F1024/F1280

Uncooled Thermal Imaging Module

Product Manual

V1.0.0

Version History

Version	Time	Description
V1.0.0	2024-07	Initial release

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1. Overview

The F1024/F1280 uncooled thermal imaging module features a highly sensitive VOx infrared detector, offering consistently high-performance module technology, advanced image algorithms, and lens control technology, providing a new experience for long-distance surveillance. This product is widely applicable in perimeter security, aerial observation, forest fire prevention, and water area monitoring.

The module is upgraded with a new generation of image algorithms, optimized for special scenarios such as forests, sea surfaces, skies, and rainy or foggy weather, providing customers with clear and sharp infrared images.

It supports athermal fixed-focus lenses, fixed-focus motorized lenses, and continuous zoom lenses, enabling functions such as motorized focusing, continuous zoom, auto-focus, and defocus compensation.

The F1024/F1280 uncooled thermal imaging module offers a choice of video output interfaces including Ethernet, BT.601, and BT.1120, with options to expand to SDI, USB, CameraLink, and HDMI interfaces. It also provides an SDK that is simple and easy to use, reducing development cycles, increasing efficiency, and lowering the costs of secondary development.

2. Lens Specifications

Table 2.1 Athermal Lens Model

Array Format	E.F.L./F#	Lens Type	FOV (H*V)	IFOV
1280*1024	10mm F1.0	Athermal	75.0°×63.1 °	1.200mrad
1024*768			63.1°×49.5 °	
1280*1024	19mm F1.0	Athermal	44°×35.8°	0.632mrad
1024*768			35.8°×27.3°	
1280*1024	25mm F1.0	Athermal	34.1°×27.6°	0.480mrad
1024*768			27.6°×21°	
1280*1024	35mm F1.0	Athermal	25.1°×20.1°	0.343mrad
1024*768			20.1°×15.1°	
1280*1024	55mm F1.0	Athermal	16°×12.8°	0.218mrad
1024*768			12.8°×9.6°	
1280*1024	75mm F1.0	Athermal	11.7°×9.4°	0.160mrad
1024*768			9.4°×7.0°	

Table2.2 Motorized Lens Model

Array Format	E.F.L./F#	Lens Type	FOV (H*V)	IFOV
1280*1024	75mm F1.0	Motorized Focus	11.7°×9.4°	0. 160mrad
1024*768			9.4°×7.0°	
1280*1024	25mm-75mm F0.95~F1.2	Continuous Zoom	11.5°×9.3°~35.9°×28.5°	0.160~0.480 mrad
1024*768			9.3°×7.0°~28.5°×21.3°	
1280*1024	100mm F1.0	Motorized Focus	8.8°×7.0°	0.120mrad
1024*768			7.0°×5.3°	
1280*1024	150mm F1.0	Motorized Focus	5.9°×4.7°	0.080mrad
1024*768			4.7°×3.5°	
1280*1024	30mm -150mm F1.0~F1.2	Continuous Zoom	5.9°×4.7°~28.7°×23.1°	0.080~0.400 mrad
1024*768			4.7°×3.5°~23.1°×17.5°	
1280*1024	25mm -225mm F1.09~F1.5	Continuous Zoom	3.9°×3.1°~34.2°×27.6°	0.053~0.480 mrad
1024*768			3.1°×2.4°~27.6°×21.0°	
1280*1024	35mm-350mm F1.09~F1.5	Continuous Zoom	2.5°×2.0°~25.1°×20.1°	0.034~0.343 mrad

3. Product Performance Parameters

3.1 01 /11 Series

The performance parameters of **01 /11 series** thermal imaging modules are shown in Table 3.1:

Table 3.1 Performance Parameters

Model	1024	1280
Performance Index		
Detector Type	VOx uncooled IRFPA	
Pixel Resolution	1024*768	1280*1024
Pixel Pitch	12µm	
Frame Rate	30Hz	
Spectral Range	8～14µm	
NETD	≤50mK@25℃, F#1.0	
Image Adjustment		
Brightness & Contrast Adjustment	Manual/Auto0/Auto1	
Polarity	Black hot/White hot	
Color Palettes	Support (18 types)	

