

**Features**




The iVu image sensor is used to monitor parts for type, size, orientation, shape, and location. The package consists of lighting, sensor, and lens, and display. Appropriate cables and mounting brackets can be ordered for each application. Additionally, other lenses, brackets, filters and external lights are available. Installation, setup, and configuration can be done quickly without requiring a PC to configure the sensor.

- No external PC required to configure the sensor
- Image processing expertise is not required
- Three sensors in one package—a match sensor that determines whether a pattern on a label or part matches some reference pattern; an area sensor that detects whether a particular feature (or features) is present or not; and an area sensor with tools that adjust for motion
- USB 2.0 compliant host provided for easy updating and diagnostics
- Integrated color touch screen display
- High speed processing

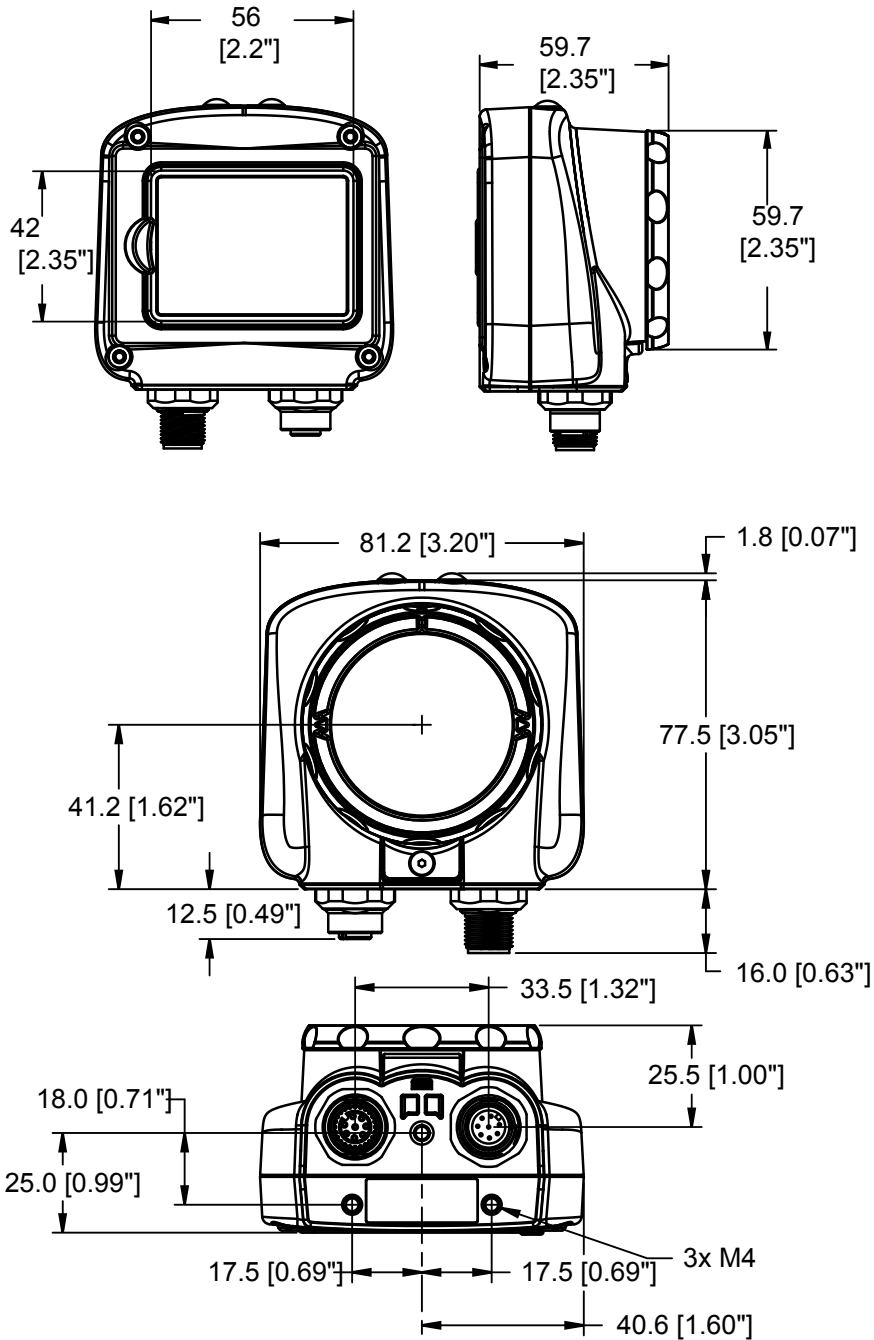
**Models**

| Ring Light Options | Lens Options |           |           |           |           | Output Type |
|--------------------|--------------|-----------|-----------|-----------|-----------|-------------|
|                    | 4.3 mm       | 8 mm      | 12 mm     | 16 mm     | 25 mm     |             |
| None               | IVUTGNX04    | IVUTGNX08 | IVUTGNX12 | IVUTGNX16 | IVUTGNX25 | NPN         |
|                    | IVUTGPX04    | IVUTGPX08 | IVUTGPX12 | IVUTGPX16 | IVUTGPX25 | PNP         |
| Red                | IVUTGNR04    | IVUTGNR08 | IVUTGNR12 | IVUTGNR16 | IVUTGNR25 | NPN         |
|                    | IVUTGPR04    | IVUTGPR08 | IVUTGPR12 | IVUTGPR16 | IVUTGPR25 | PNP         |
| Blue               | IVUTGNB04    | IVUTGNB08 | IVUTGNB12 | IVUTGNB16 | IVUTGNB25 | NPN         |
|                    | IVUTGPB04    | IVUTGPB08 | IVUTGPB12 | IVUTGPB16 | IVUTGPB25 | PNP         |
| Green              | IVUTGNG04    | IVUTGNG08 | IVUTGNG12 | IVUTGNG16 | IVUTGNG25 | NPN         |
|                    | IVUTGPG04    | IVUTGPG08 | IVUTGPG12 | IVUTGPG16 | IVUTGPG25 | PNP         |
