

iVu Bar Code Reader (BCR) Image Sensor



Used with Integrated Display

For the latest technical information about this product, including specifications, dimensions, and wiring, see www.bannerengineering.com.

Features



The iVu Plus Barcode Reader (BCR) sensor package consists of lighting, sensor, 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
- USB 2.0 compliant host provided for easy updating and diagnostics
- Integrated color touch screen display
- An RS232 serial communications port that is used to output barcode data to other applications.
- High speed processing

The iVu BCR reads the following barcode types:

- DataMatrix (ECC 200) barcodes
- QR Code (QR and Micro QR)
- Linear barcodes:
 - Code128
 - Code39
 - CODABAR
 - Interleaved 2 of 5
 - EAN13
 - EAN8
 - UPCE
 - Postnet
 - IMB
 - Pharmacode



Models

| NPN Models | | | | | | |
|--------------------|--------------------|-----------|-----------|-----------|-----------|----------------------|
| Ring Light Options | Micro Lens Options | | | | | C-Mount Lens Options |
| | 4.3 mm | 8 mm | 12 mm | 16 mm | 25 mm | |
| None | IVUTBNX04 | IVUTBNX08 | IVUTBNX12 | IVUTBNX16 | IVUTBNX25 | IVUTBNXC |
| Red | IVUTBNR04 | IVUTBNR08 | IVUTBNR12 | IVUTBNR16 | IVUTBNR25 | N/A |
| Blue | IVUTBNB04 | IVUTBNB08 | IVUTBNB12 | IVUTBNB16 | IVUTBNB25 | N/A |
| Green | IVUTBNG04 | IVUTBNG08 | IVUTBNG12 | IVUTBNG16 | IVUTBNG25 | N/A |
| IR | IVUTBNI04 | IVUTBNI08 | IVUTBNI12 | IVUTBNI16 | IVUTBNI25 | N/A |
| White | IVUTBNW04 | IVUTBNW08 | IVUTBNW12 | IVUTBNW16 | IVUTBNW25 | N/A |
| UV 365 * | IVUTBN604 | IVUTBN608 | IVUTBN612 | IVUTBN616 | IVUTBN625 | N/A |
| UV 395 * | IVUTBN904 | IVUTBN908 | IVUTBN912 | IVUTBN916 | IVUTBN925 | N/A |

| PNP Models | | | | | | |
|--------------------|--------------------|-----------|-----------|-----------|-----------|----------------------|
| Ring Light Options | Micro Lens Options | | | | | C-Mount Lens Options |
| | 4.3 mm | 8 mm | 12 mm | 16 mm | 25 mm | |
| None | IVUTBPX04 | IVUTBPX08 | IVUTBPX12 | IVUTBPX16 | IVUTBPX25 | IVUTBPXC |
| Red | IVUTBPR04 | IVUTBPR08 | IVUTBPR12 | IVUTBPR16 | IVUTBPR25 | N/A |
| Blue | IVUTBPB04 | IVUTBPB08 | IVUTBPB12 | IVUTBPB16 | IVUTBPB25 | N/A |
| Green | IVUTBPG04 | IVUTBPG08 | IVUTBPG12 | IVUTBPG16 | IVUTBPG25 | N/A |
| IR | IVUTBPI04 | IVUTBPI08 | IVUTBPI12 | IVUTBPI16 | IVUTBPI25 | N/A |
| White | IVUTBPW04 | IVUTBPW08 | IVUTBPW12 | IVUTBPW16 | IVUTBPW25 | N/A |
| UV 365 * | IVUTBP604 | IVUTBP608 | IVUTBP612 | IVUTBP616 | IVUTBP625 | N/A |
| UV 395 * | IVUTBP904 | IVUTBP908 | IVUTBP912 | IVUTBP916 | IVUTBP925 | N/A |

* Blue Filter Kit (FLTB) included with UV models.



