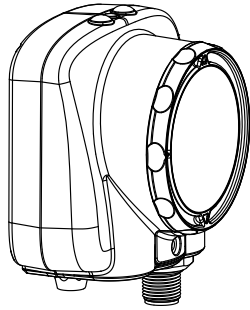


iVu Plus TG Gen2 Series Image Sensor with Integrated Display



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, lens, and display. This version of the iVu Plus has an integrated display 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
- Integrated color touch screen display
- 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 | IVU2PTGX04 | IVU2PTGX06 | IVU2PTGX08 | IVU2PTGX12 | IVU2PTGX16 | IVU2PTGX25 | IVU2PTGXC |
| Red | IVU2PTGR04 | IVU2PTGR06 | IVU2PTGR08 | IVU2PTGR12 | IVU2PTGR16 | IVU2PTGR25 | N/A |
| Blue | IVU2PTGB04 | IVU2PTGB06 | IVU2PTGB08 | IVU2PTGB12 | IVU2PTGB16 | IVU2PTGB25 | N/A |
| Green | IVU2PTGG04 | IVU2PTGG06 | IVU2PTGG08 | IVU2PTGG12 | IVU2PTGG16 | IVU2PTGG25 | N/A |
| IR | IVU2PTGI04 | IVU2PTGI06 | IVU2PTGI08 | IVU2PTGI12 | IVU2PTGI16 | IVU2PTGI25 | N/A |
| White | IVU2PTGW04 | IVU2PTGW06 | IVU2PTGW08 | IVU2PTGW12 | IVU2PTGW16 | IVU2PTGW25 | N/A |
| UV 365 ¹ | IVU2PTG604 | IVU2PTG606 | IVU2PTG608 | IVU2PTG612 | IVU2PTG616 | IVU2PTG625 | N/A |
| UV 395 ¹ | IVU2PTG904 | IVU2PTG906 | IVU2PTG908 | IVU2PTG912 | IVU2PTG916 | IVU2PTG925 | 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

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: 0.36 kg (0.80 lbs)

Environmental **Rating**

IEC IP67

Operating Conditions

Stable Ambient Temperature: 0 °C to +45 °C (+32 °F to +113 °F)

Certifications

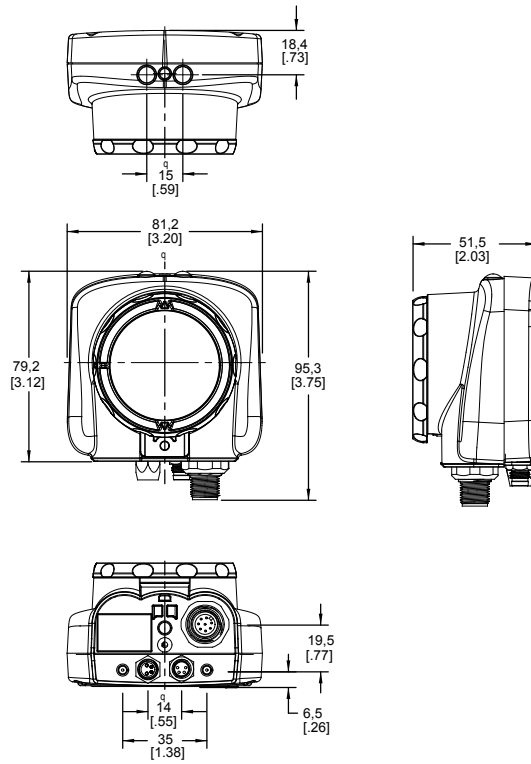


² This value can vary based on inspection settings.

