

iVu TG Image Sensor



Datasheet

iVu TG Image Sensor for use with a Remote Display

The iVu image sensor is used to monitor parts for type, size, orientation, shape, and location. The iVu TG Image Sensor package consists of lighting, sensor, and lens. This version of the iVu TG requires a separately available Remote Display touch screen to set up and monitor inspections. 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
- 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 port for uploading and downloading of inspections and log files for easy updating and diagnostics
- Separate touch screen display mounts remotely from the sensor to allow easy access to the user interface and to view inspection images
- High speed processing



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

NPN Models						
Ring Light Options	Micro Video Lens Options					C-Mount Lens Options
	4.3 mm	8 mm	12 mm	16 mm	25 mm	
None	IVURGNX04	IVURGNX08	IVURGNX12	IVURGNX16	IVURGNX25	IVURGNXC
Red	IVURGNR04	IVURGNR08	IVURGNR12	IVURGNR16	IVURGNR25	N/A
Blue	IVURGNB04	IVURGNB08	IVURGNB12	IVURGNB16	IVURGNB25	N/A
Green	IVURGNG04	IVURGNG08	IVURGNG12	IVURGNG16	IVURGNG25	N/A
IR	IVURGNI04	IVURGNI08	IVURGNI12	IVURGNI16	IVURGNI25	N/A
White	IVURGNW04	IVURGNW08	IVURGNW12	IVURGNW16	IVURGNW25	N/A
UV 365 ¹	IVURGN604	IVURGN608	IVURGN612	IVURGN616	IVURGN625	N/A
UV 395 ¹	IVURGN904	IVURGN908	IVURGN912	IVURGN916	IVURGN925	N/A

¹ Blue Filter Kit (FLT B) included with UV models.



PNP Models						
Ring Light Options	Micro Video Lens Options					C-Mount Lens Options
	4.3 mm	8 mm	12 mm	16 mm	25 mm	
None	IVURGPX04	IVURGPX08	IVURGPX12	IVURGPX16	IVURGPX25	IVURGPXC
Red	IVURGPR04	IVURGPR08	IVURGPR12	IVURGPR16	IVURGPR25	N/A
Blue	IVURGPB04	IVURGPB08	IVURGPB12	IVURGPB16	IVURGPB25	N/A
Green	IVURGPG04	IVURGPG08	IVURGPG12	IVURGPG16	IVURGPG25	N/A
IR	IVURGPI04	IVURGPI08	IVURGPI12	IVURGPI16	IVURGPI25	N/A
White	IVURGPW04	IVURGPW08	IVURGPW12	IVURGPW16	IVURGPW25	N/A
UV 365 ¹	IVURGP604	IVURGP608	IVURGP612	IVURGP616	IVURGP625	N/A
UV 395 ¹	IVURGP904	IVURGP908	IVURGP912	IVURGP916	IVURGP925	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).

Sensor Specifications

Power Connection

12-pin Euro-style (M12) male connector; accessory cable required for operation (see [Power Cable — Required](#) on page 7)

USB 2.0 Host

4-pin Pico (M8) 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 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

+ 5 V dc

Integrated Ring Light

Red, IR, Green, Blue, White

Output Rating

150 mA

Remote Display Connection

8-pin Euro-style (M12) female connector; accessory cable required for remote display

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 Valox™ sensor housing; acrylic window
Weight: 0.20 kg (0.45 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)

