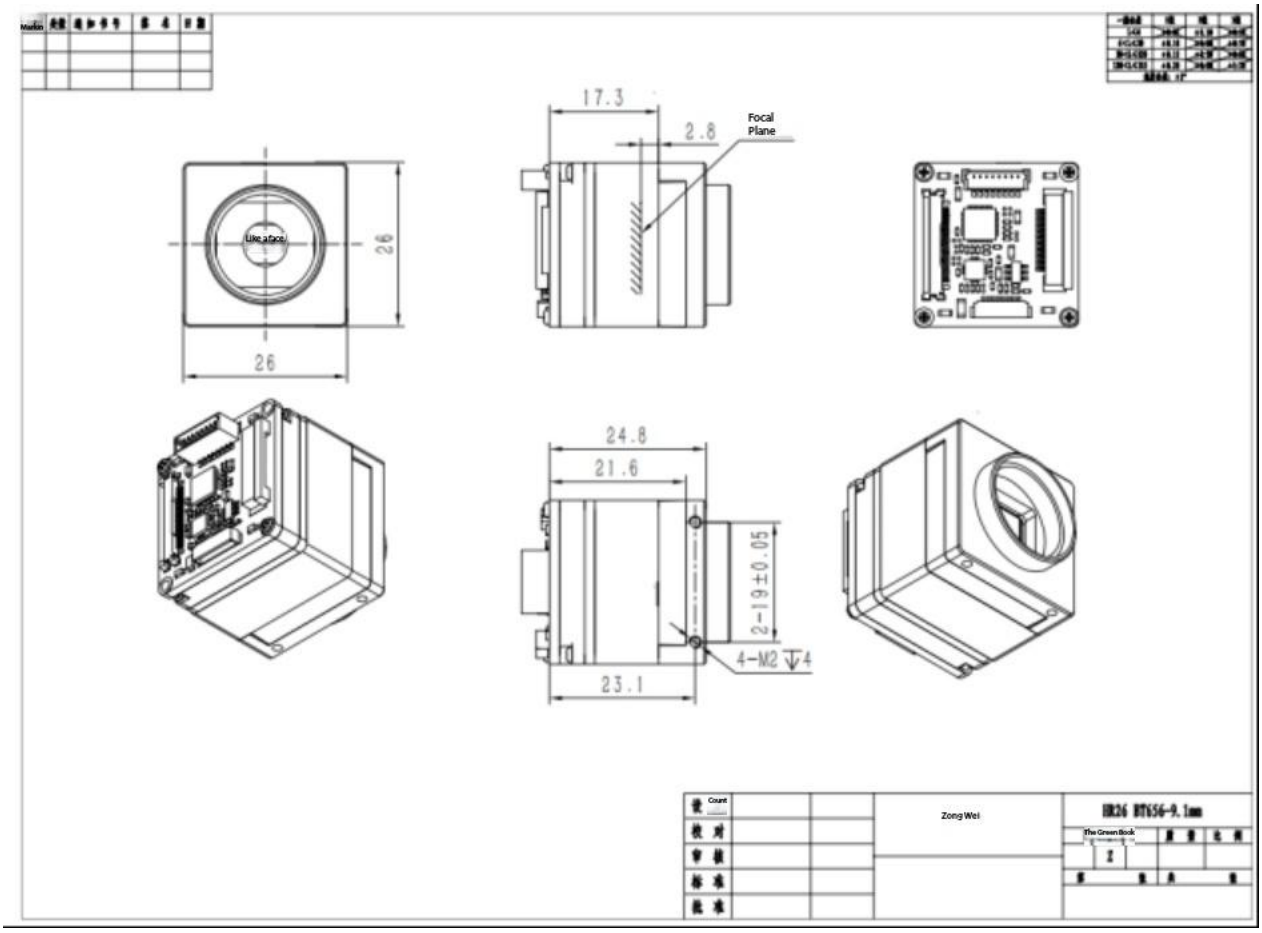
5.1 USB Expansion Board



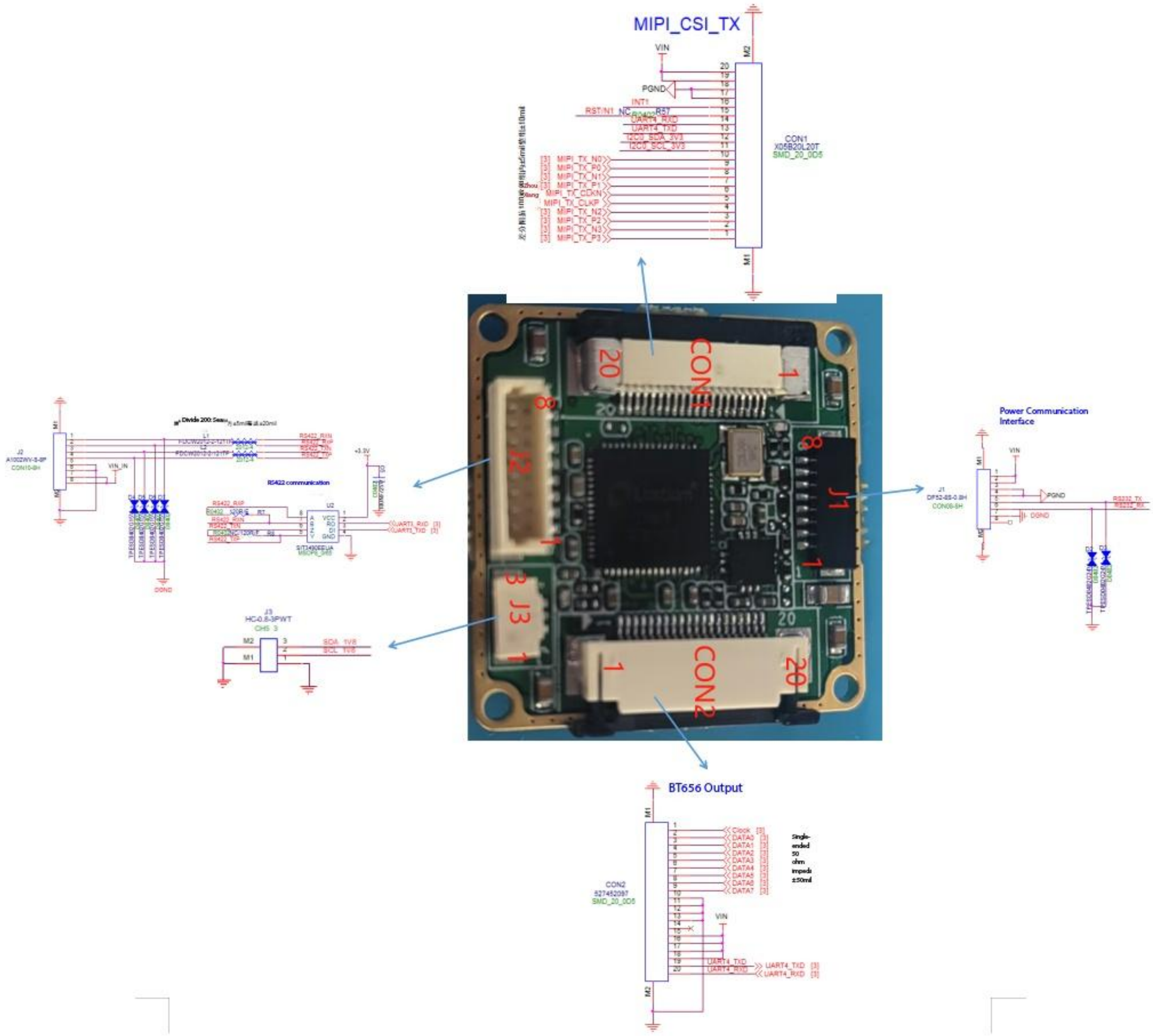

Mark
Number of places
Notification No.
Signature
Date
17.3
2.8
Focal plane
像面
26
26
24.8
21.6
2-19±0.05
4-M2
23.1
Design
Proofreading
Review
Process
Approval
Assembly
HR26 USB-9.1mm
Z

