

# iVu BCR<sup>Gen2</sup> Series Sensor with Integrated Display



## Datasheet

The iVu Barcode Reader (BCR) Gen2 Series 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.



### Features

- No PC required to configure the sensor
- Image processing expertise is not required
- USB port for uploading and downloading of inspections and log files for easy updating and diagnostics
- Integrated color touch screen display
- A RS-232 serial communications port that is used to output barcode data to other applications
- High speed processing
- Adjustable image resolution up to 752×480 pixels



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, and Pharmacode



### 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                  | IVU2TBX04                | IVU2TBX06 | IVU2TBX08 | IVU2TBX12 | IVU2TBX16 | IVU2TBX25 | IVU2TBXC             |
| Red                   | IVU2TBR04                | IVU2TBR06 | IVU2TBR08 | IVU2TBR12 | IVU2TBR16 | IVU2TBR25 | N/A                  |
| Blue                  | IVU2TBB04                | IVU2TBB06 | IVU2TBB08 | IVU2TBB12 | IVU2TBB16 | IVU2TBB25 | N/A                  |
| Green                 | IVU2TBG04                | IVU2TBG06 | IVU2TBG08 | IVU2TBG12 | IVU2TBG16 | IVU2TBG25 | N/A                  |
| IR                    | IVU2TBI04                | IVU2TBI06 | IVU2TBI08 | IVU2TBI12 | IVU2TBI16 | IVU2TBI25 | N/A                  |
| White                 | IVU2TBW04                | IVU2TBW06 | IVU2TBW08 | IVU2TBW12 | IVU2TBW16 | IVU2TBW25 | N/A                  |
| UV 365 <sup>1 2</sup> | IVU2TB604                | IVU2TB606 | IVU2TB608 | IVU2TB612 | IVU2TB616 | IVU2TB625 | N/A                  |
| UV 395 <sup>1 2</sup> | IVU2TB904                | IVU2TB906 | IVU2TB908 | IVU2TB912 | IVU2TB916 | IVU2TB925 | N/A                  |

<sup>1</sup> Blue Filter Kit (FLTb) included with UV models.

<sup>2</sup>



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).



## Sensor Specifications

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### Power Connection

12-pin Euro-style (M12) male connector; accessory cable required for operation (see [Power Cable — Required](#) on page 8)

### USB 2.0 Host

8-pin Euro-style (M12) female connector; optional USB cable required for operation of USB flash drive (see [USB Cable — Optional](#) on page 8)

### Power Requirements

Voltage: 10 to 30 V dc

Current: 800 mA 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

### External Strobe Output

+ 5 V 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 × 240 pixels

### Acquisition

60 fps (frames per second)<sup>3</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 PBT sensor housing; die cast zinc back cover; acrylic window

Weight: 0.38 kg (0.85 lbs)

### Environmental Rating

IP67

### Operating Conditions

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

Maximum relative humidity: 95% maximum relative humidity (non-condensing)

### Certifications



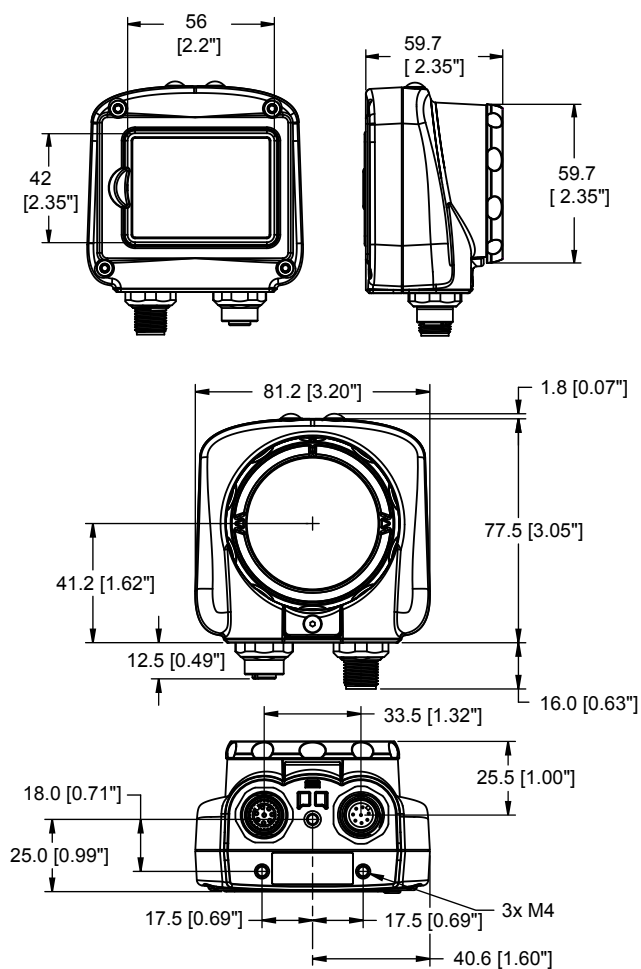

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<sup>3</sup> This value can vary based on inspection settings.