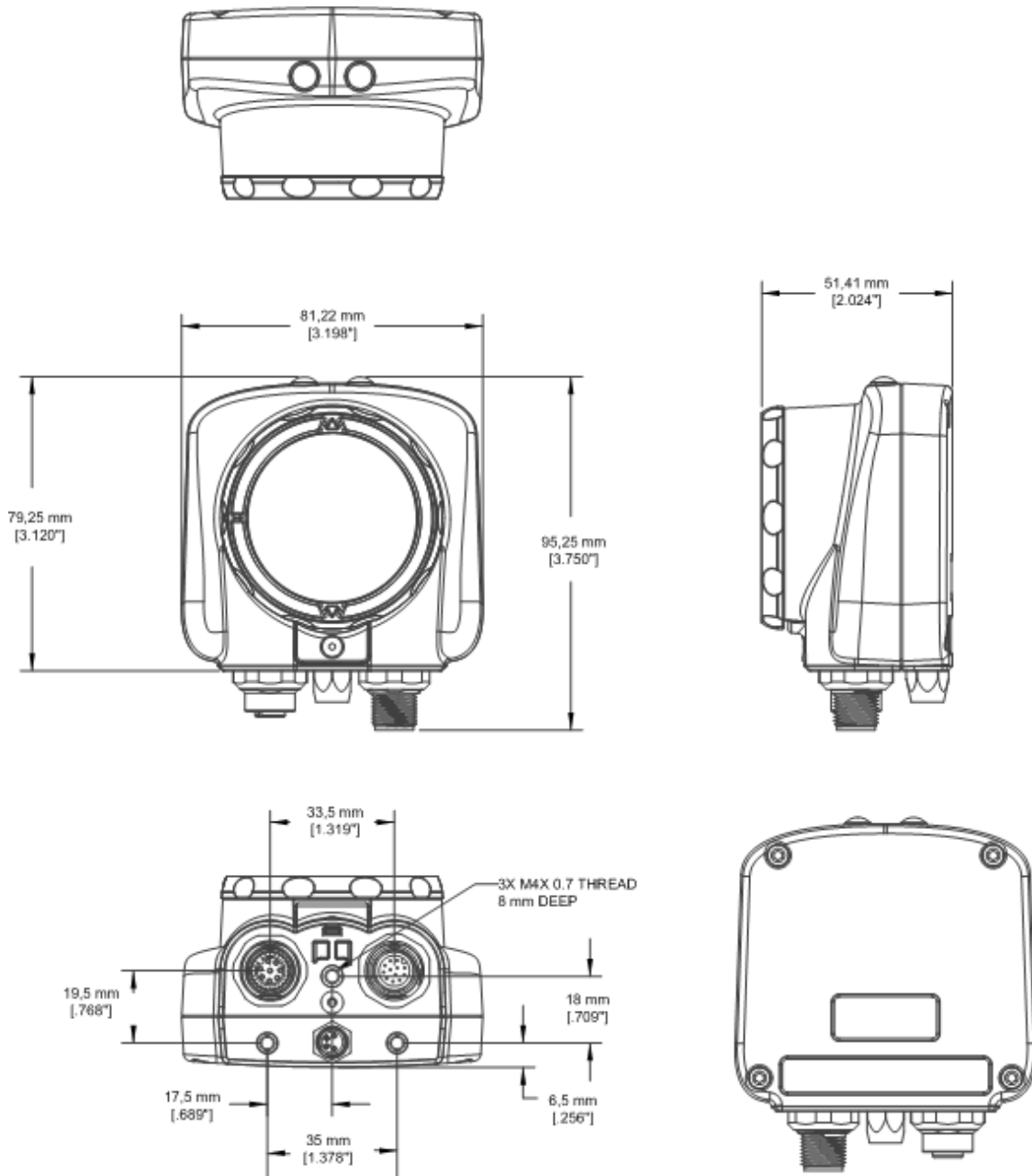
Certifications



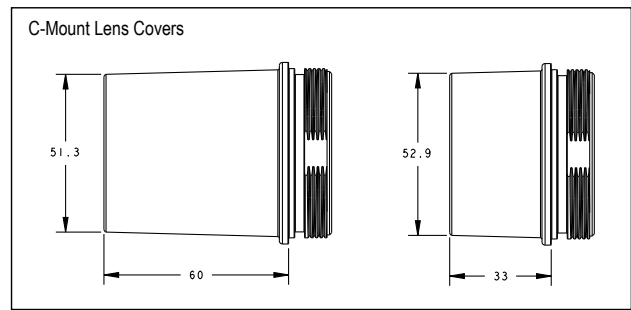
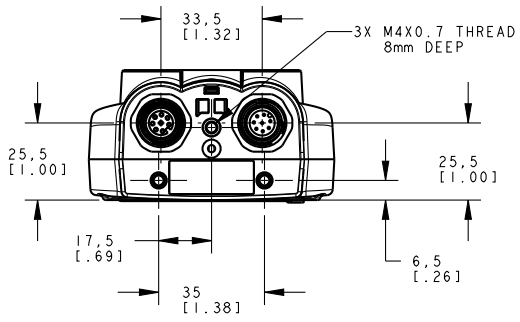
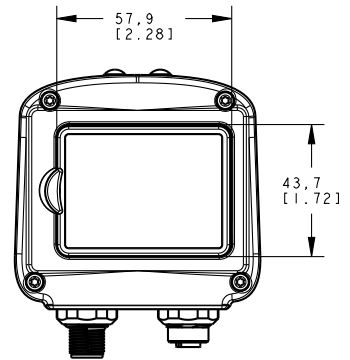
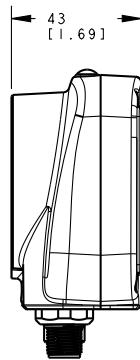
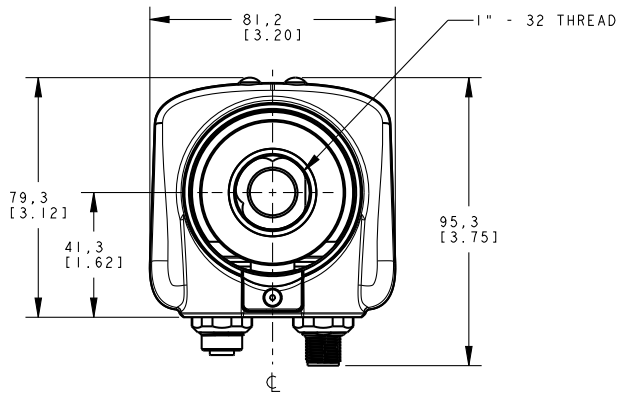
² This value can vary based on inspection settings.

Dimensions

Micro Video Lens Dimensions

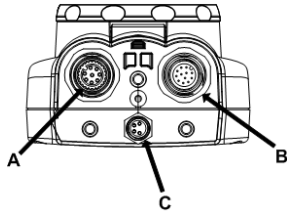


C-Mount Lens Dimensions



Cable Connections for the iVu TG with a Remote Display

The cable connections on the iVu sensor are shown below, and power I/O connections (B) are defined in the Power I/O Connections table below.



- A Remote Display Connector
- B Power I/O Connector
- C USB Connector



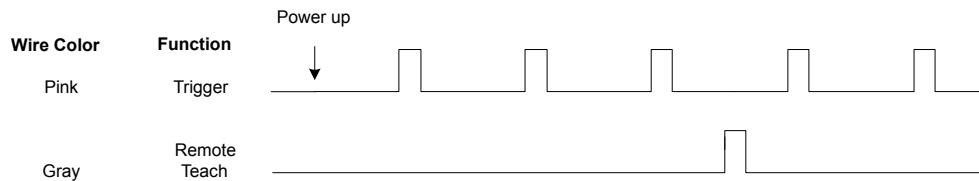
NOTE: Micro video lens model shown. C-Mount model connections are identical.

