InfiRay Micro III 384T Xcore MicroIII Series Uncooled Thermal Imaging Module User Manual

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InfiRay Micro III 384T Xcore MicroIII Series Uncooled Thermal Imaging Module

Xcore MicroIII Series Uncooled Thermal Imaging Module User Expansion Component Manual

This manual is used as a guide. The photos, graphics, diagrams and illustrations provided in the manual are only used to explain, which may be different from the specific product. Please refer to the real object.We try our best to make sure the contents in this manual are accurate.We do not provide any representations or warranties in this manual.
If you need the latest version of this manual, please contact us. IRay Photoelectric recommends that you use this manual under the guidance of professionals.

Version History

Version	Date	Description	Revised by	Checked by
V1.0.0	2019-06	Initial version		
V1.0.1	2020-04	Add expansion board MRIII00V110F016C		
V1.0.2	2020-06	Add user expansion board of MRIII00V100F008C and MRIII00V110F017C	Ma Yanjing Lin Wenjuan	Lu Fengjuan
V1.0.3	2020-08	Add Pin marks of the expansion component	Wu Changhao Lin Wenjuan	Lu Fengjuan
V1.0.4	2021-04	Revise pin definition of keys	Wu Changhao Lin Wenjuan	
V1.0.5	2021-12	Update info of expansion component MRIII00V100F012C		

The expansion components connect to the rear of module directly. Each expansion component supplies different controlling connector and video output connector, and the power protection function of over-voltage, under-voltage and reverse-connection. The default setting of digital video output is off, and can be set it on via PC software or UART command. The module supports output digital video only one channel in one time.

MRIII00V110F016C User Expansion Component

Figure 1.1 MRIII00V110F016C expansion board

MRIII00V110F016C Socket Definition

The expansion component includes USB Type C socket, which includes power supply (5V DC), one channel analog video, one channel USB2.0 connector (UVC digital video, module controller). And one USB cable is provided, one end can connect to USB Type C socket on board, and other ends is one standard USB2.0 connector and BNC connector (transmitting analog video).

Table1.1 USB2.0-Type C Socket Definition

Pin number	Pin name	Type	Definition
A4,B4,A9,B9	VBUS	Power	Power input 5VDC
A1,B1	GND	Power	Power ground 1
A8,B8	VIDEO	Output	Analog video
A12,B12	VGND	Power	Analog video ground 1
A6,B6	USB_DP	Input/output	USB
A7,B7	USB_DM	Input/output	

Note 1 GND and VGND are short connected internally of module.