## Dimensions

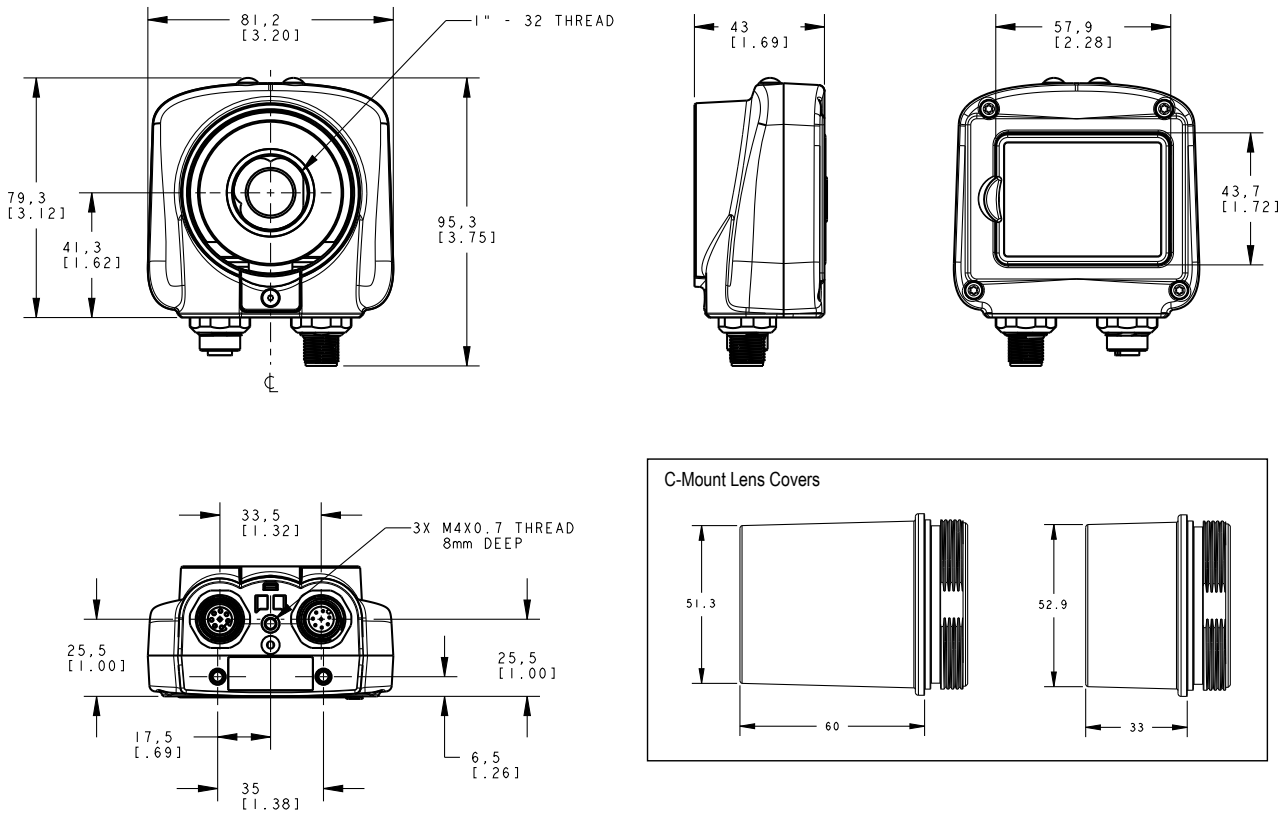
### Micro Video Lens Dimensions

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 iVu BCR with Integrated Display

The cable connections on the iVu BCR sensor are shown below, and the power I/O connections (B) are defined in [Table 1](#) on page 5.



- A USB Connector
- B Power I/O Connector



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

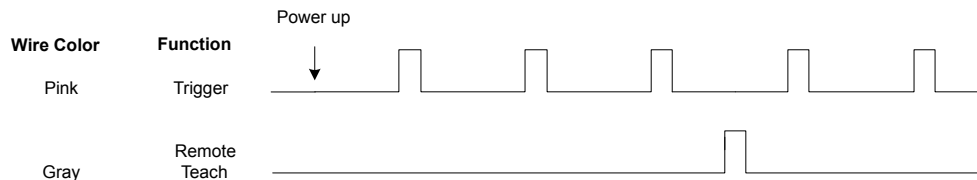
Table 1: Power I/O Connections

| 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     | Not used                | N/A       |
| 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.