NOTE: UV emitted from this product. Exempt Risk Group (RG 0) product. No optical hazard is considered reasonably foreseeable, even for continuous, unrestricted use. (-IEC 62471)

Sensor Specifications

Power Connection

12 -pin Euro-style (M12) male connector; accessory cable required for operation (see [iVu Series: Power Cable — Required](#))

USB 2.0 Host

8-pin Euro-style (M12) female connector; optional USB cable required for operation of USB Thumb Drive (see [iVu Series: USB Cable — Optional](#))

Power Requirements

Voltage: 10 - 30V dc

Current: 800 mA maximum (exclusive of I/O load)

Output Configuration

NPN or PNP determined by model

Demo Mode

Full tool functionality on canned images

Sensor Lock

Optional password protection

External Strobe Output

+ 5V dc

Integrated Ring Light

Red, IR, Green, Blue, White

Output Rating

150 mA

Display

68.5 mm (2.7 in) LCD Color Integrated Display 320 X 240 pixels

Acquisition

50 fps (frames per second) max.

Exposure Time

0.1 ms to 1.049 s

Imager

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

Lens Mount

Micro Lens models: M12 X 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: Approximately .295 kg (10.4 oz.)

Environmental Rating

IP67

Operating Conditions

Stable Ambient Temperature: 0° to + 50° C (+32° to + 122° F)