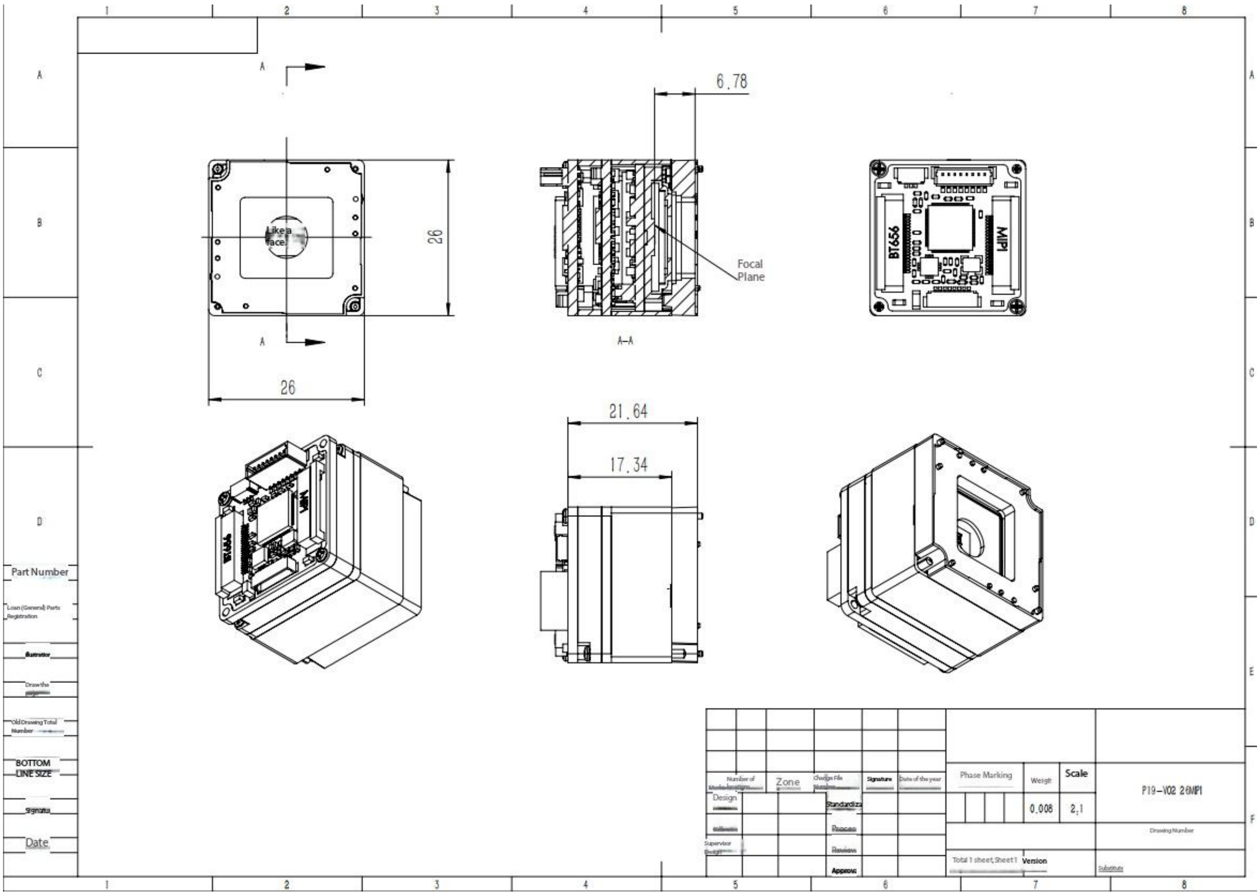
5.2 BT656/BT1120 Expansion



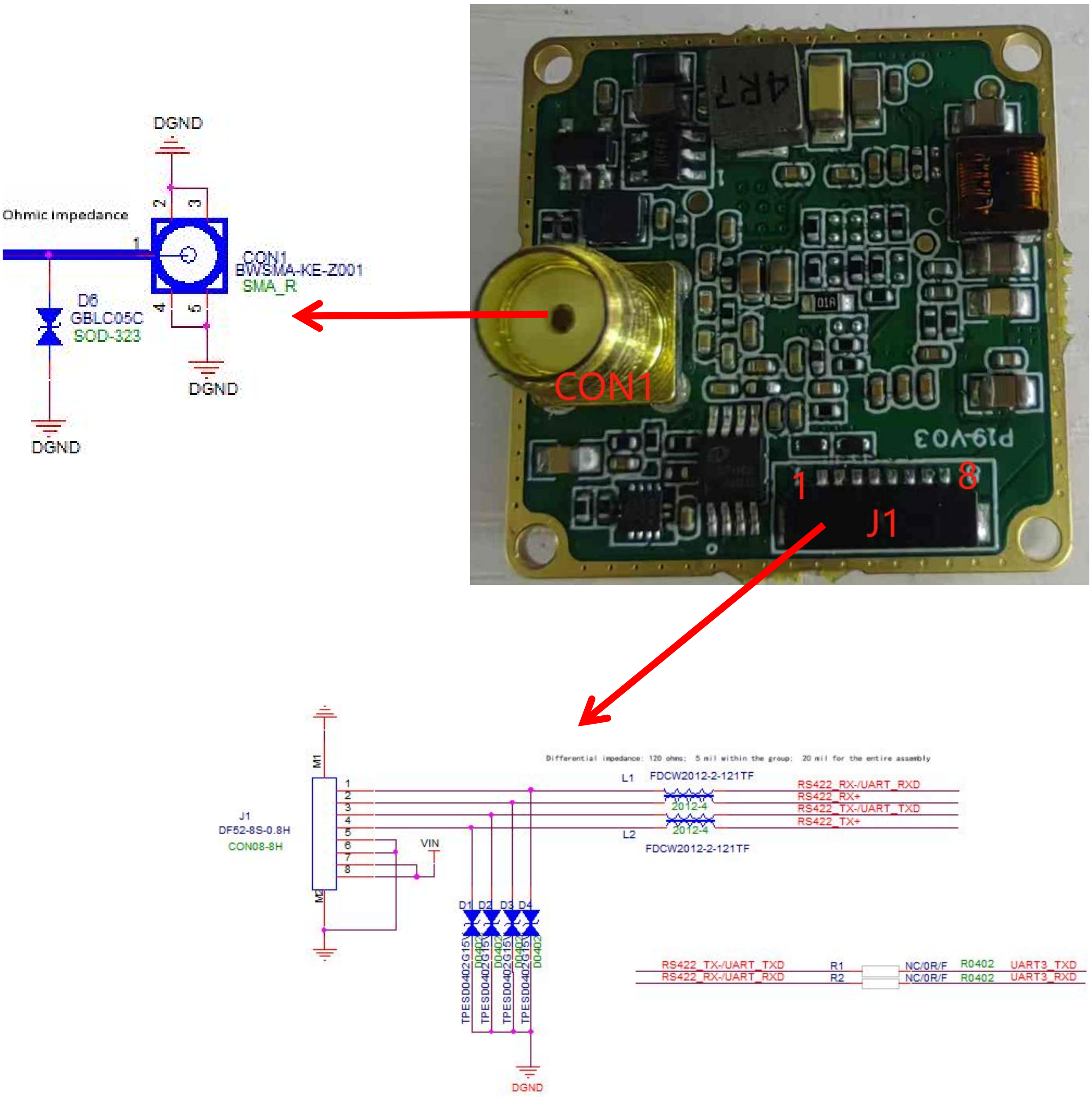

Marking
17.3
2.8
Focal Plane
Like a face
26
26
24.8
21.6
2-19±0.05
4-M2 ↧4
23.1
Count
Zong Wei
HR26 BT656-9.1mm
The Green Book
2

