

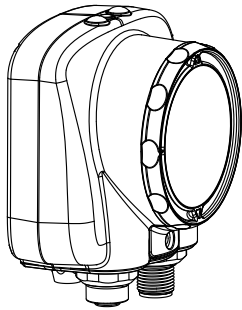
# iVu Plus Image Sensor



## Datasheet

### iVu Plus Image Sensor For Use with a Remote Display

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



#### 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	IVUPRGX04	IVUPRGX06	IVUPRGX08	IVUPRGX12	IVUPRGX16	IVUPRGX25	IVUPRGXC
Red	IVUPRGR04	IVUPRGR06	IVUPRGR08	IVUPRGR12	IVUPRGR16	IVUPRGR25	N/A
Blue	IVUPRGB04	IVUPRGB06	IVUPRGB08	IVUPRGB12	IVUPRGB16	IVUPRGB25	N/A
Green	IVUPRGG04	IVUPRGG06	IVUPRGG08	IVUPRGG12	IVUPRGG16	IVUPRGG25	N/A
IR	IVUPRGI04	IVUPRGI06	IVUPRGI08	IVUPRGI 12	IVUPRGI 16	IVUPRGI 25	N/A
White	IVUPRGW04	IVUPRGW06	IVUPRGW08	IVUPRGW12	IVUPRGW16	IVUPRGW25	N/A
UV 365 <sup>1</sup>	IVUPRG604	IVUPRG606	IVUPRG608	IVUPRG612	IVUPRG616	IVUPRG625	N/A
UV 395 <sup>1</sup>	IVUPRG904	IVUPRG906	IVUPRG908	IVUPRG912	IVUPRG916	IVUPRG925	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).

<sup>1</sup> Blue Filter Kit (FLT B) 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)<sup>2</sup>

### 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 Valox™ sensor housing; acrylic window

Weight: 0.30 kg (0.65 lbs)

### Environmental Rating

IP67

### Operating Conditions

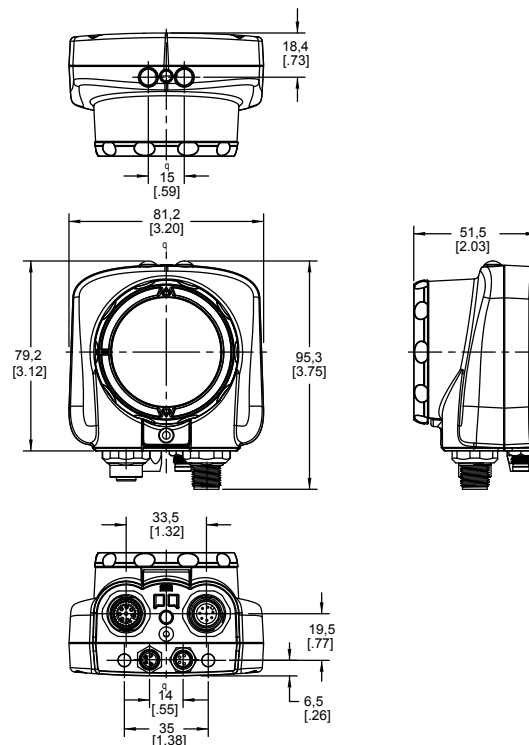
Stable Ambient Temperature: 0 °C to +40 °C (+32 °F to +104 °F)