Relative Humidity: 95%, max. relative, non-condensing

Certifications

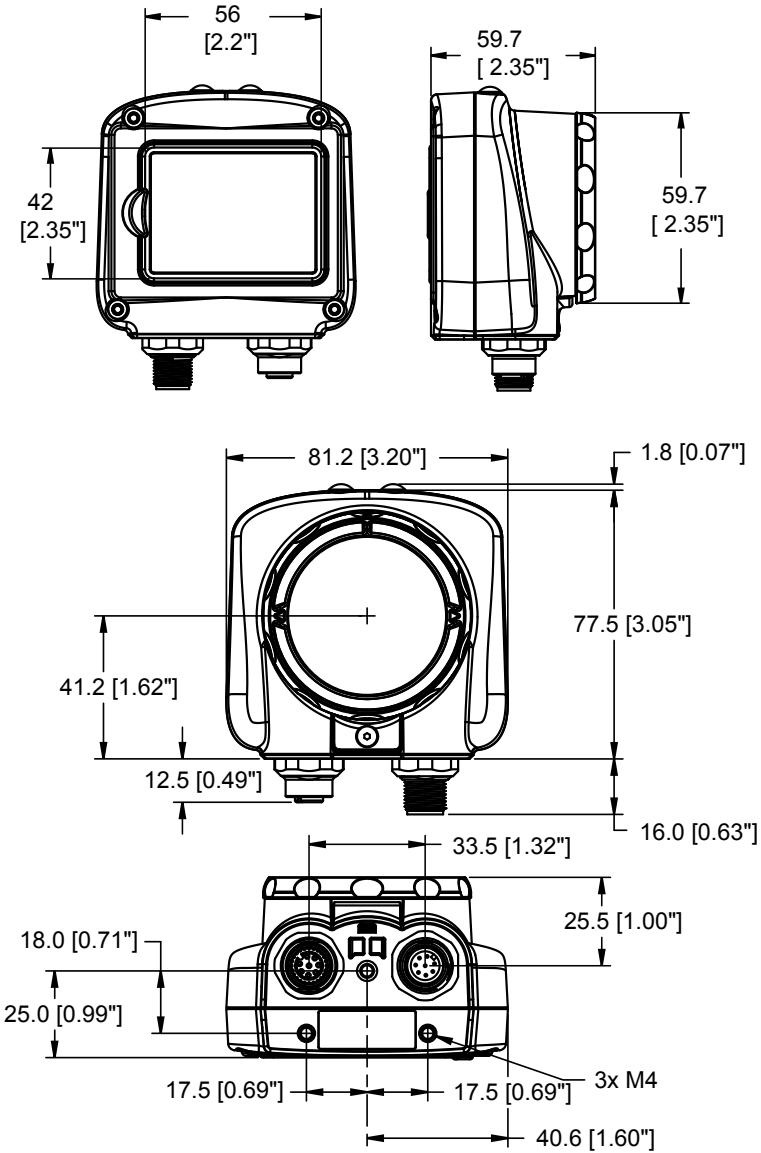


WARNING: Not To Be Used for Personnel Protection

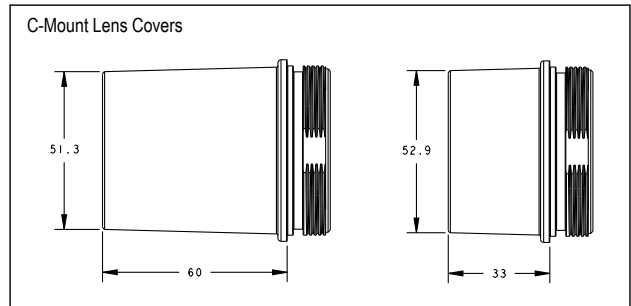
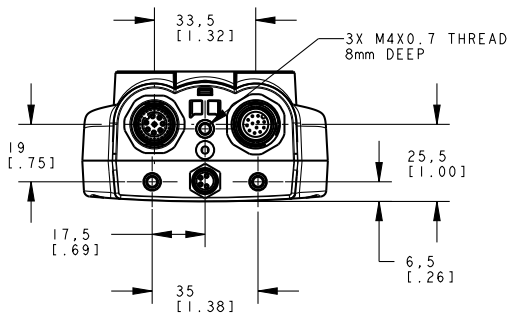
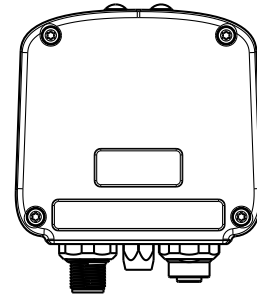
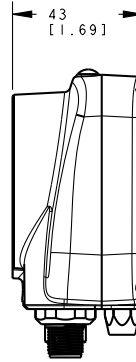
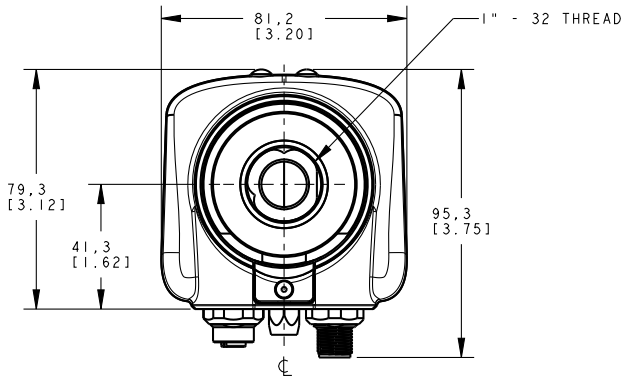
Never use this device as a sensing device for personnel protection. Doing so could lead to serious injury or death. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized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

Dimensions

Micro Lens Dimensions



C-Mount Lens Dimensions



Cable Connections for iVu Plus BCR with Integrated Display

The power and I/O cable for the iVu Plus BCR sensor is available in 2, 5, 9, and 15 m (6, 15, 30, 50') lengths. The connector on the sensor is shown below (B).

| Power I/O Connections | | | |
|-----------------------|------------|-------------------------|-----------|
| 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 | Output 1 | Output |
| 8 | Red | Ready | Output |
| 4 | Yellow | Strobe Out (5V dc only) | Output |
| 3 | Green | Output 2 | Output |
| 9 | Orange | Not used | N/A |
| 10 | Light Blue | RS-232 TX | Output |
| 11 | Black | RS-232 Signal Ground | Output |
| 12 | Violet | RS-232 Rx | Input |

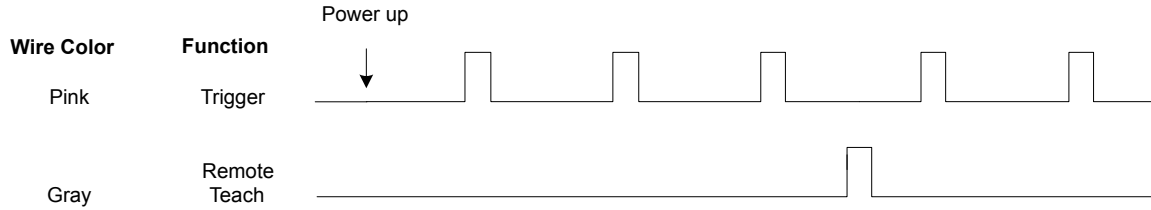
NOTE: Microlens model shown, C-Mount model connections are identical.