MRIII00V100F012C User Expansion Component

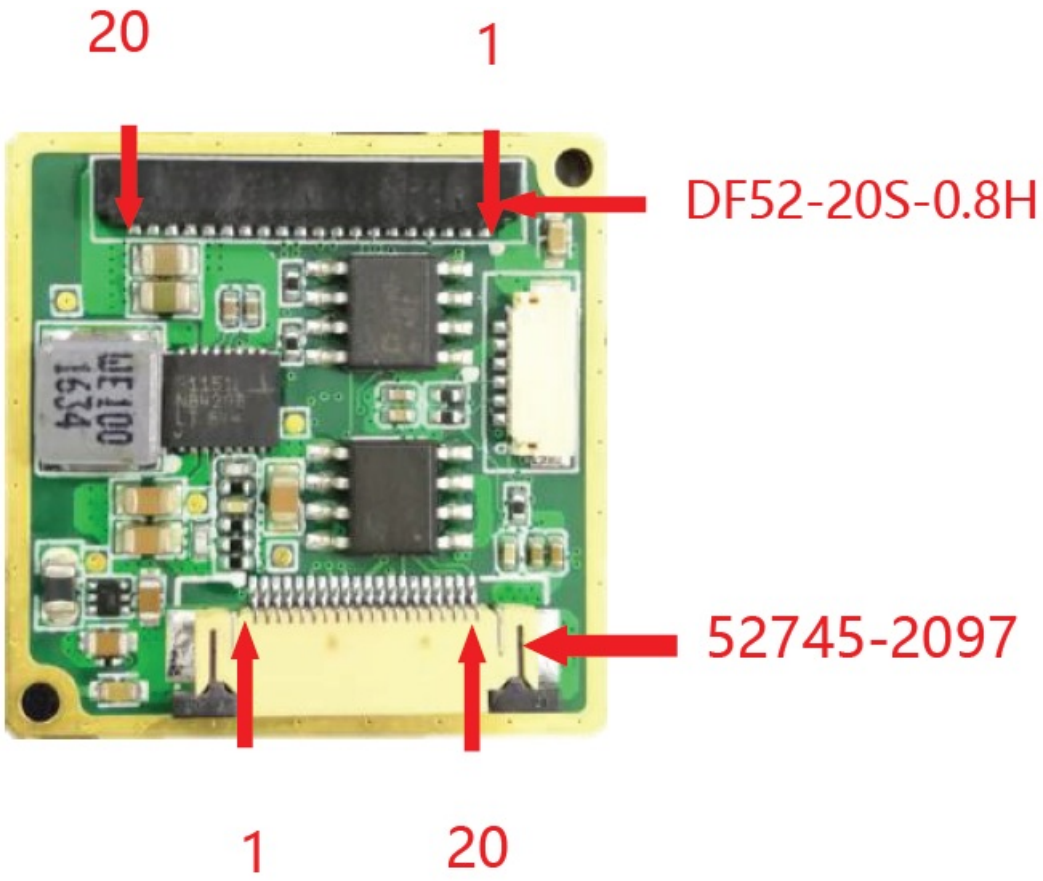

Figure 2.1 MRIII00V100F012C

MRIII00V100F012C Socket Definition

The component supplies two sockets. One is Hirose 20pin DF52-20S-0.8H socket, includes power supply (3.5~18V DC), RS232, one channel analog video in PAL format, and 4 keys board connector. Socket pins definition as table2.1. And supply one Hirose 20pins DF52-20P-0.8C cable for connecting component to other devices.

Table2.1 Hirose 20pins DF52-20S-0.8H Socket Definition

Pin number	Pin name	Type	Definition	
1 3	VGND	Power	Analog video ground 2	
2	VIDEO	Output	Analog video	
4	RS232_RX	Input/output	RS-232 serial communication connector 1	
5	RS232_TX			
6 15 18 19 20	GND	Power	Power ground 2	
7 8 9 10	——	——	N/A	
11	KEY1	Input	Keys connector 3.3V 3	M menu
12	KEY2			+ plus
13	KEY3			- minus
14	KEY4			C Correction
16 17	Power Supply	Power	Power input 3.5 18VDC 4	

Note

1. TX & RX of series communication connector is for module.
2. GND and VGND are short connected internally of module.
3. KEY1~KEY4 are low level valid and pulled up internally on the expansion component.
4. Typical power supply voltage is 12VDC.

The other interface adopts Molex 20pin connector named 52745-2097 which can be connected via FPC. It includes power supply(3.5~18VDC), UART(3.3V) communication interface, BT.656 digital video and the interface definitions are shown in table 2.2. Users can select FPC(not in standard package) to achieve the connection between thermal imaging module and other devices.

Table2.2 Molex 20pins 52745-2097 Socket Definition

NO.	Name	Type	Description	
1	Clock	Output	BT.656	Clock signal
2	DV0			Data signal LSB
3	DV1			Data signal
4	DV2			Data signal
5	DV3			Data signal
6	DV4			Data signal
7	DV5			Data signal
8	DV6			Data signal
9	DV7			Data signal MSB
10 11 12 13	GND	Power supply	Ground of power 2	
14	——	——	Not available	
15 16 17 18	Power supply	Power supply	Power input 3.5 18VDC 3	
19	UART_TX 1	Input/Output	UART communication interface 3.3V	
20	UART_RX 1			

Note

1. TX and RX of Serial Communication interfaces are relative to the imaging module;
2. GND and VGND are connected internally
3. The two channels of power supply are connected internally and it is recommended to select one channel to provide power. If the two channels of power supply are provided at same time, please keep the voltages in the same. The recommended value of operation voltage is 12VDC.

BT.656 Digital Video

The digital video of BT.656 consists of one clock signal (Clock) and eight data signals (DV0~DV7). The BT.656 digital video supports the functions of brightness/contrast adjustment, polarity selection, palette selection, reticle control, digital zoom and image mirror. And the output data of BT.656 must be the DRC. The BT.656 format follows the analog video format. If the analog video is in PAL/NTSC format, the BT656 is same as in PAL/NTSC format respectively.