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

iVu Trigger, Remote Teach, and I/O Waveforms

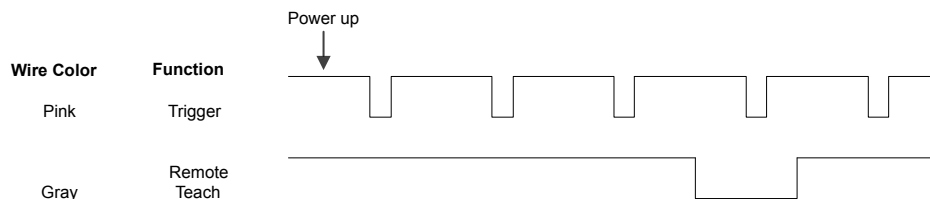
The iVu has two input signals—Trigger and Remote Teach. The default setting is to detect the low to high transition. This setting can be changed in the Main Menu > System > Discrete I/O > Input Polarity screen on the sensor.

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



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

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

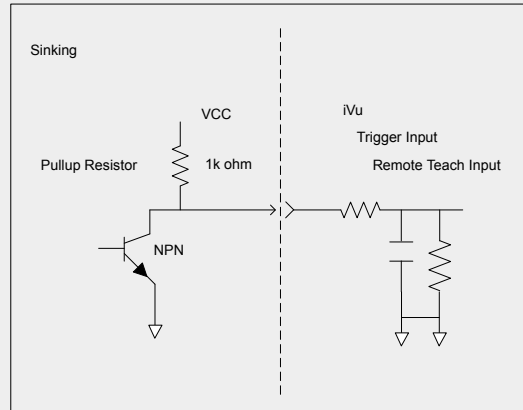


The sensor triggers from high to low, and Remote Teach behaves electrically like trigger.



NOTE: If the device used to trigger or remote teach the iVu 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.



iVu Output Waveforms

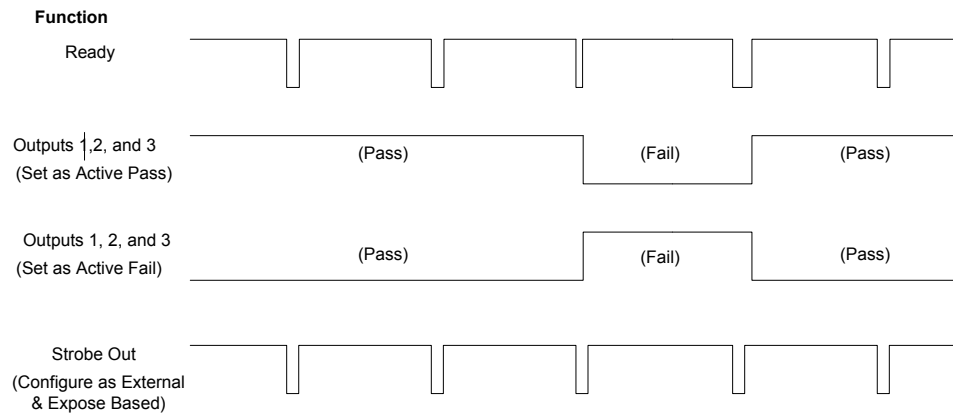


Figure 1. PNP Outputs

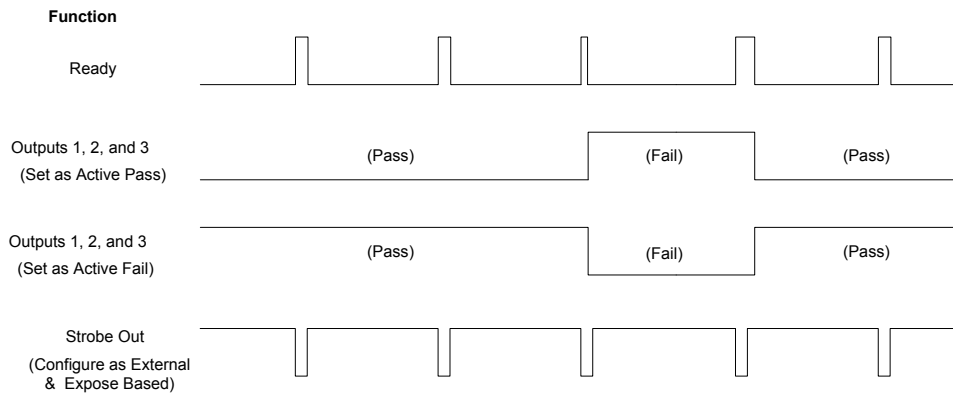
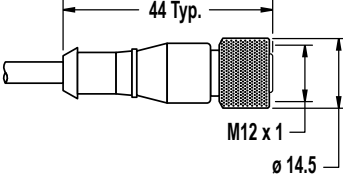
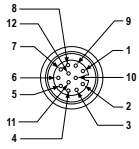