| IR                 | IVUTGNI04    | IVUTGNI08 | IVUTGNI12 | IVUTGNI16 | IVUTGNI25 | NPN         |
|                    | IVUTGPI04    | IVUTGPI08 | IVUTGPI12 | IVUTGPI16 | IVUTGPI25 | PNP         |
| White              | IVUTGNW04    | IVUTGNW08 | IVUTGNW12 | IVUTGNW16 | IVUTGNW25 | NPN         |
|                    | IVUTGPW04    | IVUTGPW08 | IVUTGPW12 | IVUTGPW16 | IVUTGPW25 | PNP         |

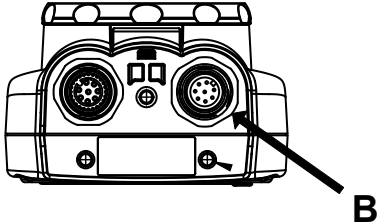
## Sensor Specifications

| Feature                       | Description  |
|-------------------------------|--|
| <b>Power Connection</b>       | 8-pin Euro-style (M12) male connector; accessory cable required for operation (see ( <a href="#">Power Cable — Required</a> )).                            |
| <b>USB 2.0 Host</b>           | 8-pin Euro-style (M12) female connector; optional USB cable required for operation of USB Thumb Drive(see <a href="#">USB Cable — Optional</a> on page 6). |
| <b>Power Requirements</b>     | <b>Voltage:</b> 10-30V dc; <b>Current:</b> 800 mA maximum (exclusive of I/O load)  |
| <b>Output Configuration</b>   | NPN or PNP determined by model   |
| <b>Tools</b>                  | Match, Area, Area with Motion  |
| <b>Demo Mode</b>              | Full tool functionality on canned images   |
| <b>Sensor Lock</b>            | Optional password protection   |
| <b>External Strobe Output</b> | + 5V dc  |
| <b>Integrated Ring Light</b>  | Red, IR, Green, Blue, White  |
| <b>Output Rating</b>          | 150 mA   |
| <b>Display</b>                | 68.5 mm (2.7") LCD Color Integrated Display 320 X 240 pixels   |
| <b>Acquisition</b>            | 100 fps (frames per second) max.   |
| <b>Exposure Time</b>          | 0.1 ms to 1.049 s  |
| <b>Imager</b>                 | 1/3 inch CMOS 752 X 480 pixels; adjustable Field of View (FOV)   |
| <b>Lens Mount</b>             | M12 X 1 mm thread; micro video lens 4.3, 6, 8, 12, 16, 25 mm   |
| <b>Construction</b>           | Black Valox™ sensor housing; acrylic window  |
| <b>Environmental Rating</b>   | IP67   |
| <b>Operating Conditions</b>   | <b>Stable Ambient Temperature:</b> 0° to + 50° C (+32° to + 122° F)  |
| <b>Certifications</b>         |   |