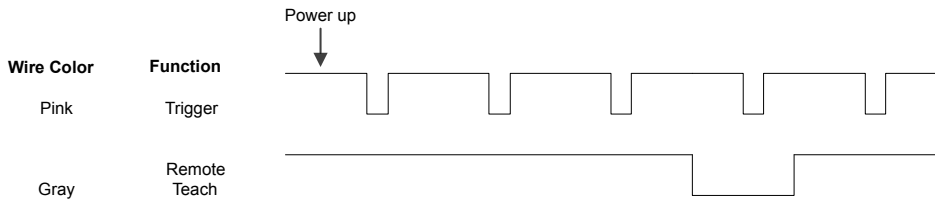


NOTE:

Table 2: 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:

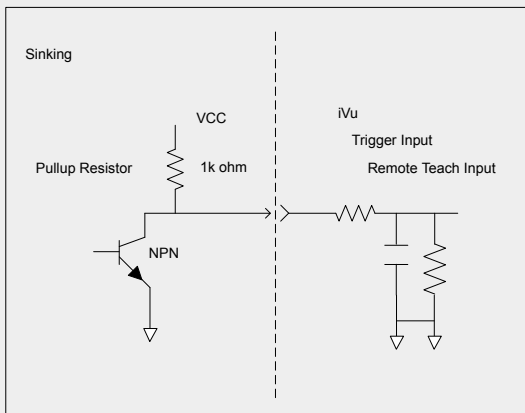
Table 3: Required iVu Input Signal Voltage

|     | ON       | OFF             |
|-----|----------|-----------------|
| NPN | < 2 V dc | + 10 to 30 V dc |



NOTE: If the device used to trigger or remote teach the iVu BCR 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 BCR software (Main Menu > System > Discrete I/O > Input Pullup).

## iVu Output Waveforms

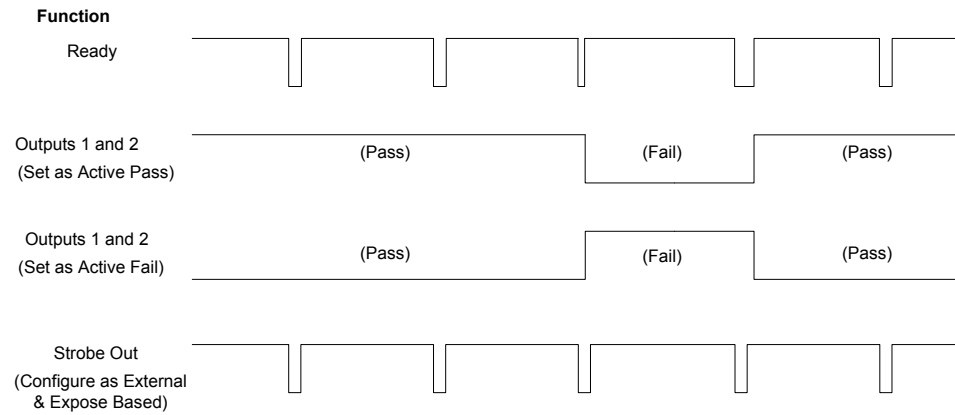


Figure 1. PNP Outputs

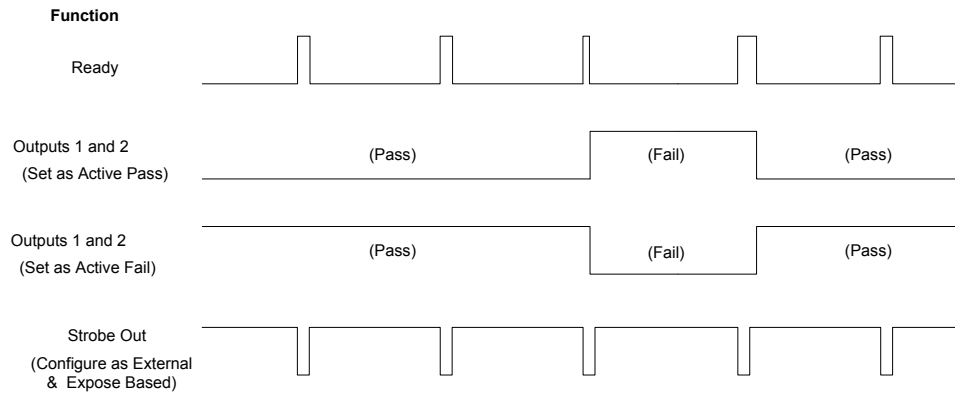


Figure 2. NPN Outputs



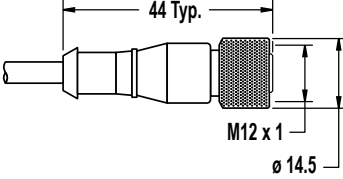
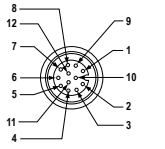
NOTE:

Table 4: Expected iVu Output Signal Voltage

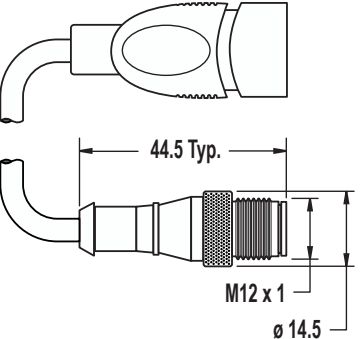
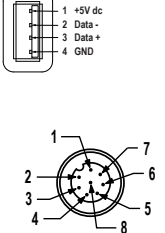
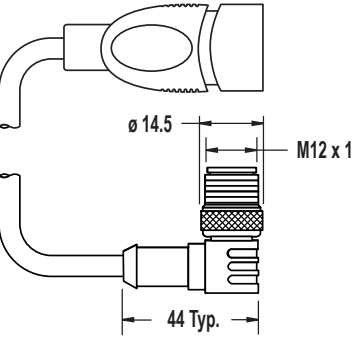
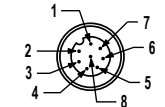
|     | ON       | OFF      |
|-----|----------|----------|
| PNP | +V       | < 2 V dc |
| NPN | < 2 V dc | +V       |

## Accessories

### Power Cable — Required

| 12-Pin M12/Euro-Style Cordsets with Open Shield |                |          |  |   |
|---|----------------|----------|--|---|
| Model   | Length         | Style    | Dimensions   | Pinout  |
| MQDC2S-1206                                     | 1.83 m (6 ft)  | Straight |  |  <p>             1 = White<br/>             2 = Brown<br/>             3 = Green<br/>             4 = Yellow<br/>             5 = Gray<br/>             6 = Pink<br/>             7 = Blue<br/>             8 = Red<br/>             9 = Orange<br/>             10 = Lt. Blue<br/>             11 = Black<br/>             12 = Violet           </p> |
| 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) |          |  |   |

### USB Cable — Optional

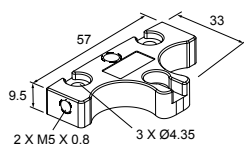
| 8-Pin Threaded M12/Euro-Style to USB Cordsets—Double Ended |               |                         |  |  |
|--|---------------|-------------------------|--|--|
| Model  | Length        | Style                   | Dimensions   | Pinout   |
| MQDEC-8005-USB   | 0.15 m (6 in) | Straight Euro QD/USB    |  |  <p>             1 = +5V dc<br/>             2 = Data -<br/>             3 = Data +<br/>             4 = GND           </p> |
| MQDEC-801-USB  | 0.31 m (1 ft) |                         |  |  |
| MQDEC-803-USB  | 0.91 m (3 ft) |                         |  |  |
| MQDEC-810-USB  | 3.0 m (10 ft) |                         |  |  |
| MQDEC-8005RA-USB   | 0.15 m (6 in) | Right-Angle Euro QD/USB |  |  <p>             1 = +5V dc<br/>             2 = Data -<br/>             3 = Data +<br/>             4 = GND           </p> |
| MQDEC-801RA-USB  | 0.31 m (1 ft) |                         |  |  |
| MQDEC-803RA-USB  | 0.91 m (3 ft) |                         |  |  |
| MQDEC-810RA-USB  | 3.0 m (10 ft) |                         |  |  |



## Brackets

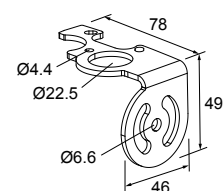
### SMBI VUB

- Bottom mounting bracket
- Black anodized aluminum
- Hardware included



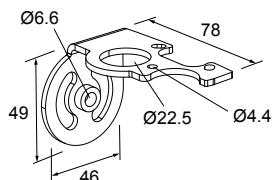
### SMBI VURAL

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



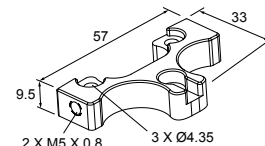
### SMBI VURAR

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



### SMBI VUU

- 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 <sup>4</sup> | 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      |
|-------|------------------|
| FLTMR | Red filter kit   |
| FLTMB | Blue filter kit  |
| FLTMG | Green filter kit |
| FLTMI | IR filter kit    |

<sup>4</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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