iVu TG 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 image sensor is used to monitor parts for type, size, orientation, shape, and location. 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
- 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 a blemish sensor that detects flaws on parts
- USB 2.0 compliant host provided for easy updating and diagnostics
- Integrated color touch screen display
- High speed processing

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	IVUTGNX04	IVUTGNX08	IVUTGNX12	IVUTGNX16	IVUTGNX25	IVUTGNXC
Red	IVUTGNR04	IVUTGNR08	IVUTGNR12	IVUTGNR16	IVUTGNR25	N/A
Blue	IVUTGNB04	IVUTGNB08	IVUTGNB12	IVUTGNB16	IVUTGNB25	N/A
Green	IVUTGNG04	IVUTGNG08	IVUTGNG12	IVUTGNG16	IVUTGNG25	N/A
IR	IVUTGNI04	IVUTGNI08	IVUTGNI12	IVUTGNI16	IVUTGNI25	N/A
White	IVUTGNW04	IVUTGNW08	IVUTGNW12	IVUTGNW16	IVUTGNW25	N/A
UV 365 *	IVUTGN604	IVUTGN608	IVUTGN612	IVUTGN616	IVUTGN625	N/A
UV 395 *	IVUTGN904	IVUTGN908	IVUTGN912	IVUTGN916	IVUTGN925	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	IVUTGPX04	IVUTGPX08	IVUTGPX12	IVUTGPX16	IVUTGPX25	IVUTGPXC
Red	IVUTGPR04	IVUTGPR08	IVUTGPR12	IVUTGPR16	IVUTGPR25	N/A
Blue	IVUTGPB04	IVUTGPB08	IVUTGPB12	IVUTGPB16	IVUTGPB25	N/A
Green	IVUTGPG04	IVUTGPG08	IVUTGPG12	IVUTGPG16	IVUTGPG25	N/A
IR	IVUTGPI04	IVUTGPI08	IVUTGPI12	IVUTGPI16	IVUTGPI25	N/A
White	IVUTGPW04	IVUTGPW08	IVUTGPW12	IVUTGPW16	IVUTGPW25	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**	
UV 365 *	IVUTGP604	IVUTGP608	IVUTGP612	IVUTGP616	IVUTGP625	N/A
UV 395 *	IVUTGP904	IVUTGP908	IVUTGP912	IVUTGP916	IVUTGP925	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)

> **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.