### Certifications



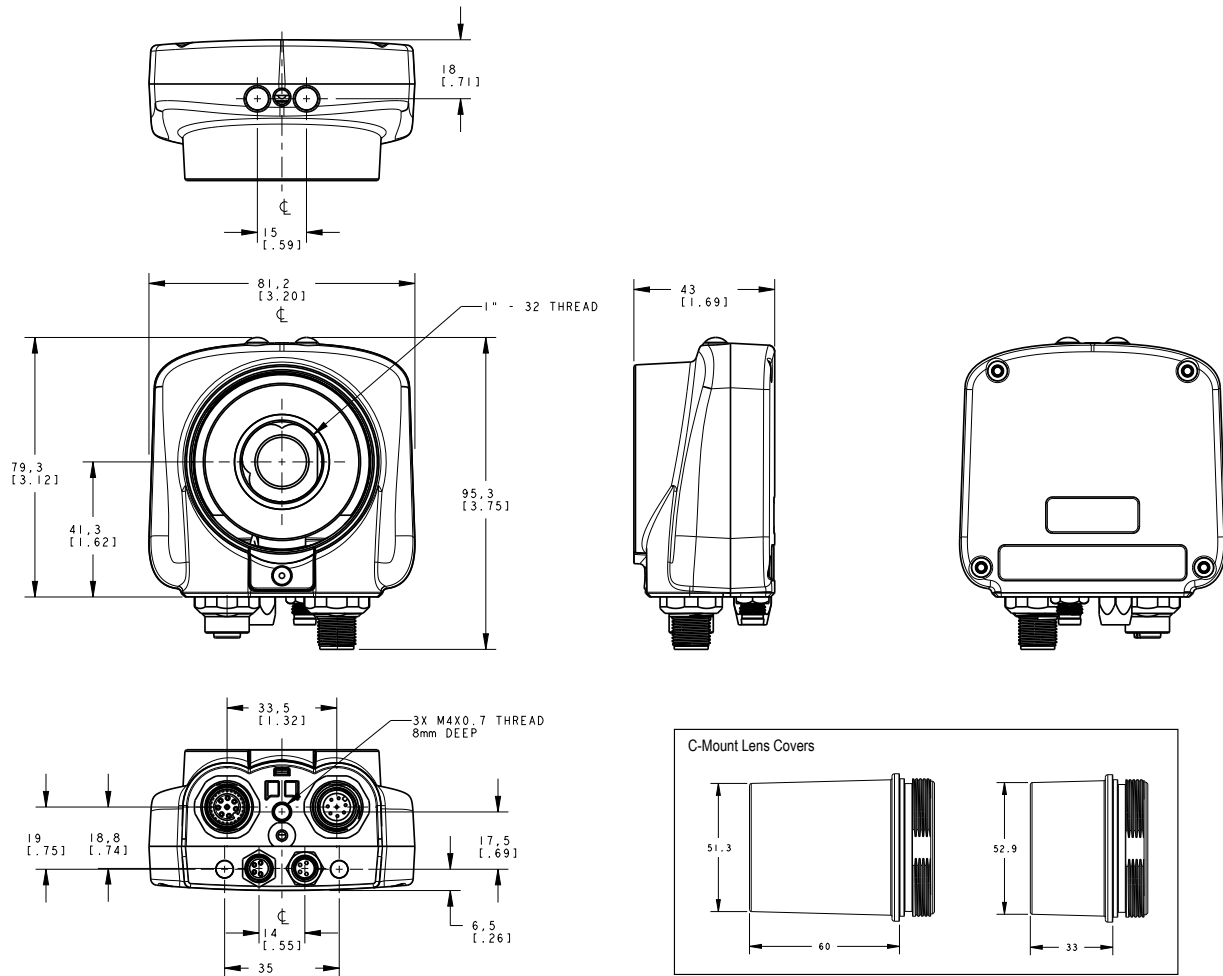
## Dimensions

Micro Video Lens Dimensions



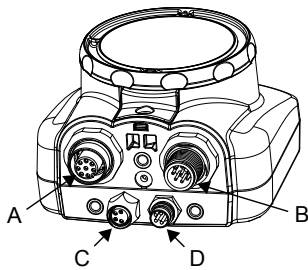
<sup>2</sup> This value can vary based on inspection settings.

C-Mount Lens Dimensions



## 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



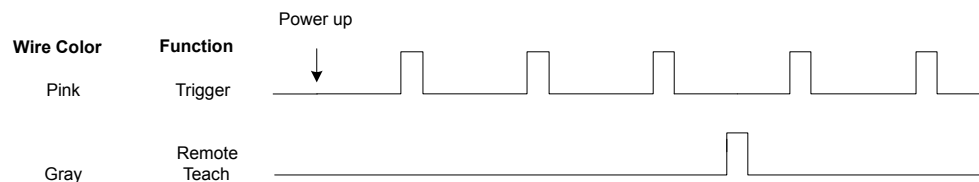
NOTE: Micro video lens model shown, C-Mount model connections are identical.