Dimensions

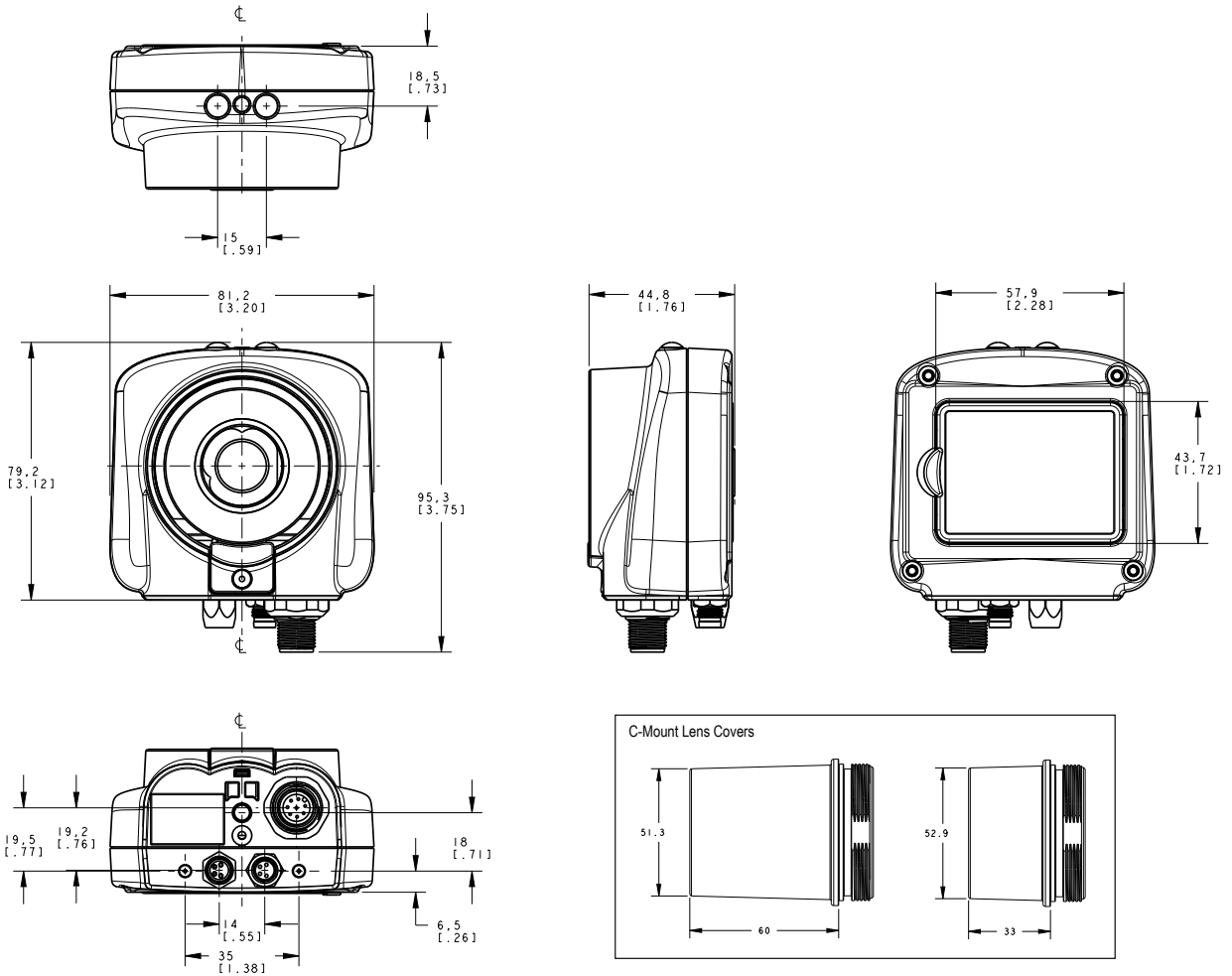
Micro Video Lens Dimensions

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



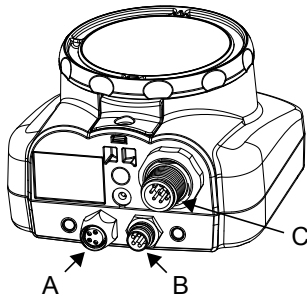
C-Mount Lens Dimensions

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



Cable Connections for Integrated Display

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



- A USB Connector
- B Ethernet Connector
- C Power I/O Connector



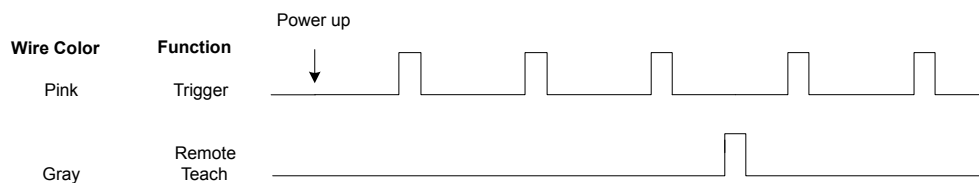
Note: Micro video lens model shown, C-Mount model connections are identical.

| 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.

