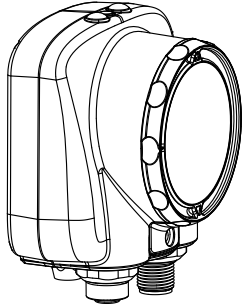


iVu Plus TG Gen2 Series Image Sensor for use with a Remote Display



Datasheet

The iVu image sensor is used to monitor parts for type, size, orientation, shape, and location. The iVu Plus TG package consists of lighting, sensor, and lens. This version of the iVu Plus TG requires a Remote Display touch screen (available separately) to set up and monitor inspections. Cables and mounting brackets can be ordered for each application. Additionally, other lenses, filters, and external lights are available.



Features

- No PC required to configure the sensor
- Image processing expertise is not required
- Multiple inspections that facilitate storing and controlling up to 30 inspections for fast product turnover
- Each inspection can store multiple sensors to enable multiple features inspection.
- Four sensor types in one package—a match sensor that determines whether a pattern on a label or part matches a reference pattern; a sort sensor that can recognize and sort up to ten different patterns within the same inspection; an area sensor that detects whether or not a particular feature (or features) is present; and a blemish sensor that detects flaws on parts
- USB port for uploading and downloading of inspections and log files for easy updating and diagnostics
- Separate touch screen display mounts remotely from the sensor to allow easy access to the user interface and to view inspection images
- Ethernet communications for communication with the sensor
- A RS-232 serial communications port
- High speed processing
- Adjustable image resolution up to 752×480 pixels



WARNING: Not To Be Used for Personnel Protection

Never use this device as a sensing device for personnel **protection**. Doing so could lead to serious injury or death. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

Models

Ring Light Options	Micro Video Lens Options						C-Mount Lens Options
	4.3 mm	6 mm	8 mm	12 mm	16 mm	25 mm	
None	IVU2PRGX04	IVU2PRGX06	IVU2PRGX08	IVU2PRGX12	IVU2PRGX16	IVU2PRGX25	IVU2PRGXC
Red	IVU2PRGR04	IVU2PRGR06	IVU2PRGR08	IVU2PRGR12	IVU2PRGR16	IVU2PRGR25	N/A
Blue	IVU2PRGB04	IVU2PRGB06	IVU2PRGB08	IVU2PRGB12	IVU2PRGB16	IVU2PRGB25	N/A
Green	IVU2PRGG04	IVU2PRGG06	IVU2PRGG08	IVU2PRGG12	IVU2PRGG16	IVU2PRGG25	N/A
IR	IVU2PRGI04	IVU2PRGI06	IVU2PRGI08	IVU2PRGI12	IVU2PRGI16	IVU2PRGI25	N/A
White	IVU2PRGW04	IVU2PRGW06	IVU2PRGW08	IVU2PRGW12	IVU2PRGW16	IVU2PRGW25	N/A
UV 365 ¹	IVU2PRG604	IVU2PRG606	IVU2PRG608	IVU2PRG612	IVU2PRG616	IVU2PRG625	N/A
UV 395 ¹	IVU2PRG904	IVU2PRG906	IVU2PRG908	IVU2PRG912	IVU2PRG916	IVU2PRG925	N/A



Note: This product emits UV light. Exempt Risk Group (RG 0) product. No optical hazard is considered reasonably foreseeable, even for continuous, unrestricted use (IEC 62471).

¹ Blue Filter Kit (FLTMB) is included with UV models.



Specifications

Power **Connection**

12-pin Euro-style (M12) male connector; accessory cable required for operation

USB 2.0 Host

4-pin Pico (M8) female connector; optional USB cable required for operation of USB flash drive

Ethernet **Connection**

4-pin Pico (M8) male connector

Remote Display **Connection**

8-pin Euro-style (M12) female connector; accessory cable required for remote display

Power Requirements

Voltage: 10 to 30 V dc

Current: 1 A maximum (exclusive of I/O load)