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

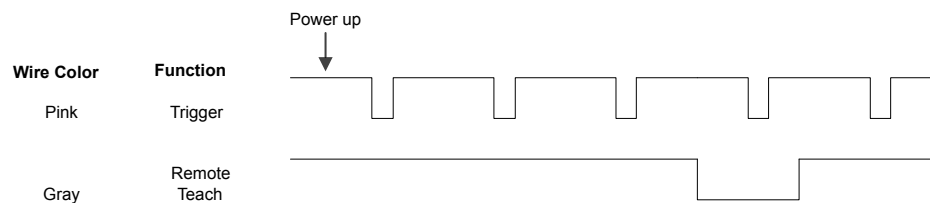
The iVu has two input signals—Trigger and Remote Teach. The default setting is to detect the low to high transition. This setting can be changed in the Main Menu > System > Discrete I/O > Input Polarity screen on the sensor.

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



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

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

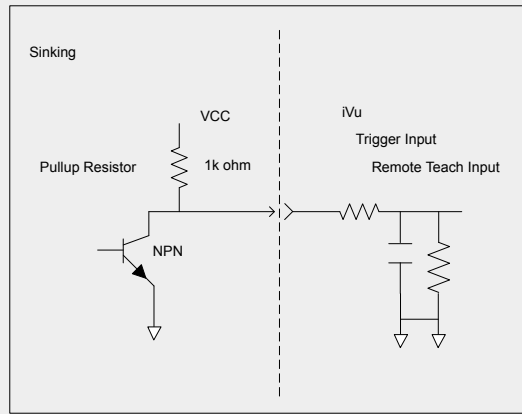


The sensor triggers from high to low, and Remote Teach behaves electrically like trigger.



