TIF SC640
Uncooled Infrared Observation Module
Product Manual

Document Version: V1.0 (20250919)

Contents

Revision History

The version history records the changes of each update. The latest version of the document includes updates from all previous versions.

Version	Time	Description
V1.0	September 19, 2025	Initial version.

1. Product Introduction

1.1. Product Description

The TIF SC640 series uncooled infrared module uses high frame rate 8μm WLP detector, and self-developed infrared Falcon 300 chip, enabling a frame rate of up to 60 Hz. It features high-performance, compact design, lightweight, low power consumption, and low cost, meeting the SWaP (Size, Weight and Power/Price) application requirements.

The entire series is equipped with the shutterless algorithm that ensures smooth and non-choppy images. The next-generation infrared-specific NMX3.0 and IMX3.0 image processing algorithms can ensure delicate and clear image quality.

1.2. Product Features

- High frame rate
- 8 μm detector
- Standard shutterless algorithm
- High-quality image display

1.3. Application Scenarios

- Civilian UAVs
- Perimeter security
- Intelligent integration: assisted driving

2. Product Selection

2.1. Model Encoding Rules

Table 2-1 TIF SC Module Model Encoding Rules

TIF SC-640	06008X	H	NR	M	A
Name	Lens (focal length and f number)	Gain mode	Core mode	Lens focusing method	Lens serial number
TIF SC640	06008X: 6 mm F0.8	H: high quality	NR: imaging	S: fixed focus M: manual focusing N: no lens	A: The first lens for the focal length, F-number and focus method. B: second lens

2.2. Recommended Models

Table 2-2 List of Recommended Models for TIF SC640

S/N	Model
1	TIFSC64006008HNRSAC
2	TIFSC64006008HNRSAK

2.3. Lens Parameters

Table 2-3 Lens Parameters

Lens No.	Lens parameters				DOF	Detection range	Recognition range	Identification range	Weight (lens + flange)
	Focal length mm	F number	IFOV	FOV					
06008X	6 mm	0.8	1.33mrad	48.74° × 39.01°	1.5M to ∞	1 km	0.25 km	0.125km	13 g±1 g

NOTE 1. The above detection range, recognition range, and identification range are estimated based on Johnson's criteria, taking pedestrians (2× 0.5× 0.3 m) as the target.

NOTE 2. The lens depth of field (DOF) refers to the maximum clear range achievable when the focus is fixed (via gluing or set screw locking), not the focusing range. The typical focusing range is 0.3 m to ∞.

3. Specifications

Table 3-1 TIF SC640 Technical Specifications

Technical Parameters	TIF SC
	Overview
Detector Type	VOx uncooled infrared focal plane detector
Resolution	640×512
Detector Frame Rate	60 Hz
Pixel Pitch	8 μm
Response Band	8 - 14 μm
NETD	≤ 40mK@25℃, F#1.0,25Hz
Thermal Time Constant	15 ms
	Image Adjustment
Non-Uniformity Correction	Shutter correction/shutterless algorithm correction
Brightness/Contrast Adjustment	0 - 100 optional
Polarity/Pseudocolor	White hot/Black hot
Electronic Zoom	1.0 - 8.0× continuous zoom (step size: 0.1)
Image Mirroring	Vertical/Horizontal/Diagonal
	Electrical Parameters
Analog Video Output	CVBS
Digital Video Output	USB2.0
Communication Interface	UART/I2C/USB2.0
Power Supply Input	Single circuit supply 5V (±5 %)
Typical Power Consumption of USB Output @25℃	≤650 mW
	Physical Characteristics
Weight (without lens)	9 g
Dimensions (without lens)	21×21×10.3 mm
	Environmental Adaptability
Operating Case Temperature	-30℃ - +70℃
Storage Case Temperature	-50℃ - +85℃
Humidity	5% - 95%, non-condensing
Vibration	6.06 g, random vibration, all axes
Impact	80g, 4ms, final peak sawtooth wave, three axes and six directions

NOTE 1. The above parameters are measured under laboratory conditions, and the actual specifications and test methods shall be subject to the test report.

4. Structural Dimensions

Note: Only with the TIF SC640 6 mm lens module as an example, please contact our technical staff for specific 2D and 3D drawings.