Figure 2. NPN Outputs

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		 <ul style="list-style-type: none"> 1 = White 2 = Brown 3 = Green 4 = Yellow 5 = Gray 6 = Pink 7 = Blue 8 = Red 9 = Orange 10 = Lt. Blue 11 = Black 12 = Violet
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)			

Remote Display — Required for Setup

Model	Description	Data Sheet
RD35	89 mm (3.5 in) Diagonal Remote Touch Screen	p/n 149171
RDM35	89 mm (3.5 in) Diagonal Machine-Mountable Remote Touch Screen	p/n 166096

Cordsets

Table 1: Cordsets

Model	Length	Description
IVURD-MX-803	0.91 m (3 ft)	8-pin cable, straight, M12-Molex
IVURD-MX-806	1.83 m (6 ft)	
IVURD-MX-815	4.57 m (15 ft)	
IVURD-MX-830	9.14 m (30 ft)	
IVURD-MX-850	15.2 m (50 ft)	
IVURD-MX-803RA	0.91m (3 ft)	8-pin cable, right-angle, M12-Molex
IVURD-MX-806RA	1.83m (6 ft)	
IVURD-MX-815RA	4.57m (15 ft)	
IVURD-MX-830RA	9.14m (30 ft)	
IVURD-MX-850RA	15.2m (50 ft)	

Table 2: Cordset Kits

Model	Length	Description
IVURD-MXK-803	0.91 m (3 ft)	8-pin cable, straight, M12-Molex Mounting Bracket (SMBRD35) Stylus
IVURD-MXK-806	1.83 m (6 ft)	
IVURD-MXK-815	4.57 m (15 ft)	
IVURD-MXK-830	9.14 m (30 ft)	
IVURD-MXK-850	15.2 m (50 ft)	
IVURD-MXK-803RA	0.91 m (3 ft)	8-pin cable, right-angle, M12-Molex Mounting Bracket (SMBRD35) Stylus
IVURD-MXK-806RA	1.83 m (6 ft)	
IVURD-MXK-815RA	4.57 m (15 ft)	
IVURD-MXK-830RA	9.14 m (30 ft)	
IVURD-MXK-850RA	15.2 m (50 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	3.0 m (10 ft)			
PSG-4M-416-USB	4.9 m (16 ft)			

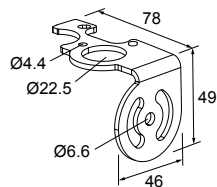
USB Flash Drive — Optional

Model	Description
IVU-USBFD2	USB Flash Drive 2 GB

Brackets

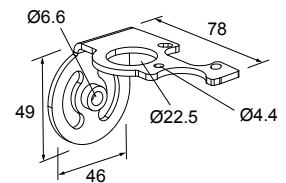
SMBI VURAL

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



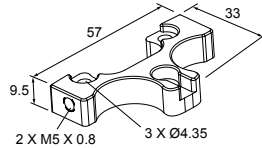
SMBI VURAR

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



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
LMFO4 ³	4.3 mm lens
LMFO6	6 mm lens
LMFO8	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

C-Mount Lens Accessories

C-Mount Lens Models

Model	Lens Description
LCFO4	4 mm Lens - no threads for filter
LCFO8	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)

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.

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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