Sensor Specifications

Power Connection
8-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

Tools
Match, Area, Area with Motion

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
100 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
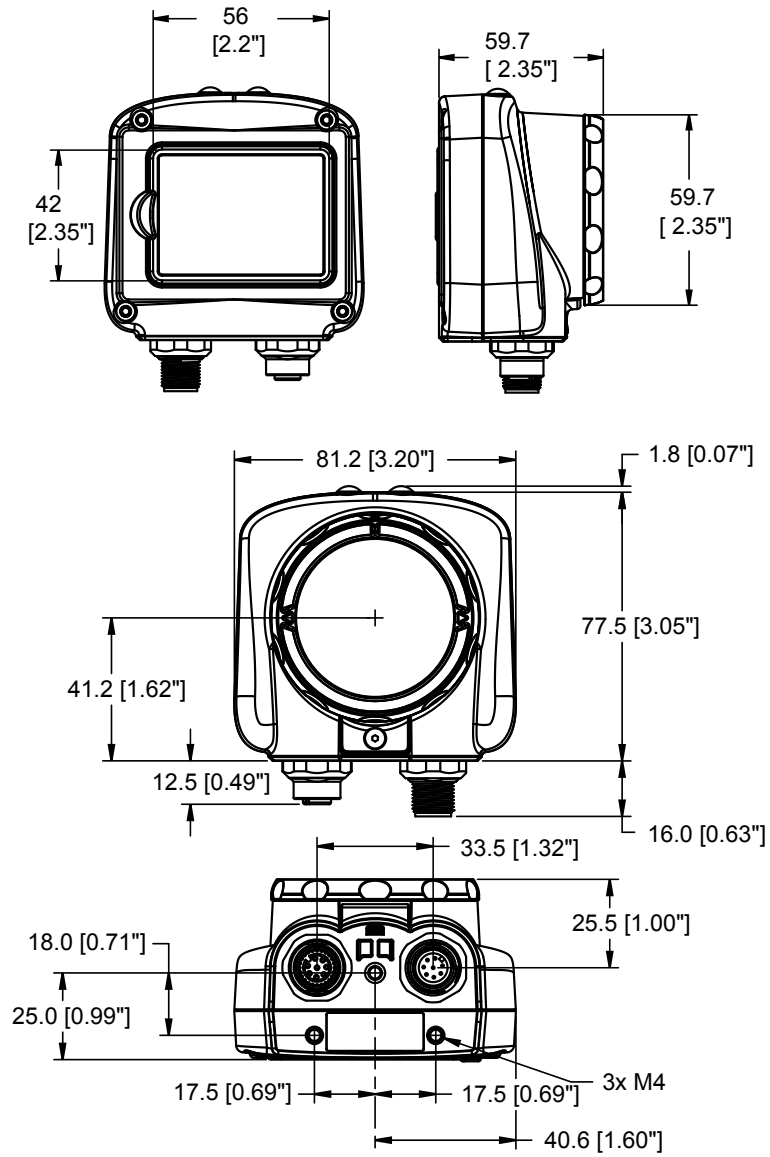**Stable Ambient Temperature:** 0° to + 50° C (+32° to + 122° F)
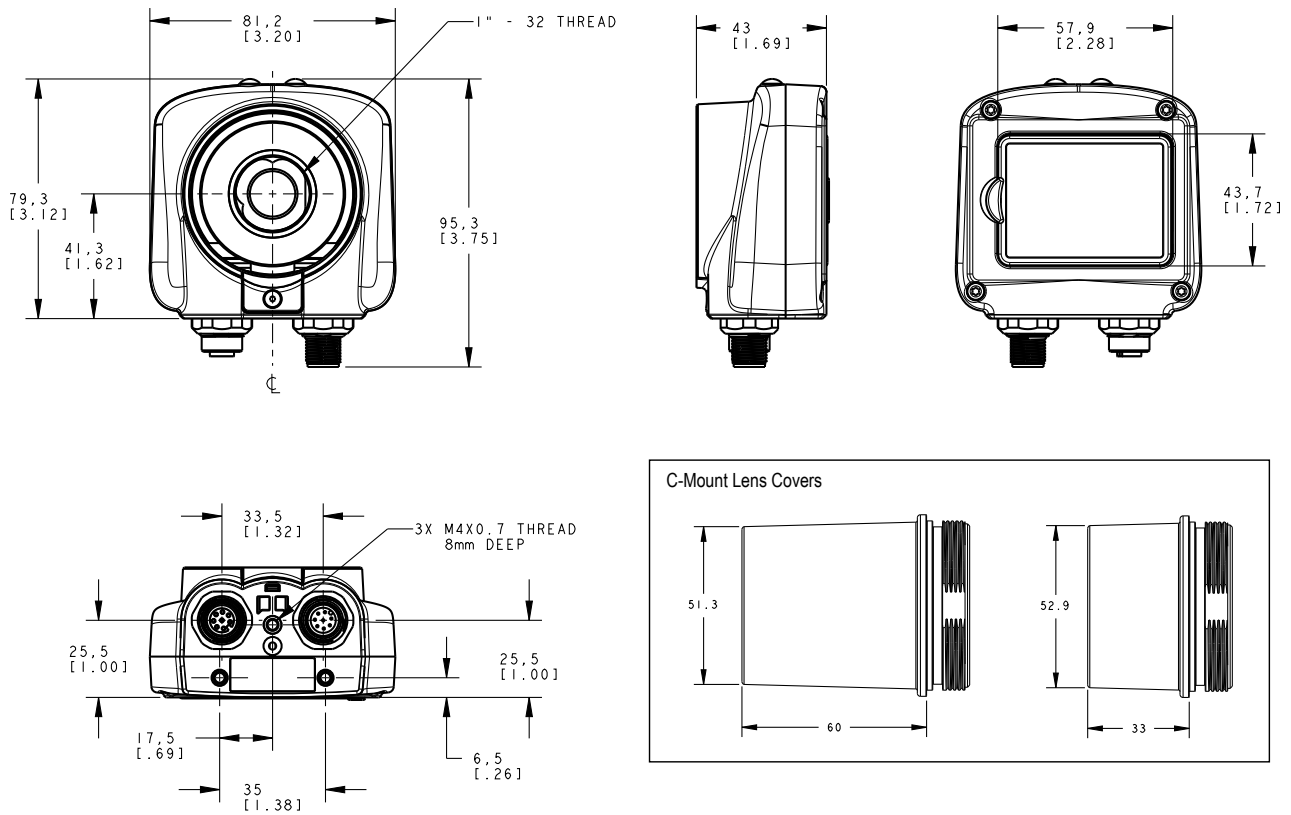**Relative Humidity:** 95%, max. relative, non-condensing