Output **Configuration**

NPN or PNP, software selectable

Demo Mode

Full tool functionality on canned images

Sensor Lock

Optional password protection

Integrated Ring Light

Models with Red, IR, Green, Blue, White or no integrated ring light

Output **Rating**

150 mA

External Strobe Output

+ 5 V dc

Acquisition

98 fps (frames per second)²

Exposure Time

0.1 ms to 1.049 s

Imager

1/3 inch CMOS 752 × 480 pixels; adjustable Field of View (FOV)

Lens Mount

Micro Video Lens models: M12 × 1 mm thread; micro video lens 4.3, 6, 8, 12, 16, 25 mm

C-Mount models: Standard C-mount (1 inch-32 UN)

Construction

Black PBT sensor housing; die cast zinc back cover; acrylic window

Weight: 0.41 kg (0.90 lbs)

Environmental **Rating**

IEC IP67

Operating Conditions

Stable Ambient Temperature: 0 °C to +40 °C (+32 °F to +104 °F)

Certifications

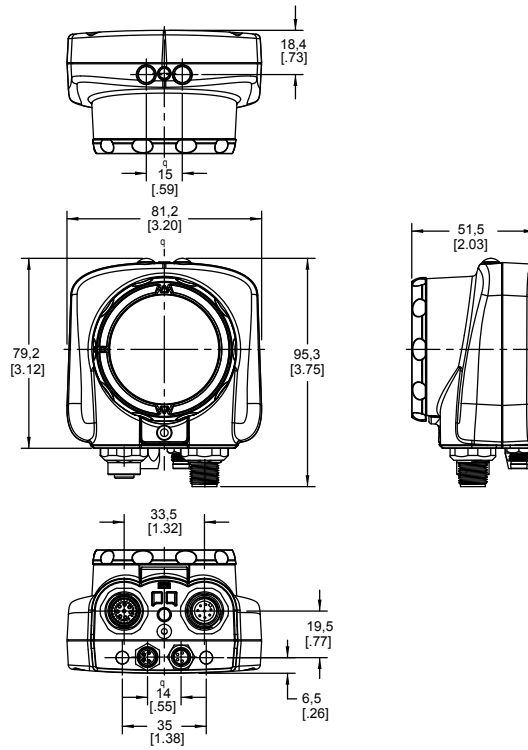


² This value can vary based on inspection settings.