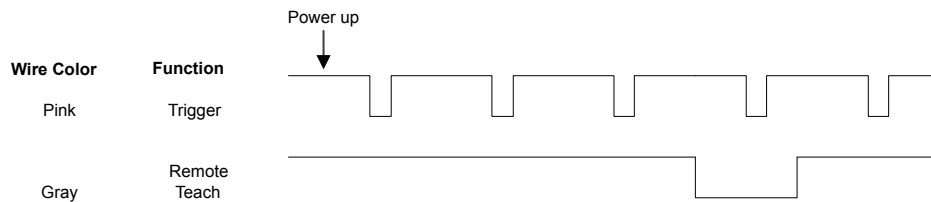


Note:

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:

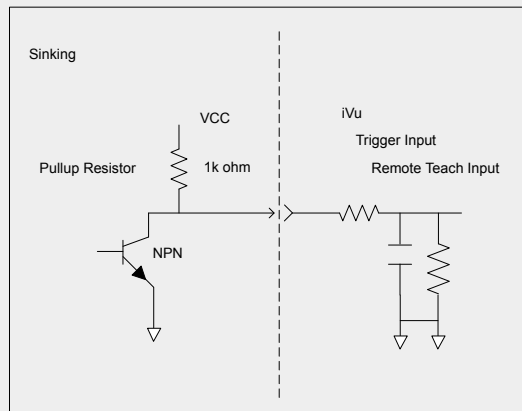
Table 2: Required iVu Input Signal Voltage

| | 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

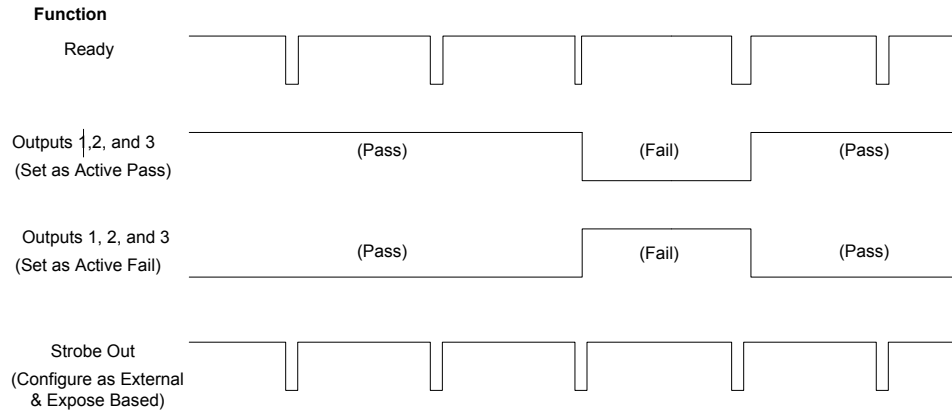


Figure 1. PNP Outputs

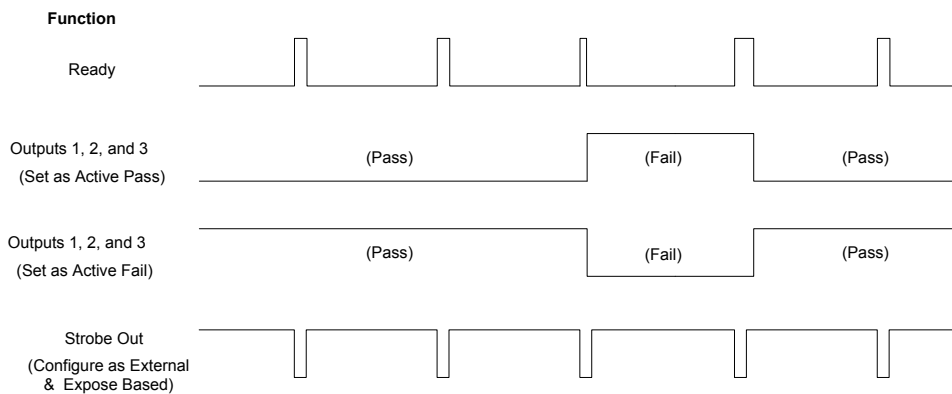


Figure 2. NPN Outputs



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) | | | |

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 = 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) | | | |

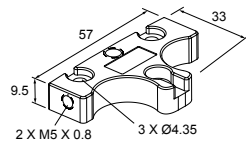
USB Flash Drive — Optional

| Model | Description |
|------------|----------------------|
| IVU-USBFD2 | USB Flash Drive 2 GB |

Brackets

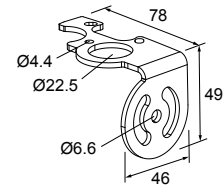
SMBIVUB

- Bottom mounting bracket
- Black anodized aluminum
- Hardware included



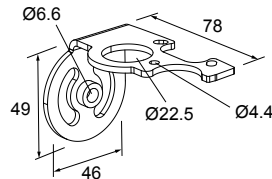
SMBIVURAL

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



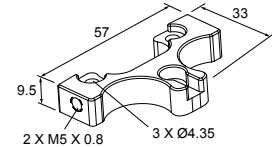
SMBIVURAR

- 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 |

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.

| Model | Lens Description |
|----------|---|
| 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 Models

| 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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