Certifications
CE

Dimensions
Micro Lens Dimensions

C-Mount Lens Dimensions

C-Mount Lens Covers

Cable Connections for the iVu Plus BCR with Integrated Display

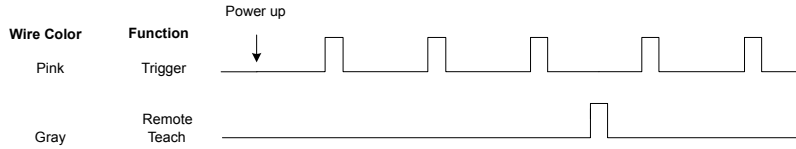|	Pin #	Wire Color	Description	Direction
	2	Brown	10-30V dc	Input
	7	Blue	Common (Signal Ground)	Input
	6	Pink	External Trigger	Input
	5	Gray	Remote Teach	Input
	1	White	Output 1	Output
	8	Red	Ready	Output
	4	Yellow	Strobe Out (5V dc only)	Output
	3	Green	Output 2	Output

NOTE: Microlens models show, 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.

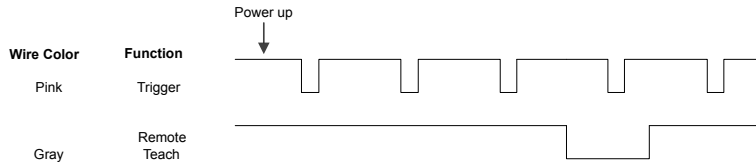## PNP (Low-to-High) Trigger and Remote Teach Input Waveforms

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

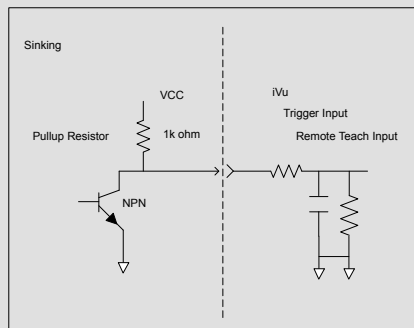The iVu High-to-Low Trigger and Remote Teach input waveforms are shown below.