Dimensions

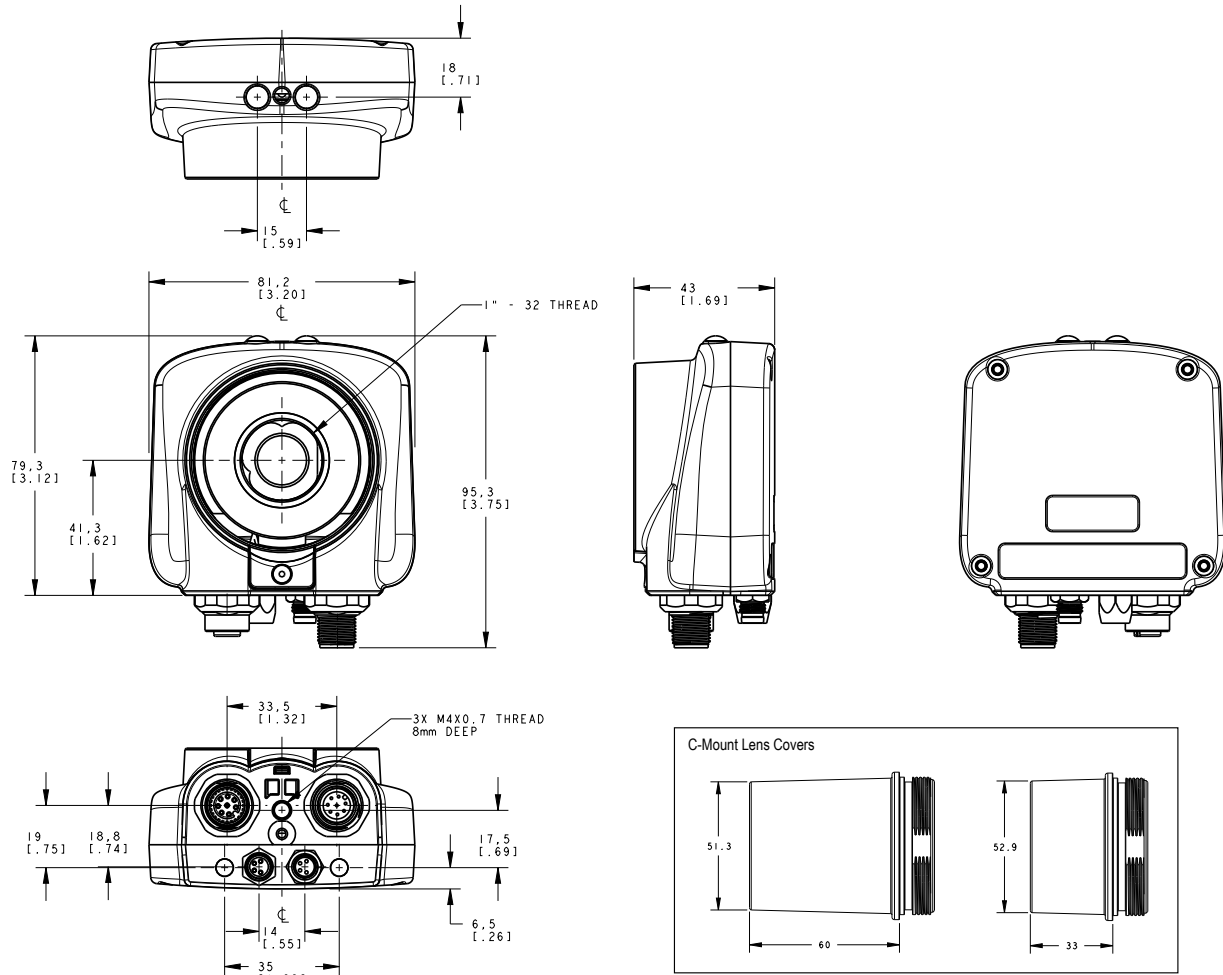
Micro Video Lens Dimensions

All measurements are listed in millimeters [inches], unless noted otherwise.



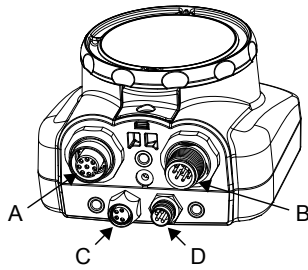
C-Mount Lens Dimensions

All measurements are listed in millimeters [inches], unless noted otherwise.



Cable Connections for Remote Display

The cable connections on the iVu Plus with remote display are shown below, and power I/O connections (B) are defined in the Power I/O Connections table below.



- A Remote Display Connector
- B Power I/O Connector
- C USB Connector
- D Ethernet Connector



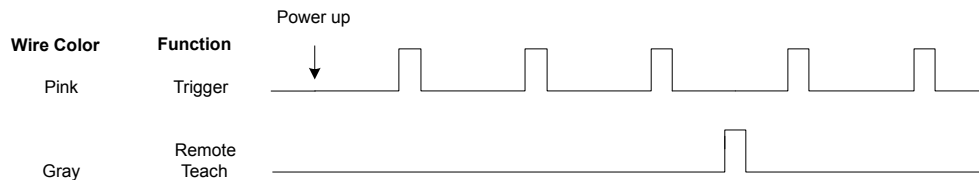
Note: Micro video lens model shown, C-Mount model connections are identical.

Power I/O Connections			
Pin #	Wire Color	Description	Direction
1	White	Output 1	Output
2	Brown	10-30V dc	Input
3	Green	Output 2	Output
4	Yellow	Strobe Out (5V dc only)	Output
5	Gray	Remote Teach	Input
6	Pink	External Trigger	Input
7	Blue	Common (Signal Ground)	Input
8	Red	Ready	Output
9	Orange	Output 3	Output
10	Light Blue	RS-232 TX	Output
11	Black	RS-232 Signal Ground	Output
12	Violet	RS-232 Rx	Input

iVu Trigger, Remote Teach, and I/O Waveforms

The iVu has two input signals—Trigger and Remote Teach. The default setting is to detect the low to high transition. This setting can be changed in the Main Menu > System > Discrete I/O > Input Polarity screen on the sensor.