MRIII00V100F011C User Expansion Component

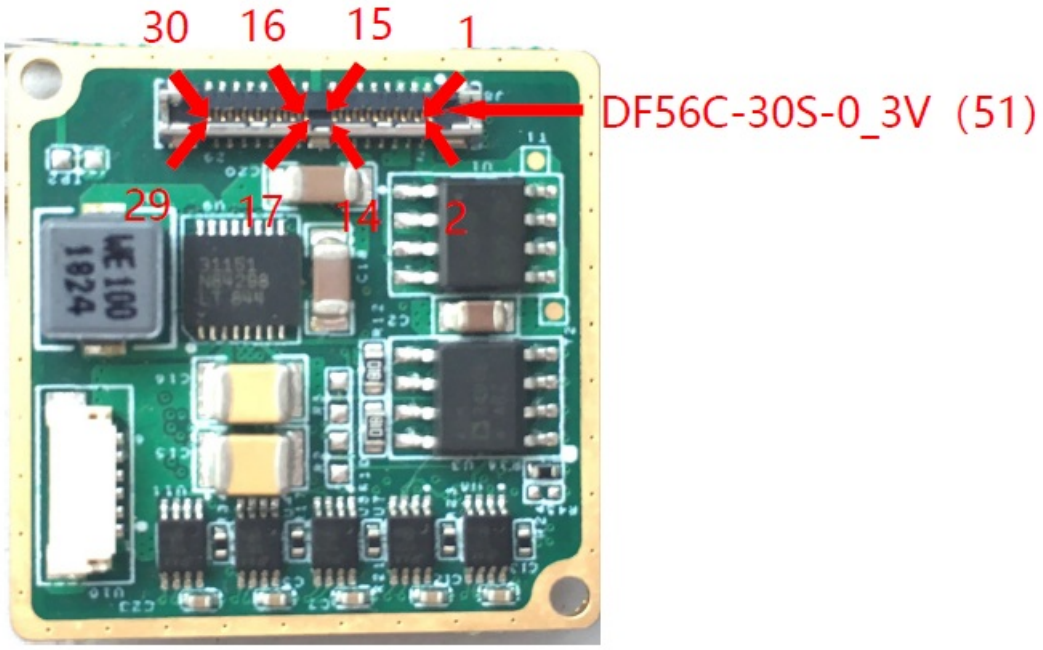

Figure 3.1 MRIII00V100F011C expansion component

MRIII00V100F011C Socket Definition

The component supports a socket of Hirose 30pins DF56C-30S-0_3V 51 , includes power supply (3.5~18VDC), RS232&RS422, one channel analog video output, LVDS_H digital video output, and 4keys board connector. And supply a Hirose 30pins connector to connect DF56C-30S-0_3V 51 socket, the length of cable is 9~11cm, the other end of cable can connect to other devices.

Table3.1 Hirose 30Pins DF56C-30S-0_3V(51) Socket Definition

NO.	Name	Type	Description	
4 5 6 19 20	GND	Power	Power ground 3	
1 2 3	Power Supply	Power	Power input 3.5 18VDC 1	
11	RS-422_RX+	Input/Output	RS-422 communication interface 2	
12	RS-422_RX-			
13	RS-422_TX+			
14	RS-422_TX-			
9	RS-232_RX	Input/Output	RS-232 communication interface 2	
10	RS-232_TX			
29	LVDS_CLK+	Output	LVDS_H digital video 2.5V	Clock signal
30	LVDS_CLK-			
27	LVDS_DATA0+	Output		Data signal
28	LVDS_DATA0-			
25	LVDS_DATA1+	Output		Data signal
26	LVDS_DATA1-			
23	LVDS_DATA2+	Output		Data signal
24	LVDS_DATA2-			
21	LVDS_DATA3+	Output		Data signal
22	LVDS_DATA3-			
8	VGND	Power	Analog video ground 3	
7	VIDEO	Output	Analog video	
15	KEY1	Input	Keys connector 3.3V 4	M menu
16	KEY2	Input		+ plus
17	KEY3	Input		- minus
18	KEY4	Input		C Correction

Note

1. The recommended value of operation voltage is 12VDC.
2. TX and RX of Serial Communication interfaces are relative to the imaging module.
3. GND and VGND are connected internally.
4. KEY1~KEY4 are low level valid and pulled up internally inside the expansion component.