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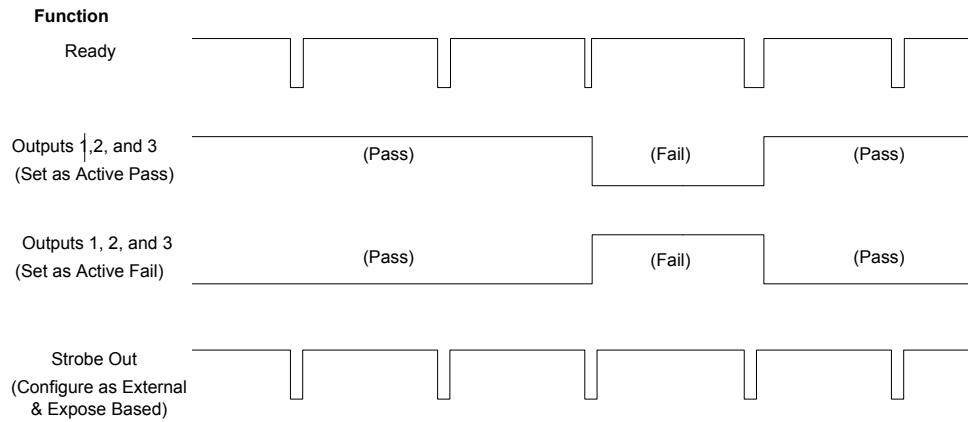
Option 1: Put a pull-up resistor, rated approximately 1k ohm, between the sensor's positive (+) voltage and the sensor's input as shown below.
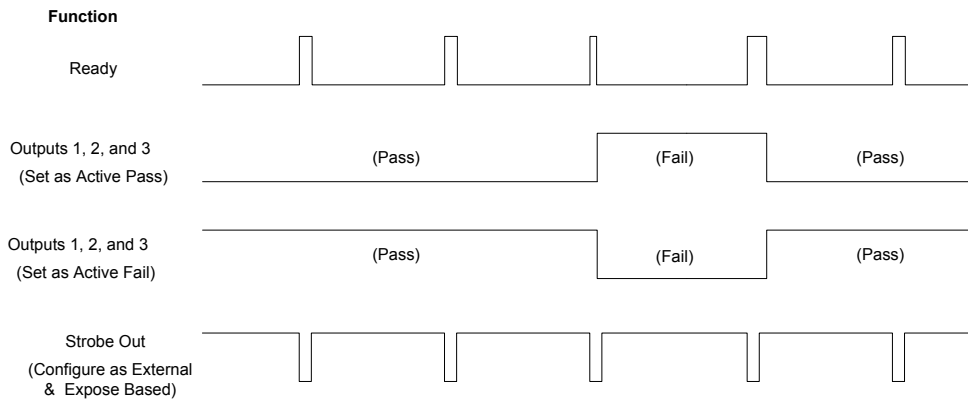

Option 2: Enable the Input Pullup in the iVu Plus BCR software (**Main Menu** > **System** > **Discrete I/O** > **Input Pullup**).

iVu Output Waveforms

PNP Outputs

Function						
Ready						
Outputs 1,2, and 3 (Set as Active Pass)	(Pass)		(Fail)		(Pass)	
Outputs 1, 2, and 3 (Set as Active Fail)	(Pass)		(Fail)		(Pass)	
Strobe Out (Configure as External & Expose Based)						

NPN Outputs

Function						
Ready						
Outputs 1, 2, and 3 (Set as Active Pass)	(Pass)		(Fail)		(Pass)	
Outputs 1, 2, and 3 (Set as Active Fail)	(Pass)		(Fail)		(Pass)	
Strobe Out (Configure as External & Expose Based)						

Power Cable — Required

Model	Length	Description
MQDC2S-806	2 m (6 ft)	8-pin cable, straight
MQDC2S-815	5 m (15 ft)	
MQDC2S-830	9 m (30 ft)	
MQDC2S-850	16 m (50 ft)	
MQDC2S-806RA	2 m (6 ft)	8-pin cable, right angle
MQDC2S-815RA	5 m (15 ft)	
MQDC2S-830RA	9 m (30 ft)	
MQDC2S-850RA	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')	

Model	Length	Description
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	
SMBIVUU	U-shape mounting bracket kit **NOTE:** Banner recommends that cables with right-angle connectors be used with this bracket kit.	

NOTE: Micro Lens models shown

Micro Lens Accessories

Micro Lens Choices

Model	Lens Description
LMF04	4.3 mm lens

Model	Lens Description
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
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

Model	Description
FLTI	IR Filter kit

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