**NOTE:** 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

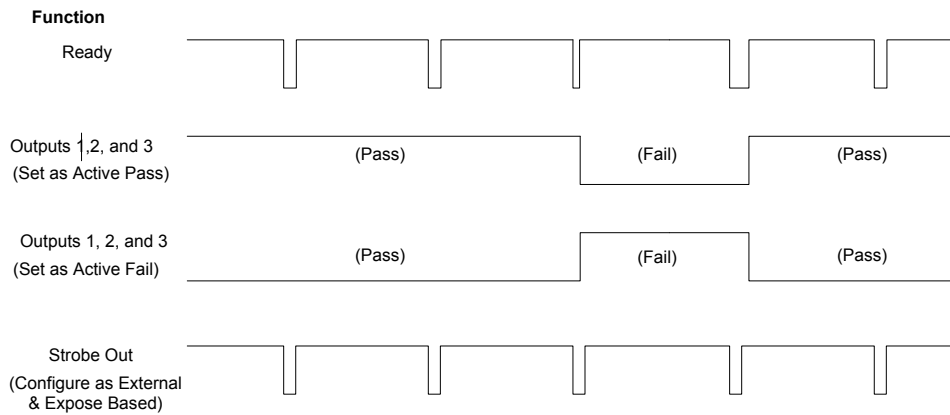


Figure 1. PNP Outputs

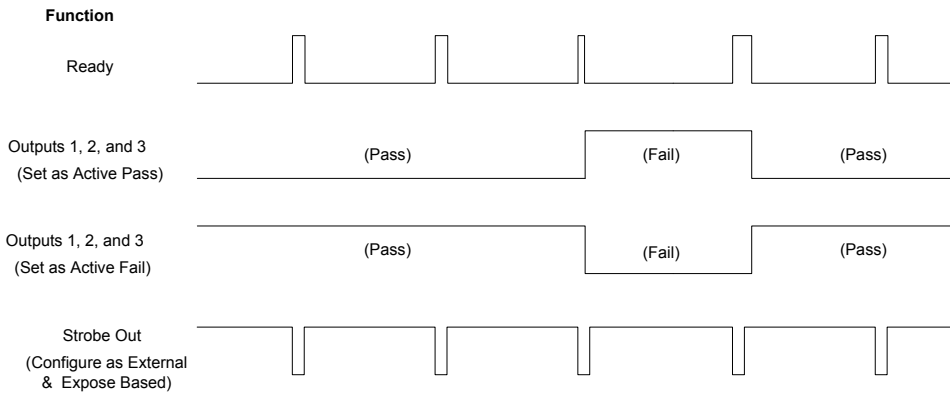
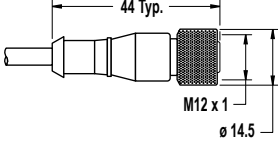
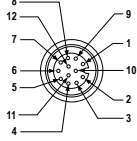
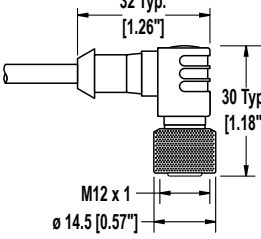



Figure 2. NPN Outputs

## Accessories

### Power Cable — Required

12-Pin M12/Euro-Style Cordsets				
Model	Length	Style	Dimensions	Pinout
iVUC-1206	1.83 m (6 ft)	Straight		 1 = White 2 = Brown 3 = Green 4 = Yellow 5 = Gray 6 = Pink 7 = Blue 8 = Red 9 = Orange 10 = Lt. Blue 11 = Black 12 = Violet
iVUC-1215	4.57 m (15 ft)			
iVUC-1230	9.14 m (30 ft)			
iVUC-1250	15.2 m (50 ft)			
iVUC-1275	22.9 m (75 ft)			
iVUC-1206RA	1.83 m (6 ft)	Right-Angle		
iVUC-1215RA	4.57 m (15 ft)			
iVUC-1230RA	9.14 m (30 ft)			
iVUC-1250RA	15.2 m (50 ft)			
iVUC-1275RA	22.9 m (75 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 1: Cordset Kits

Model	Length	Description
IVURD-MXK-803	0.91 m (3 ft)	8-pin cable, straight, M12-Molex
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)	Mounting Bracket (SMBRD35)
IVURD-MXK-803RA	0.91 m (3 ft)	8-pin cable, right-angle, M12-Molex
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)	Mounting Bracket (SMBRD35)
		Stylus

## RDM35 Remote Display Accessory Kit

Table 2: Cordset Kits

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

## 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>1 = +5V dc 2 = Data - 3 = Data + 4 = GND</p>
PSG-4M-401-USB	0.31 m (1 ft)			
PSG-4M-403-USB	0.91 m (3 ft)			
PSG-4M-410-USB	3.0 m (10 ft)			
PSG-4M-416-USB	4.9 m (16 ft)			
				<p>1 = Red 2 = White 3 = Black 4 = Green</p>

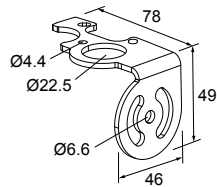
## USB Flash Drive — Optional

Model	Description
IVU-USBFD2	USB Flash Drive 2 GB

## Brackets

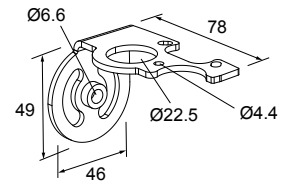
### SMBIVURAL

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



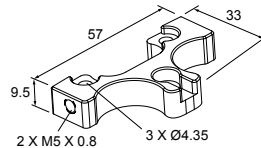
### SMBIVURAR

- 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
LMFO4 <sup>3</sup>	4.3 mm lens
LMFO6	6 mm lens
LMFO8	8 mm lens
LMF12	12 mm lens
LMF16	16 mm lens
LMF25	25 mm lens

### Micro Video Lens Filters — Optional

Model	Description
FLTMR	Red filter kit
FLTMB	Blue filter kit
FLTMG	Green filter kit
FLTMI	IR filter kit

<sup>3</sup> 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 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)

### 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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