## Dimensions



## Power and I/O Cable Connections for the iVu TG with Integrated Display

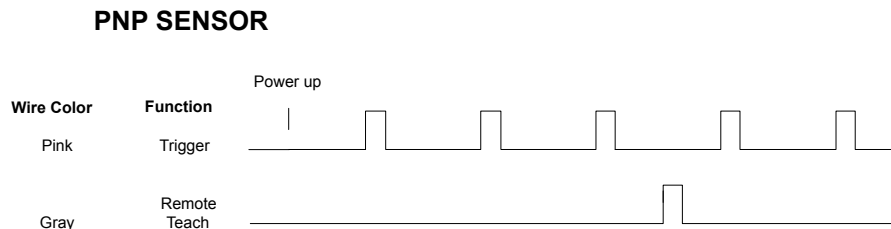
|   | Pin # | Wire Color | Description             | Direction               |
|---|-------|------------|-------------------------|-------------------------|
|  | 2     | Brown      | 10-30V dc               | Input                   |
|   | 7     | Blue       | Common (Signal Ground)  | Input                   |
|   | 6     | Pink       | External Trigger        | Input                   |
|   | 5     | Gray       | Remote Teach            | Input                   |
|   | 1     | White      | Pass/Fail               | Output                  |
|   | 8     | Red        | Ready                   | Output                  |
|   | 4     | Yellow     | Strobe Out (5V dc only) | Output                  |
|   | 3     | Green      | <i>Reserved</i>         | Output (Do not connect) |

### iVu Trigger, Remote Teach, and I/O Waveforms

The iVu has two input signals—Trigger and Remote Teach. The default setting for PNP sensors is to detect the Trigger or Remote Teach input on the low to high transition. For NPN sensors the default setting is to detect the Trigger or Remote Teach input on the high to low transition. This setting can be changed in the Input Polarity screen on the sensor.

#### iVu PNP Trigger and Remote Teach Input Waveforms

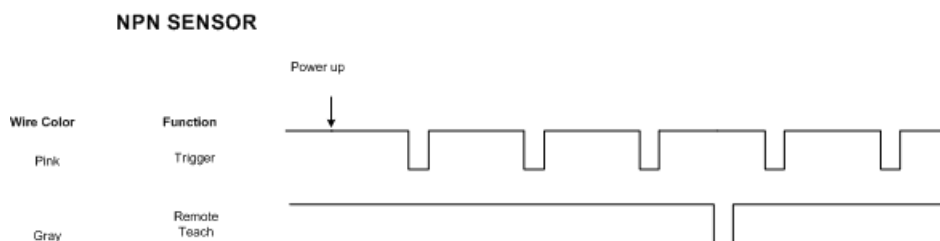
The iVu Trigger and Remote Teach input waveforms are shown below.



The PNP sensor triggers from low to high, and Remote Teach behaves electrically like trigger (see above).

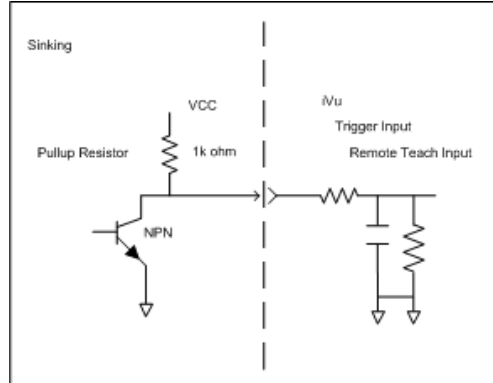
#### iVu NPN Trigger and Remote Teach Input Waveforms

The iVu Trigger and Remote Teach input waveforms are shown below.



### iVu with Integrated Display

By default, the NPN version of the sensor triggers from high to low, and Remote Teach behaves electrically like trigger. If using an NPN trigger sensor, put a pull-up resistor, rated approximately 1k ohm, between the sensor's positive (+) voltage and the sensor's input as shown below.