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 Trigger or Remote Teach input on 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

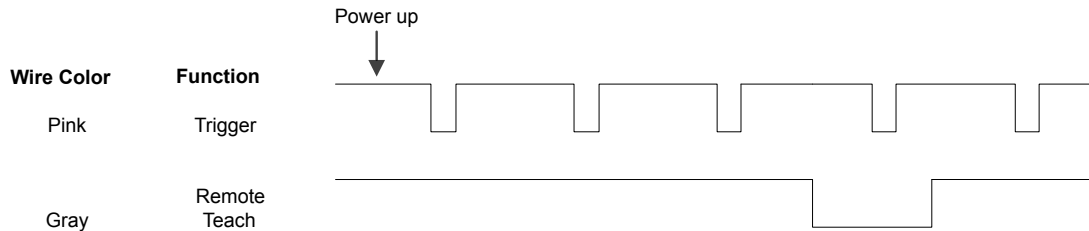
The iVu Trigger and Remote Teach input waveforms are shown below.



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

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

The iVu High-to-Low Trigger and Remote Teach input waveforms are shown below.

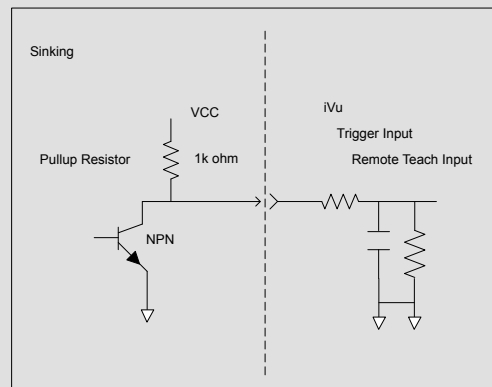


The sensor triggers from high to low, and Remote Teach behaves electrically like trigger.



NOTE: If the device used to trigger or remote teach the iVu Plus BCR is a sinking device (that is, NPN), then there are two options regarding the use of a pull-up resistor:

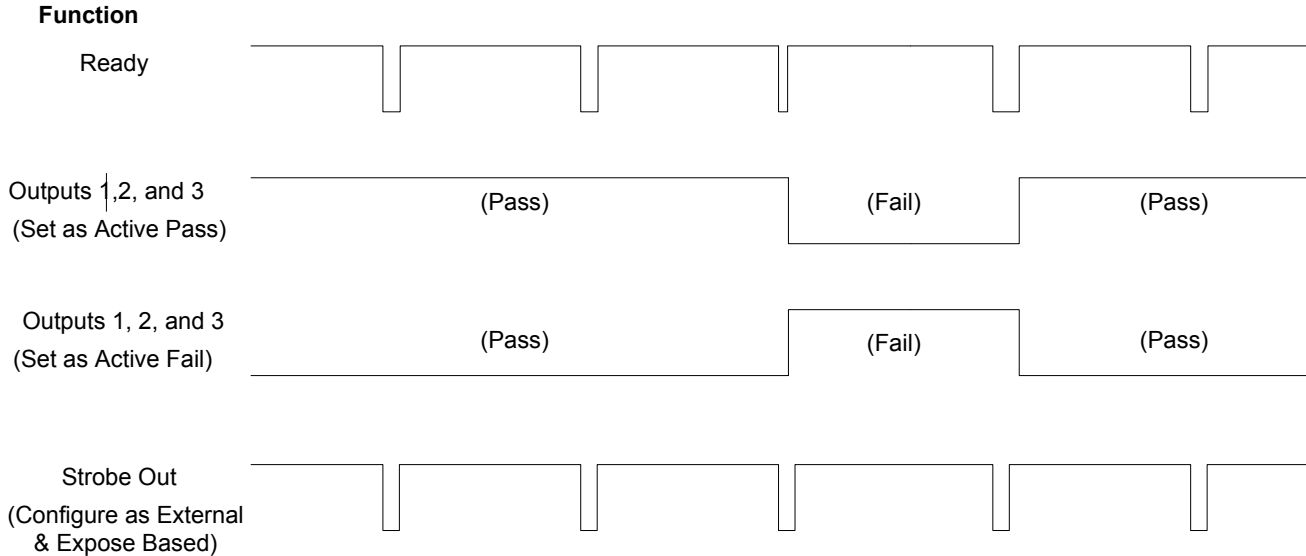
Option 1: Put a pull-up resistor, rated approximately 1k ohm, between the sensor's positive (+) voltage and the sensor's input as shown below.