PNP (Low-to-High) Trigger and Remote Teach Input Waveforms



The sensor triggers from low to high, and Remote Teach behaves electrically like trigger.

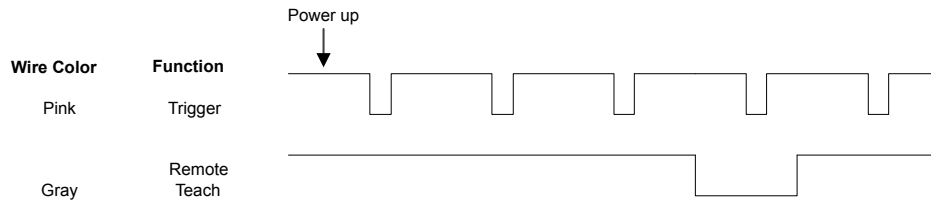


Note:

Table 1: Required iVu Input Signal Voltage

	ON	OFF
PNP	+10 to 30 V dc	< 2 V dc

NPN (High-to-Low) Trigger and Remote Teach Input Waveforms



The sensor triggers from high to low, and Remote Teach behaves electrically like trigger.



Note:

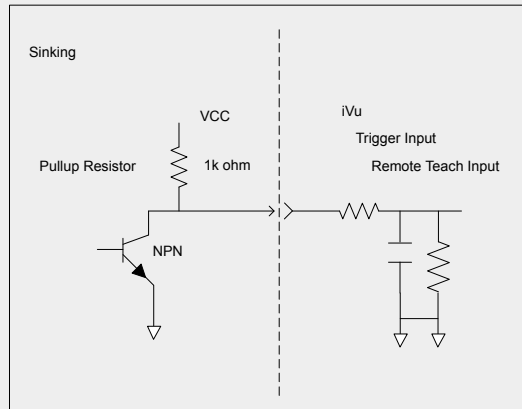
Table 2: Required iVu Input Signal Voltage

	ON	OFF
NPN	< 2 V dc	+10 to 30 V dc



Note: If the device used to trigger or remote teach the iVu Plus TG is a sinking device, these are the options regarding the use of a pull-up resistor:

Option 1: Put a pull-up resistor, rated approximately 1k ohm, between the sensor's positive (+) voltage and the sensor's input as shown below.



Option 2: Enable the Input Pullup in the iVu Plus TG software (Main Menu > System > Discrete I/O > Input Pullup).