Model	1024	1280
Reticle	Display/Hide/Move	
Digital Zoom	1.0~4.0× Continuous Zoom (in 0.1× increment), magnify in any area	
Image Processing	NUC	
	DNR	
	DDE	
Image Mirror	Left-right/Up-down/Diagonal	
Temperature Measurement and Alarm Function		
Full Frame Temperature Measurement	Support display of Max. temp, Min. temp and center spot temp	
Area Temperature Measurement	Support (at most 5)	
High Temperature Alarm	Support	
Fire Alarm	Support	
Alarm Box Mark	Support	
Alarm Response Time	≤0.2s	
Alarm I/O	1channel (LVCMOS level)	
Alarm Command Output	Support	
Lens Control		
Lens Type	Fixed focus/Continuous zoom	
Auto Focus	Support (Auto-focus time near clear points≤3s)	
Motorized Focus	yes	
Motorized Zoom	yes	
Power Supply		
Supply Voltage	5-24V DC	
Typical Supply Voltage	12V DC	
Power Protection	Over-voltage/Under-voltage/Reverse Connection	
Typical Consumption @25℃	<2.4W	<2.6W
Interface		
Video Output	Analog Video	Unsupported
	Digital Video	LVCMOS/BT.1120/LVDS
Video Sync In	Support [1]	
Video Sync Out	Support [1]	
Serial Communication Interface	RS-232	
	RS-485(Support standard PELCO-D only)	
Button	4 buttons	
Physical Properties		

Model	1024	1280
Weight	102.7g(without flange, shutter exposed)	168±10g(Lens excluded)
Size	45mm × 45mm	55mm × 55mm
Environmental Adaptation		
Operating Temperature Range	-40℃～+60℃	
Storage Temperature Range	-45℃～+85℃	
Humidity	5-95%, no condensation	
Environment Certification		
RoHS 2.0	Compliant	

Note:

(1) Only one can be selected between Sync In and Sync Out.

3.2 18/28 Series

The performance parameters of **18/28 series** thermal imaging modules are shown in Table 3.2:

Table 3.2 Performance Parameters

Model	1024	1280
Performance Index		
Detector Type	VOx uncooled IRFPA	
Resolution	1024*768	1280*1024
Pixel Pitch	12μm	
Frame Rate	30Hz	
Spectral Range	8～14μm	
NETD	≤50mK@25℃,F#1.0	
Image Adjustment		
Palette	Black Hot, white Hot, and 18 kinds of color Palettes	
Digital Zoom	1.0~4.0× Continuous Zoom (in 0.1× increment),zoom in any area	
Image Processing	NUC	
	DNR	
	DDE	
Image Mirror	Right- left/Up- down/Diagonal	
Network		

Model	1024	1280
Network Protocol	TCP/IP,UDP,ICMP,HTTP,HTTPS,FTP,DHCP,DNS,RTP,RTSP,RTCP,IGMP, SMTP, NTP, QoS	
Interoperability	ONVIF, GB28181, SDK	
Simultaneous live view	Up to 20 channels	
User Management	Up to 20users, 3 levels: Administrator, Operator and User	
Browser	IE8+, multiple languages	
Smart Function		
Fire Detection	yes	
Smart Recording	yes	
Smart Alarm	Support alarm trigger of network disconnection, IP address conflict, full memory, memory error, illegal access and abnormal detection	
VCA	Tripwire, intrusion detection	
Alarm Linkage	Video recording/Snapshot/Sending Email/PTZ linkage/Alarm out	
Lens Control		
Lens Type	Fixed focus/continuous zoom	
Auto Focus	Yes (Auto focus time near the clear points≤3s)	
Motorized Focus	yes	
Motorized Zoom	yes	
Power		
Typical Voltage	12V DC±10%	
Power Protection	Over-voltage, undervoltage and reverse protection	
Typical Power Consumption@25℃	<3.0W	<3.8W
Interface		
Serial Communication Interface	RS-485(Pan/Tilt control)	
PELCO Protocol	Support standard PELCO-D, PELCO-P	
Network Interface	Support ONVIF, GB28281	
Audio	Support 1-ch audio input, 1-ch audio output	
Alarm (only 18)	Support 1-ch DV 5V alarm level input, 1-ch alarm output	
Physical Properties		
Weight	180.9g(w/o flange, shutter exposed)	220±10g(w/o lens)
Size	55mm × 55mm	55mm × 55mm
Environmental Adaptation		
Operating Temperature	-40℃～+60℃	

Model	1024	1280
Storage Temperature	\-45℃～+85℃	
Humidity	5-95%, no condensation	
Environmental Certification		
RoHS2.0	Compliant	

3.3 09 Series

The performance parameters of **09 series** thermal imaging modules are shown in Table 3.3:

Table 3.3 Performance Parameters

Model	1024	1280
Performance Index		
Detector Type	VOx Uncooled IRFPA	
Resolution	1024*768	1280*1024
Pixel Pitch	12μm	
Frame Rate	30Hz	
Spectral Range	8～14μm	
NETD	≤50mK@25℃,F#1.0	
Image Adjustment		
Brightness & Contrast Adjustment	Manual/Auto0/Auto1	
Polarity	Black hot, white hot	
Color Palettes	18 kinds of color palettes	
Crosshair Reticle	Display/Hide/Move	
Digital Zoom	1.0~4.0× Continuous Zoom (in 0.1× increment), zoom in any area	
Image Processing	NUC	
	DNR	
	DDE	
Image Mirror	Right- left/Up- down/Diagonal	
Lens Control		
Lens Type	Fixed focus/continuous zoom	
Auto Focus	Yes (Auto focus time near the clear points≤3s)	
Motorized Focus	Yes	
Motorized Zoom	Yes	
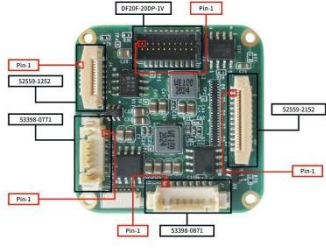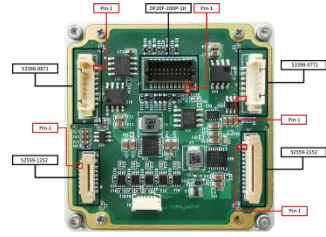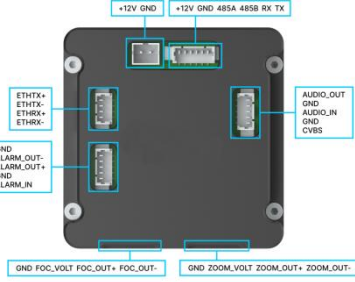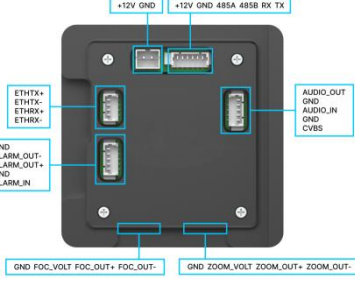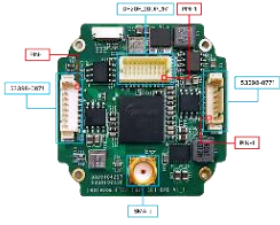
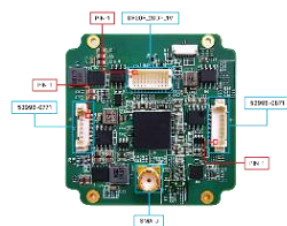| Model	1024	1280
Power		
Power Supply	5-24V DC	
Typical Voltage	12V DC	
Power Protection	Over-voltage, undervoltage and reverse protection	
Typical Power Consumption@25℃	＜2.8W	<3.4W
Interface		
Video Output	SDI	
Video Sync In	Support [1]	
Video Sync Out	Support [1]	
Serial Communication Interface	RS-232 RS-485 (Support PELCO-D only)	
Physical Properties		
Weight	102.7g (w/o flange, shutter exposed)	168±10g (w/o lens)
Size	45mm × 45mm	55mm × 55mm
Environmental Adaptability		
Operating Temperature Range	-40℃～+60℃	
Non-operating Temperature Range	-45℃～+85℃	
Humidity	5-95%, no condensation	
Environmental Certification		
RoHS2.0	Conform to	

Note :

(1) *Only one can be selected between Sync In and Sync Out.*

4. User Expansion Board

Table 4.1 User Expansion Board List

Model	Picture (Illustration)	Main Interface	Well-matched Models
01 Digital		- Power supply 5-24V - RS-232, RS-485 (PELCO) - LVDS, LVCMOS, BT.1120 digital video - Lens Motor Interface - Button Interface - Alarm in & Alarm out	1024
01/11Digital		- Power supply 5-24V - RS-232, RS-485(PELCO) - LVDS, LVCMOS, BT.1120 digital Video - Lens Motor Interface - Button Interface - Alarm in & Alarm out	1280
18 Ethernet		- Power supply 12V - RS-485 (PELCO) - TTL serial port (Visca) - Audio interface - Alarm interface - Ethernet Interface - SD card - Lens Motor Interface	1024
18/28 Ethernet		- Power supply 12V - RS-485 (PELCO protocols) - TTL serial port (Visca) - Audio interface - Alarm interface - Ethernet Interface - SD card - Lens Motor Interface	1280
09 SDI		- Power supply 5-24V - RS-232, RS-485 (Pelco) - SDI digital video - Lens Motor Interface - Alarm In & Alarm Out	1024