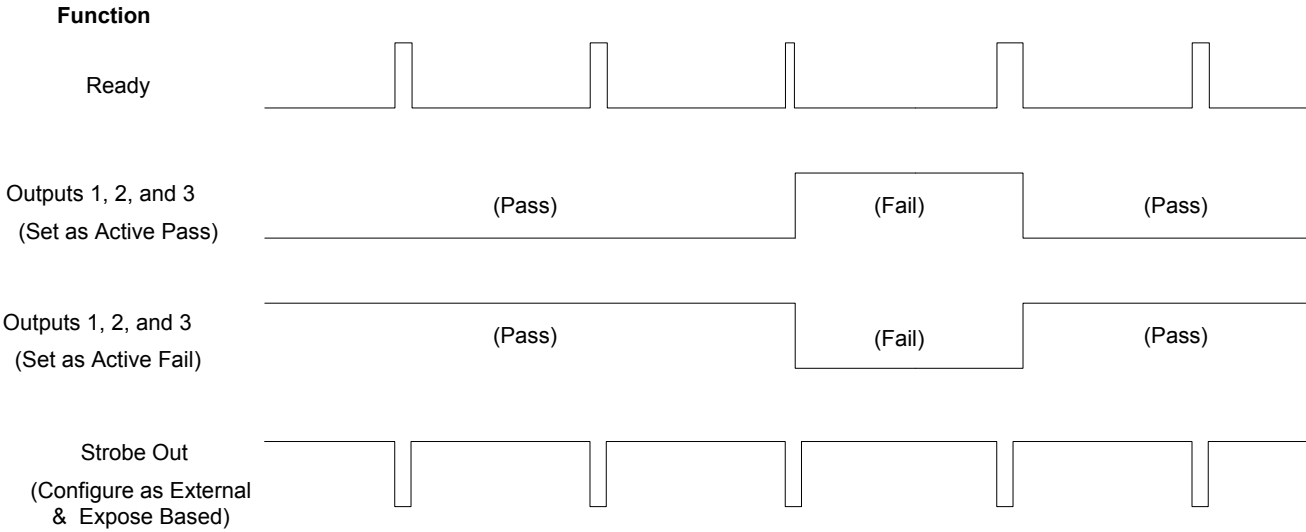
Option 2: Enable the Input Pullup in the iVu Plus BCR software (**Main Menu > System > Discrete I/O > Input Pullup**).

iVu Output Waveforms

PNP Outputs



NPN Outputs



Accessories




Power Cable — Required



| Model | Length | Description |
|-------------|--------------|------------------------|
| MQDC2S-1206 | 2 m (6 ft) | 12-pin cable, straight |
| MQDC2S-1215 | 5 m (15 ft) | |
| MQDC2S-1230 | 9 m (30 ft) | |
| MQDC2S-1250 | 16 m (50 ft) | |

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') | |

Bracket Choices

| Model | Description | Mounting Bracket |
|-----------|-------------------------------------|--|
| SMBIVURAL | Right angle, left mounting bracket |  |
| SMBIVURAR | Right angle, right mounting bracket |  |
| SMBIVUB | Bottom mounting bracket kit |  |

| Model | Description | Mounting Bracket |
|---------|---|--|
| SMBIVUU | U-shape mounting bracket kit  <div style="border: 1px solid gray; padding: 5px; margin-top: 10px;"> <p>NOTE: Banner recommends that cables with right-angle connectors be used with this bracket kit.</p> </div> |  |



NOTE: Micro Lens models shown

Micro Lens Accessories

Micro 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 |

Micro Lens Filter Choices — Optional

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

C-Mount Lens Accessories

C-Mount Lens Choices

| 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 |

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