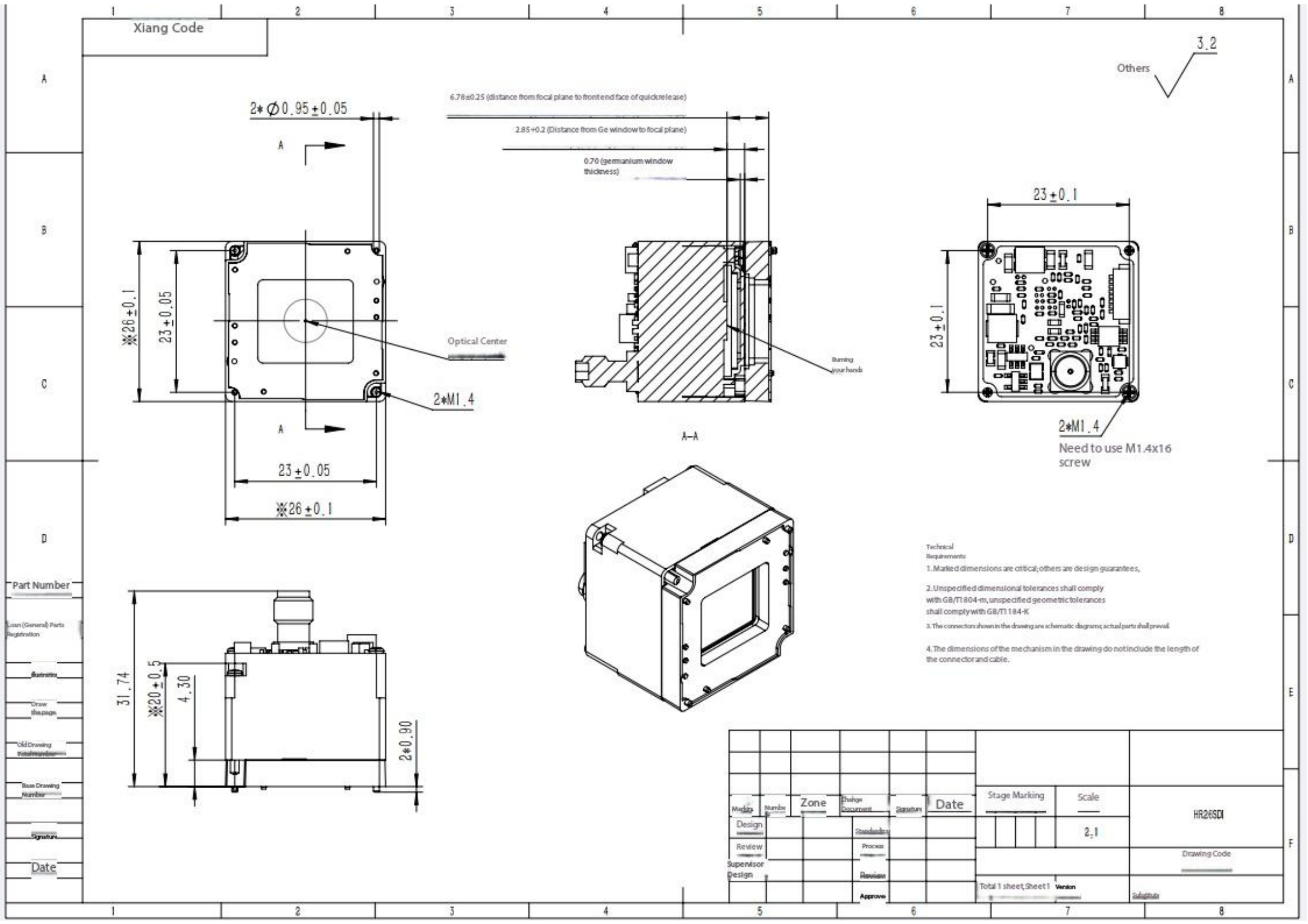
5.3 MIPI/BT656 Expansion




A
A
Like a face
26
26
6.78
Focal Plane
A–A
BT656
MIPI
21.64
17.34
Part Number
Loan (General) Parts Registration
Illustrator
Draw the
Old Drawing Total Number
BOTTOM LINE SIZE
Signatu
Date
Number of
Zone
Change File Number
Signature
Date of the year
Design
Standardiza
Process
Supervisor Design
Review
Approve
Phase Marking
Weigh
Scale
0.008
2:1
P19-V02 26MIPI
Drawing Number
Total 1 sheet, Sheet1
Version
Substitute

5.4 SDI Expansion





6. Precautions

To protect yourself and others from injury and to prevent damage to your device, please read all of the following information before using your device.

1. Do not expose components to direct sunlight or other sources of intense radiation;
2. The ideal operating temperature range is -20°C to 50°C;
3. Do not touch the device or cables with wet hands;
4. Do not bend or damage any connecting cables;
5. Do not clean your device with solvents;
6. Do not plug in or unplug other cables while the power is still connected;
7. Do not connect the included cables incorrectly to avoid damaging the device;
8. Take precautions against static electricity;
9. Do not disassemble the device. If a malfunction occurs, please contact our company so that a professional can perform repairs.

7. Support and Services

Customizable expansion components can be designed to meet users' specific application requirements.

8. After-Sales Service

The HR-L612 series of uncooled infrared camera modules are developed in-house by our company and come with comprehensive after-sales support, including equipment maintenance and repair services. A one-year warranty is provided. Please contact us if you have any questions or needs.