iVu Output Waveforms

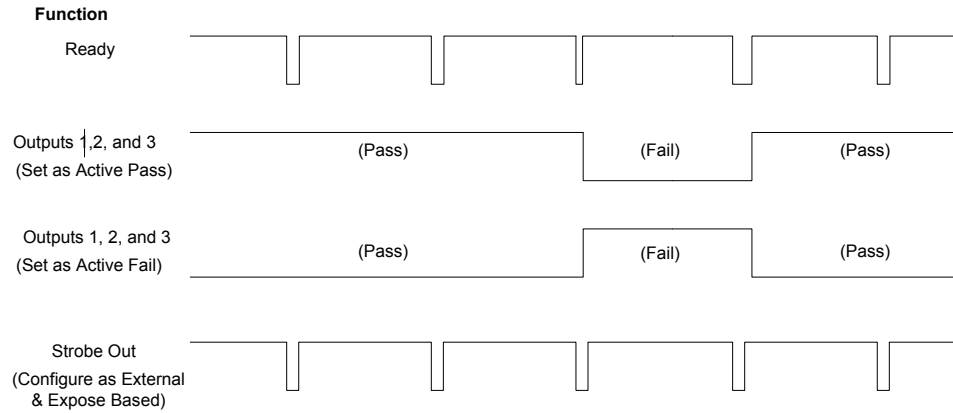


Figure 1. PNP Outputs

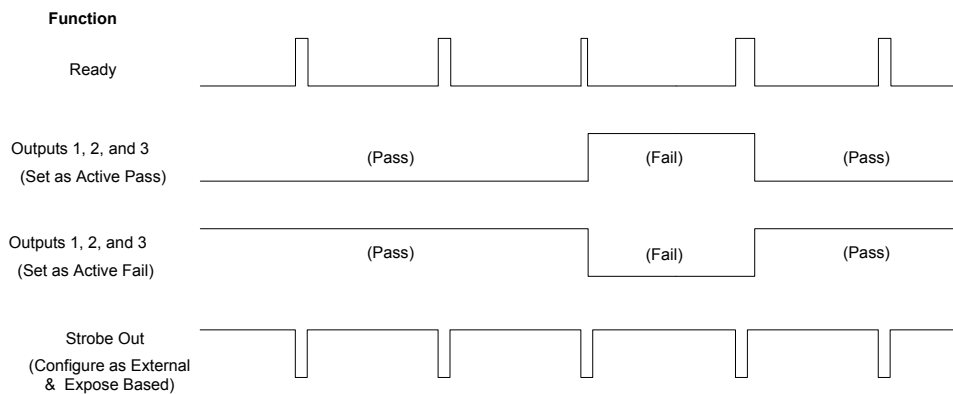


Figure 2. NPN Outputs



Note:

Table 3: Expected iVu Output Signal Voltage

	ON	OFF
PNP	+ V	0 V
NPN	+1 V	+V


Accessories

Power Cable — Required

12-Pin M12/Euro-Style Cordsets with Open Shield				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC2S-1206	1.83 m (6 ft)	Straight		
MQDC2S-1215	4.57 m (15 ft)			
MQDC2S-1230	9.14 m (30 ft)			
MQDC2S-1250	15.2 m (50 ft)			
MQDC2S-1275	22.9 m (75 ft)			

12-Pin M12/Euro-Style Cordsets with Open Shield				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC2S-1206RA	1.83 m (6 ft)	Right Angle		
MQDC2S-1215RA	4.57 m (15 ft)			
MQDC2S-1230RA	9.14 m (30 ft)			
MQDC2S-1250RA	15.2 m (50 ft)			



Note: The cables listed above must be used to meet .

Remote Display — Required for Setup

Model	Description	Data Sheet
RD35	89 mm (3.5 in) Diagonal Remote Touch Screen	p/n 149171
RDM35	89 mm (3.5 in) Diagonal Machine-Mountable Remote Touch Screen	p/n 166096

RD35 Remote Display Accessory Kit

Table 4: Cordset Kits

Model	Length	Description
IVURD-MXK-803	0.91 m (3 ft)	8-pin cable, straight, M12-Molex Mounting Bracket (SMBRD35) Stylus
IVURD-MXK-806	1.83 m (6 ft)	
IVURD-MXK-815	4.57 m (15 ft)	
IVURD-MXK-830	9.14 m (30 ft)	
IVURD-MXK-850	15.2 m (50 ft)	
IVURD-MXK-803RA	0.91 m (3 ft)	8-pin cable, right-angle, M12-Molex Mounting Bracket (SMBRD35) Stylus
IVURD-MXK-806RA	1.83 m (6 ft)	
IVURD-MXK-815RA	4.57 m (15 ft)	
IVURD-MXK-830RA	9.14 m (30 ft)	
IVURD-MXK-850RA	15.2 m (50 ft)	

RDM35 Remote Display Accessory Kit

Table 5: Cordset Kits

Model	Length	Description
IVURDM-QDK-803	0.91 m (3 ft)	8-pin cable, straight, M12-M12 Mounting bracket (SMBRDM35) Stylus
IVURDM-QDK-806	1.83 m (6 ft)	
IVURDM-QDK-815	4.57 m (15 ft)	
IVURDM-QDK-830	9.14 m (30 ft)	
IVURDM-QDK-850	15.2 m (50 ft)	8-pin cable, right-angle, M12-M12 Mounting bracket (SMBRDM35) Stylus
IVURDM-QDK-803RA	0.91 m (3 ft)	
IVURDM-QDK-806RA	1.83 m (6 ft)	
IVURDM-QDK-815RA	4.57 m (15 ft)	