LVDS_H Digital Video

LVDS_H digital video includes one clock signal(LVDS_CLK), and four data signals(LVDS_DATA1, LVDS_DATA2, LVDS_DATA3 and LVDS_DATA4). It is convenient to be parsed by mainstream encode/code chip.
LVDS_H digital video can be turned on/off by control command. When it is turned on, ORG data, NUC data, DNS data, DRC data and Temp data can be selected.
When DRC data is selected, function of digital zoom and menu display are not supportable.

Table 3.2 LVDS_H Clock frequency

Module	**Clock frequency** **LVDS_CLK**
M3640	33.75MHz
M3384	22.50MHz

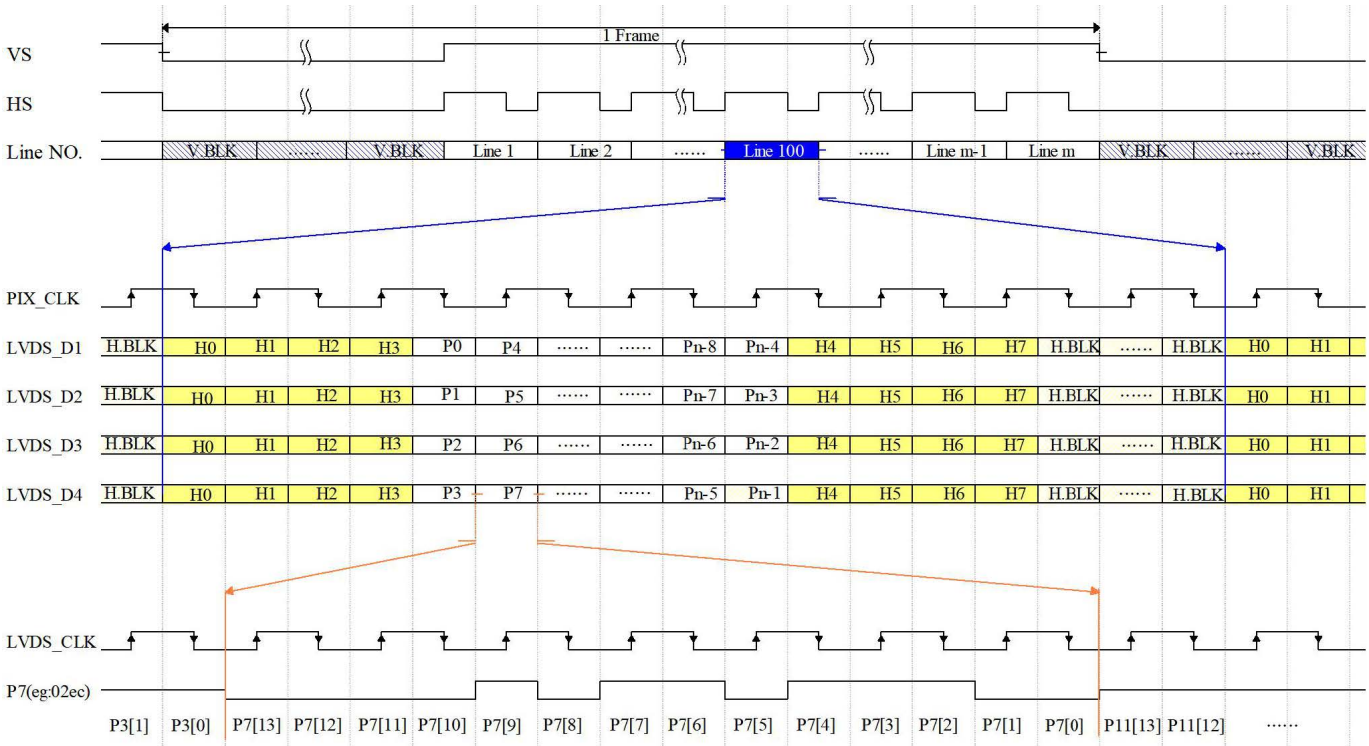

Figure 3.2 LVDS_H Digital Video Timing Diagram n×m Array

MRIII00V100F008C User Expansion Component

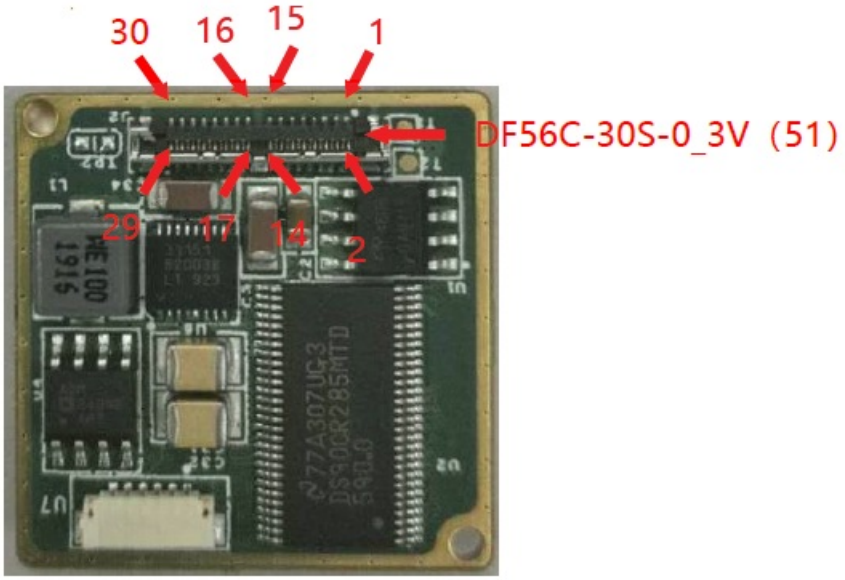

Figure4.1 MRIII00V100F008C Expansion Board

MRIII00V100F008C Socket Definition

The component supports a socket of Hirose 30pins DF56C-30S-0_3V 51 , includes power supply (3.5~18VDC), RS232&RS422, one channel analog video output, Camera LINK digital video output, and 4keys connector. And supply a Hirose 30pins connector to connect DF56C-30S-0_3V 51 socket, the length of cable is 9~11cm, the other end of cable can connect to other devices.