### Remote Teach

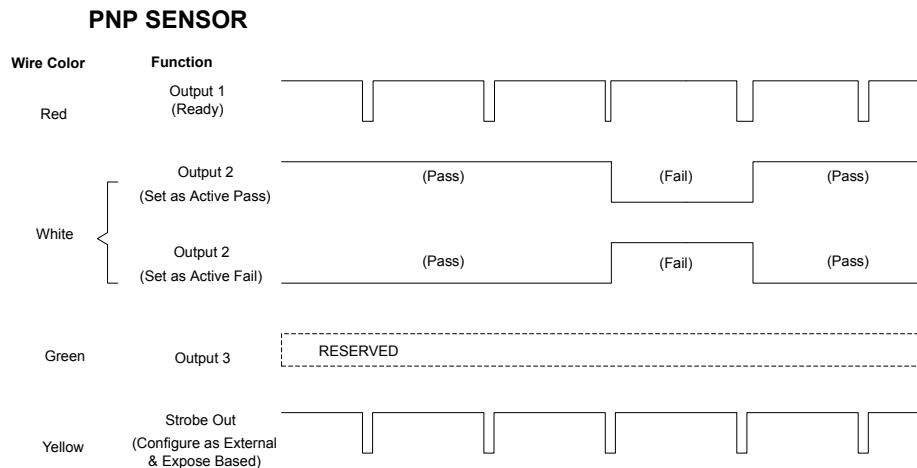
The Remote Teach function is a method of remotely updating inspection parameters while the iVu sensor is running. Remote Teach is only available when the iVu is configured as a Match sensor. The sequence of events for executing a Remote Teach as follows:

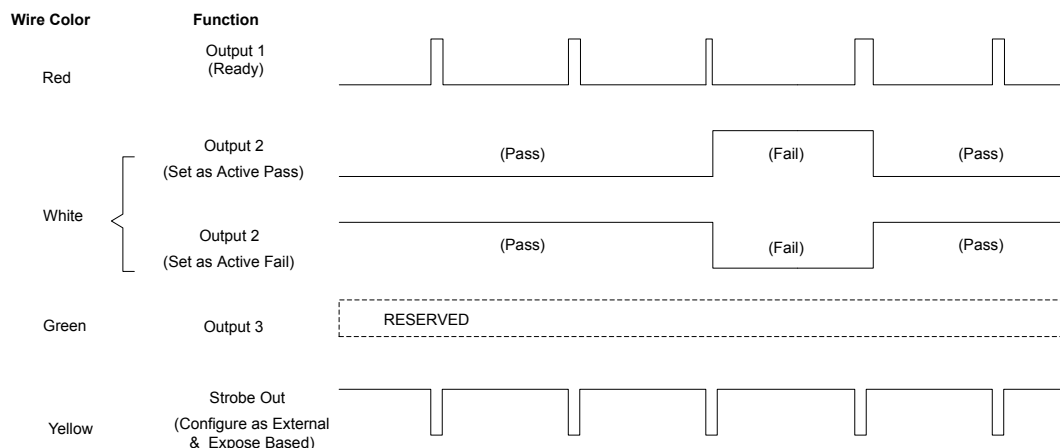
1. With the sensor Ready, pulse the Remote Teach line.
2. The sensor recognizes that the Remote Teach line has been pulsed and waits for the next valid trigger.
3. At the next valid trigger, Ready goes inactive (the Green Ready LED shuts OFF), and the sensor acquires a new image.
4. The sensor learns the new pattern and performs the analysis.

### iVu Output Waveforms

#### Output Waveforms

Below are the iVu output waveforms.



**NPN SENSOR****Power Cables**

| Model        | Length     | Description              |
|--------------|------------|--------------------------|
| MQDC2S-806   | 2 m (6')   | 8-pin cable, straight    |
| MQDC2S-815   | 5 m (15')  |                          |
| MQDC2S-830   | 9 m (30')  |                          |
| MQDC2S-850   | 15 m (50') |                          |
| MQDC2S-806RA | 2 m (6')   | 8-pin cable, right angle |
| MQDC2S-815RA | 5 m (15')  |                          |
| MQDC2S-830RA | 9 m (30')  |                          |
| MQDC2S-850RA | 15 m (50') |                          |