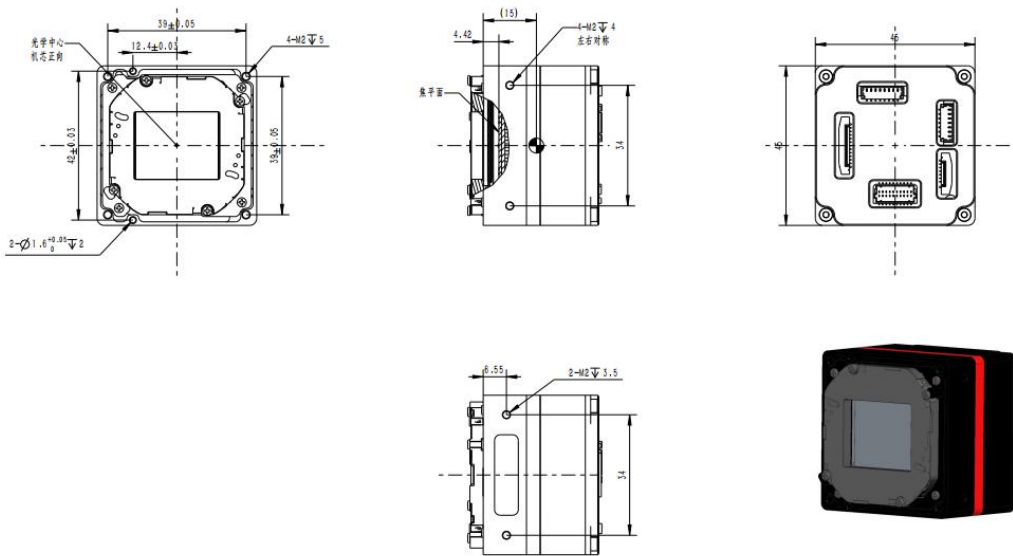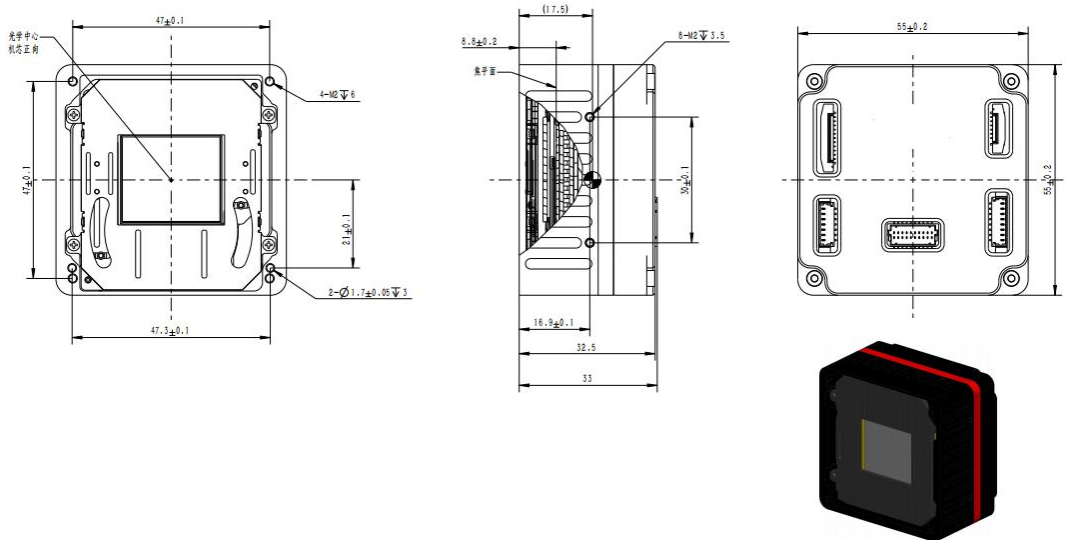| Model	Picture (Illustration)	Main Interface	Well-matched Models
09 SDI		● Power supply 5-24V ● RS-232, RS-485 (Pelco) ● SDI digital video ● Lens Motor Interface ● Alarm In & Alarm Out	1280

5. Dimensions

Figure 5.1 Dimension of F1024 01 Series Module

Figure 5.2 Dimension of F1280 01 Series Module

Note: The dimensions of the module vary depending on the lens and expansion components. Please refer to the detailed module dimension diagram for specifics.

6. Cautions

To protect you and others from injury or to protect your equipment from damage, please read all of the following information before using your equipment.

1. Do not make the thermal imaging module directly towards the sun and other high-intensity radiation sources;

2. The optimal environment temperature for operating is - 20 ℃ to 50 ℃;

3. Do not touch or hit the detector window with hands or other objects;

4. Do not touch the equipment and cables with wet hands;

5. Do not bend or damage all cables;

6. Do not scrub your equipment with diluents;

7. Do not unplug and plug other cables without disconnecting the power supply;

8. Do not connect the wrong cable to avoid damage to the equipment;

9. Please pay attention to prevent static electricity;

10. Please do not disassemble the equipment. If there is any fault, please contact our company, and professional personnel will carry out maintenance.