Table 4.1 Hirose 30pin DF56C-30S-0_3V 51 Socket Definition

Pin No.	Pin Name	Type	Definition
4 5 6 19 20	GND	Power	Power ground 3

Pin No.	Pin Name	Type	Definition	
1 2 3	Power Supply	Power	Power input 3.5 18VDC 1	
11	RS-422_RX+	Input/output	RS-422 serial communication interface 2	
12	RS-422_RX-			
13	RS-422_TX+			
14	RS-422_TX-			
9	RS-232_RX	Input/output	RS-232 serial communication interface 2	
10	RS-232_TX			
29	CMLK_CLK+	Output	Camera LINK digital video	Clock signal
30	CMLK _CLK-			
27	CMLK _DATA0+	Output		Data signal
28	CMLK _DATA0-			
25	CMLK _DATA1+	Output		Data signal
26	CMLK _DATA1-			
23	CMLK _DATA2+	Output		Data signal
24	CMLK _DATA2-			
21	CMLK _DATA3+	Output		Data signal
22	CMLK _DATA3-			
8	VGND	Power	Analog video ground 3	
7	VIDEO	Output	Analog video	
15	KEY1	Input	Key interface 3.3V 4	M menu
16	KEY2	Input		+ plus
17	KEY3	Input		- minus
18	KEY4	Input		C Correction

Note

1. The recommended value of operation voltage is 12VDC.
2. TX and RX of Serial Communication interfaces are relative to the imaging module.
3. GND and VGND are connected internally.
4. KEY1~KEY4 are low level valid and pulled up internally inside the expansion component.