Model	Length	Description
IVURDM-QDK-830RA	9.14 m (30 ft)	
IVURDM-QDK-850RA	15.2 m (50 ft)	

Ethernet Cable Options

RJ45 Ethernet to 4-Pin Threaded M8/Pico-Style Cordsets				
Model	Length	Style	Dimensions	Pinout
IVUC-E-406	1.83 m (6 ft)	Cat5e Shielded		<p>1 = Blue 2 = White/Blue 3 = White/Orange 4 = Orange</p>
IVUC-E-415	4.57 m (15 ft)			
IVUC-E-430	9.14 m (30 ft)			
IVUC-E-450	15.2 m (50 ft)			
IVUC-E-475	22.9 m (75 ft)			

USB Cable — Optional

4-Pin Threaded M8/Pico-Style to USB Cordsets with Shield—Double Ended				
Model	Length	Style	Dimensions	Pinout
PSG-4M-4005-USB	0.15 m (6 in)	Straight Pico QD/ USB		<p>Male</p> <p>1 = Red 2 = White 3 = Black 4 = Green</p>
PSG-4M-401-USB	0.31 m (1 ft)			
PSG-4M-403-USB	0.91 m (3 ft)			
PSG-4M-410-USB	3 m (10 ft)			

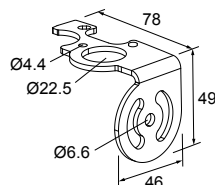
USB Flash Drive — Optional

Model	Description
IVU-USBFD2	USB Flash Drive 2 GB

Brackets

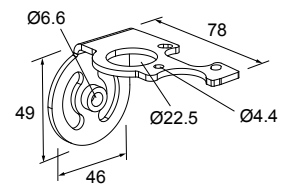
SMBIVURAL

- Right-angle bracket for mounting sensor from the left
- 12-ga. stainless steel
- Hardware included



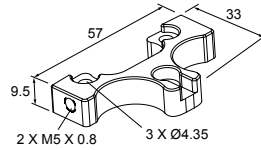
SMBIVURAR

- Right-angle bracket for mounting sensor from right
- 12-ga. stainless steel
- Hardware included



SMBIVUU

- U-shaped swivel bracket kit
- 14-ga. stainless steel
- Hardware included



Note: Use cables with right-angle connectors with this bracket kit.

Micro Video Lens Accessories

Micro Video Lens Models

Model	Lens Description
LMF04 ³	4.3 mm lens
LMF06	6 mm lens
LMF08	8 mm lens
LMF12	12 mm lens
LMF16	16 mm lens
LMF25	25 mm lens

Micro Video Lens Filters — **Optional**

Model	Description
FLTMR2	Red and dark red filter kit
FLTMI	Infrared filter kit
FLTMB	Blue filter kit
FLTMG	Green filter kit

C-Mount Lens Accessories

C-Mount Lens Models

Model	Lens Description
LCF04	4 mm Lens - no threads for filter
LCF08	8 mm Lens - no threads for filter
LCF12	12 mm Lens - no threads for filter
LCF16	16 mm Lens, aperture lock - no threads for filter
LCF25R	25mm lens
LCF25LR	25mm lens with focus locking
LCF50L1R	50mm lens with focus locking, plastic
LCF50L2R	50mm lens with focus locking, metal (will not fit ring)
LCF75LR	75mm lens with focus locking, metal (will not fit ring)

³ Due to the flexibility of the replaceable lenses, focus mechanism, and imager field-of-view settings, it is possible with the 4.3 mm lens to experience reflections from the internal strobe on the inspection image. To eliminate this effect, the field-of-view can be limited to the system default of 320×240 (or 640×480 for fine), the working distance to the object should be no more than about 8 inches, or an external strobe should be used instead of the internal ring light.

C-Mount Lens Enclosure Choices

Model	Description
IVUSLC50-P	Sealed C-mount lens enclosure
IVUSLC75-P	

C-Mount Lens Filters — **Optional**

Model	Description
FLTR	Red filter kit
FLTB	Blue filter kit
FLTG	Green filter kit
FLTI	IR Filter kit

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