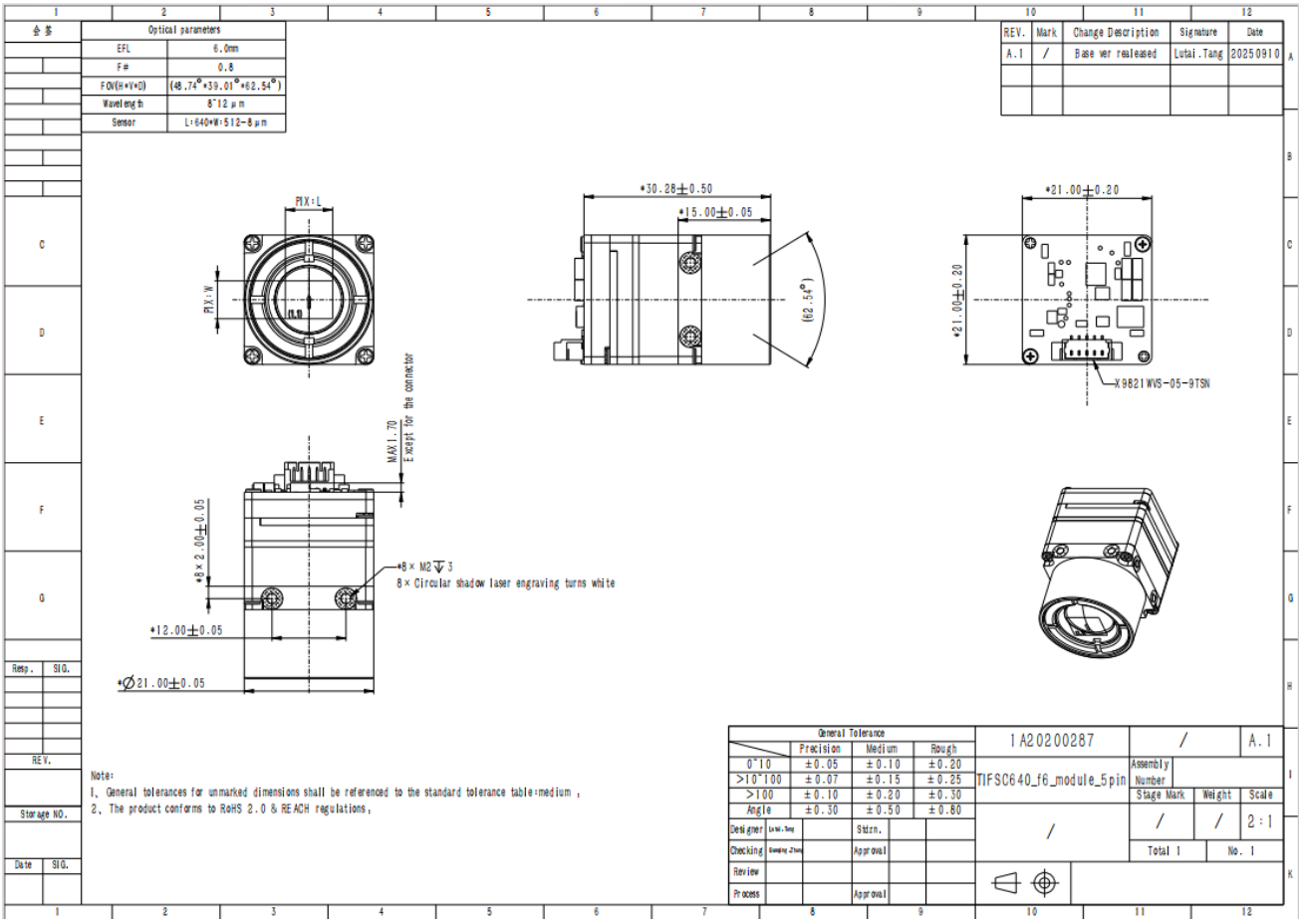

Figure 4-1 Structural Diagram of TIF SC640 6 mm Lens Module

5. Precautions

To protect you and others from injury and your equipment from damage, please read all the following safety instructions before using your device.

1. Do not point the device directly at high-intensity radiation sources such as the sun;
2. The recommended operating ambient temperature ranges from -40℃ to 80℃;
3. Do not touch the device and cables with wet hands;
4. Do not bend or damage connecting cables;
5. Do not scrub the device with thinners;
6. Do not plug or unplug other cables While the power is on;
7. Ensure the supplied cables are connected correctly to avoid damaging the device;
8. Please take care to prevent electrostatic discharge（ESD）;
9. Do not disassemble the device. In case of malfunction, please contact our professional service personnel

6. Warranty

Dear customers,

Thank you for choosing our products. We will continue to provide you with satisfactory services as always!

1. For any malfunction of this product under normal usage conditions, our company provides a one-year warranty and lifetime maintenance service.
2. Warranty coverage:

   Malfunctions under normal usage conditions, which generally refers to natural damage to the product caused neither by intentional human acts nor negligence when the product is used properly by the user.
3. Warranty does not apply under the following circumstances:
   1) Damage caused by any modification or repair not authorized by our company.
   2) Malfunctions or damage caused by the use of third-party software or services.
   3) Damage caused by accidental factors or human actions, such as liquid ingress, drop damage, inappropriate voltage input, excessive extrusion, and motherboard deformation. Obvious appearance damage, including hard object scratches, cracks, broken pins, severe deformation, as well as damaged, disconnected, or exposed-core power cord.
   4) Loss or damage of product data.
   5) Failure to provide valid product warranty certificates (e.g., product nameplate, SN barcode, or anti-tampering label is torn off, damaged, or blurred beyond recognition).
   6) Malfunctions or damage caused by failure to install, use, maintain, or store the product in accordance with the requirements of the user manual.
   7) Products that have exceeded the warranty period.
   8) Malfunctions or damage caused by force majeure events (e.g., fire, earthquake, and flood).

7. Supports and Services

We provide services including pre-sales training, in-sales development support, and post-sales module maintenance. For specific policies, please contact our sales staff.