MRIII00V110F017C User Expansion Component

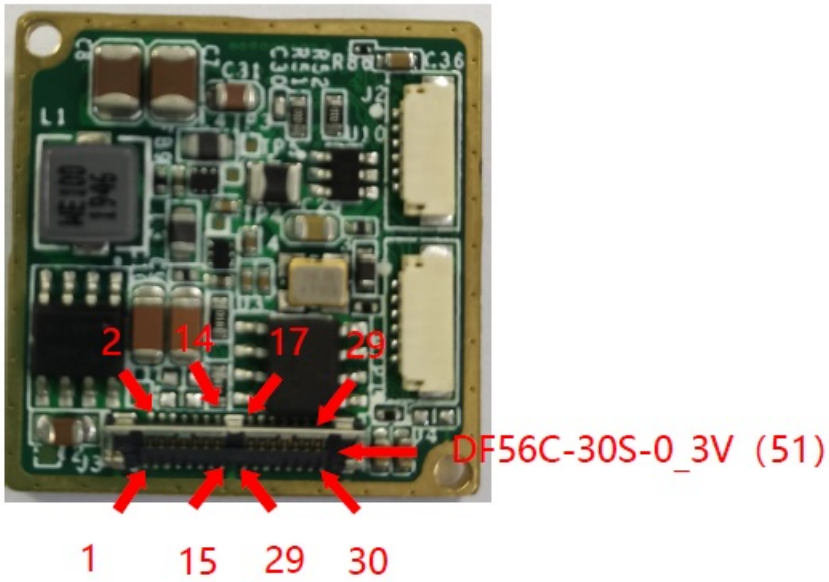

Figure 5.1 MRIII00V110F017C Expansion Board

MRIII00V110F017C Socket Definition

The component supports a socket of Hirose 30pins DF56C-30S-0_3V 51 , includes power supply (3.5~18VDC), RS232&RS422, one channel analog video output, MIPI digital video output, and 4keys connector. And supply a Hirose 30pins connector to connect DF56C-30S-0_3V 51 socket, the length of cable is 9~11cm, the other end of cable can connect to other devices.

Table 5.1 Hirose 30pin DF56C-30S-0_3V 51 Socket Definition

Pin No.	Pin Name	Type	Definition	
4 5 6 19 20	GND	Power	Power ground 3	
1 2 3	Power Supply	Power	Power input 3.5 18VDC 1	
11	RS-422_RX+	Input/output	RS-422 serial communication interface 2	
12	RS-422_RX-			
13	RS-422_TX+			
14	RS-422_TX-			
9	RS-232_RX	Input/output	RS-232 serial communication interface 2	
10	RS-232_TX			
29	MIPI_CLK+	Output	MIPI digital video	Clock Signal
30	MIPI_CLK-			
27	MIPI_DATA0+	Output		Data Signal
28	MIPI_DATA0-			
25	MIPI_DATA1+	Output		Data Signal
26	MIPI_DATA1-			
23	MIPI_DATA2+	Output		Data Signal

Pin No.	Pin Name	Type	Definition	
24	MIPI_DATA2-			
21	MIPI_DATA3+	Output		Data Signal
22	MIPI_DATA3-			
8	VGND	Power	Analog video ground 3	
7	VIDEO	Output	Analog video	
15	KEY1	Input	Key interface 3.3V 4	M menu
16	KEY2	Input		+ plus
17	KEY3	Input		- minus
18	KEY4	Input		C Correction

Note

1. The recommended value of operation voltage is 12VDC.
2. TX and RX of Serial Communication interfaces are relative to the imaging module.
3. GND and VGND are connected internally.
4. KEY1~KEY4 are low level valid and pulled up internally inside the expansion component.

Announcements

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. The product should not be made towards the sun directly 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. Please do not bend or damage cables;
6. Do not scrub your equipment with diluents;
7. Should not unplug and plug other cables without disconnecting the power supply;
8. Wrong cable should not be connected in case that brings damages 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.

Supports and Services

Technical Supports

1. Refitting and designing schemes according to users' application requirements.

2. Providing professional and systematic technical training for users and operators.

After-sales Services

Xcore MicroIII series uncooled thermal imaging core is developed by our company. It has good after-sales service guarantee such as equipment maintenance. If you have any requirements, please contact us.

Company Information

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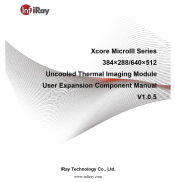
Documents / Resources

	InfiRay Micro III 384T Xcore MicroIII Series Uncooled Thermal Imaging Module [pdf] User Manual Micro III 384T, Xcore MicroIII Series, Uncooled Thermal Imaging Module, Micro III 384T Xcore MicroIII Series Uncooled Thermal Imaging Module, Xcore MicroIII Series Uncooled Thermal Imaging Module, Thermal Imaging Module, Imaging Module

References

- InfiRay Thermal Camera Manufacturer/Supplier