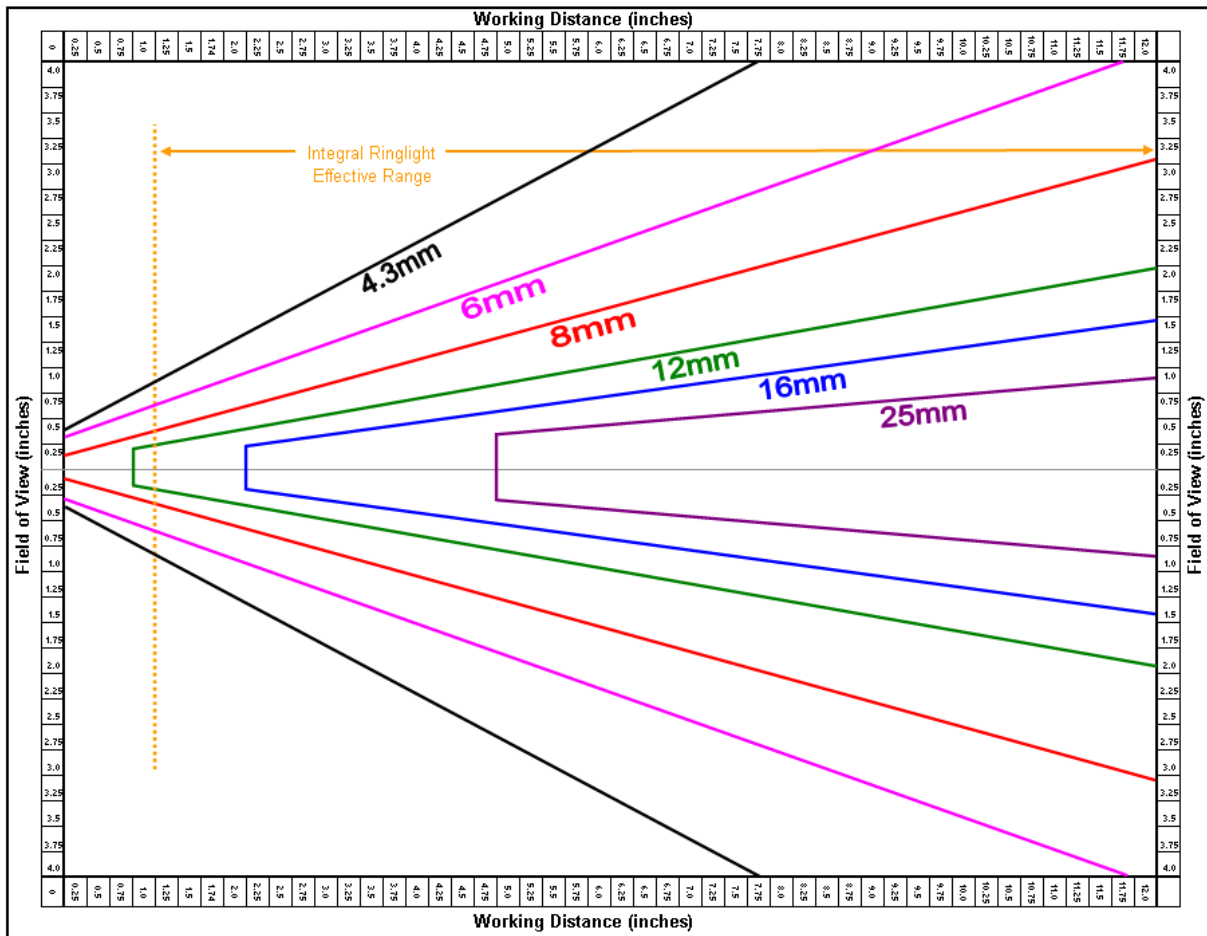
**USB Cable — Optional**

| Model            | Length     | Description            |
|------------------|------------|------------------------|
| MQDEC-8005-USB   | .15 m (6") | USB cable, straight    |
| MQDEC-801-USB    | .30 m (1') |                        |
| MQDEC-803-USB    | .90 m (3') |                        |
| MQDEC-810-USB    | 3 m (10')  |                        |
| MQDEC-8005RA-USB | .15 m (6") | USB cable, right angle |
| MQDEC-801RA-USB  | .30 m (1') |                        |
| MQDEC-803RA-USB  | .90 m (3') |                        |
| MQDEC-810RA-USB  | 3 m (10')  |                        |

## Lens Choices

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






## iVu Lens Chart



## Filters — Optional

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

## Bracket Choices

| Model     | Description   | Mounting Bracket   |
|-----------|---|--|
| SMBIVURAL | Right angle, left mounting bracket  |    |
| SMBIVURAR | Right angle, right mounting bracket   |  |
| SMBIVUB   | Bottom mounting bracket kit   |  |
| SMBIVUU   | U-shape mounting bracket kit<br> <b>Note:</b> Banner recommends that cables with right-angle connectors be used with this bracket kit. |  |