OSIRIS™ Photoelectric Sensors

For Full Color and Color Mark Detection

Introducing the most advanced color detection technology available!

Developed by Telemecanique, these photoelectric sensors were designed specifically to meet the needs of OEMs who need to detect objects, parts, labels and paper of varying color. From precise color differentiation to the detection of transparent labels, OSIRIS provides the ultimate detection solution!

Today we use index marks to indicate to the PLC or computer when to cut glue or even count. These marks have a wide variety of uses and come in many different sizes and colors. Some of these marks are as small as 0.5mm wide (about the size of a human hair) and appear on everything from ketchup bottles to toothpaste tubes. Some applications require a transparent or translucent package that means that the mark is also transparent or translucent. Other applications may require the need to recognize a color or even sort by color, and in some cases distinguish between shades of a color for accuracy. This has created a need for various types of color detection sensors.

There are three main types of color detection sensors:

- Surface Color Mark Detection
- Transparent or Translucent Color Mark Detection
- True Color Recognition

Color mark detection sensors really do not detect the color of the mark but rather the difference in contrast of the mark verses the background.

The XURC Full Color Detector recognizes colors; therefore surpassing sensors that simply detect differences in contrast.

The XURK Color Mark Detector is a metal enclosed, self-contained detector that offers Red or Green emission with a 31-turn potentiometer for a wide range of color contrast detection.

The XUM Color Mark Detector is the smallest in the industry. It features a red or green emission, a “Marginal Detection Output” capability, and a “Test Input” capability to ensure that the system is working properly.

The XUVK “Smart” Color Mark Detector is a self-contained fork-style photoelectric sensor specifically designed for the detection of transparent or translucent materials or targets on transparent or translucent backgrounds.

SQUARE D
GROUPE SCHNEIDER

XURC Full Color Detector

Ideal for applications such as sorting, label detection and multi-color printing. Self-teaching via top mounted push-button or externally for comparing and matching of similar colors. Three independent outputs for multi-color or multiple target applications. Selectable response time 0.8ms/1.5ms/3ms for increased productivity. Synchronization input allows another sensor to trigger the sensing mode and ignore the background. Selectable 40 ms pulse stretcher offers a longer output for fast applications. Adjustable sensing distance reduces inventory one device for many applications. Run mode (sorting) is for sorting applications, the Tolerance mode (matching) is for high-accuracy color applications.

Sensing Distance	Circuit Type	Output Mode	Emission	Voltage Range	Load Current Max.	Connection	Catalog Number
40 to 60 mm	3 - PNP	Light	Red, Green, Blue	10 to 30 VDC	100 mA	2 M (6.6') Cable	XURC3PPML2
40 to 60 mm	3 - NPN	Light	Red, Green, Blue	10 to 30 VDC	100 mA	2 M (6.6') Cable	XURC3NPML2

XURK Color Mark Detector

Ideal for applications such as cut to length, sorting, label detection and printed film. Red or Green selectable emission with PNP or NPN, and Light or Dark selectable Outputs for reduced inventory. Selectable 20 ms pulse stretcher offers a longer output for fast applications. Set-up assistance LED's for quicker and simpler set-up. 10kHz for extremely fast applications with small registration marks.

Sensing Distance	Circuit Type	Output Mode	Emission	Voltage Range	Load Current Max.	Connection	Catalog Number
9 mm	PNP or NPN	Light or Dark	Red or Green	10 to 30 VDC	200 mA	4 pin Micro Style DC Connector	XURK0955D

XUM Color Mark Detector

Ideal for applications such as cut to length, sorting, and label detection and printed film. Smallest self-contained color mark sensor in the industry. Red or Green emission for selective applications. PNP or NPN, and Light or Dark Outputs available. Marginal signal output and test input offers the user-advanced start-up and trouble-shooting features. Set-up assistance LED's for quicker and simpler set-up. 500Hz for fast applications with small registration marks.

Sensing Distance	Circuit Type	Output Mode	Emission	Voltage Range	Load Current Max.	Connection	Catalog Number
15 mm	PNP	Light or Dark	Red	10 to 30 VDC	100 mA	2 M (6.6') Cable	XUMH15353R
15 mm	PNP	Light or Dark	Green	10 to 30 VDC	100 mA	2 M (6.6') Cable	XUMH15353G
15 mm	NPN	Light or Dark	Red	10 to 30 VDC	100 mA	2 M (6.6') Cable	XUMJ15353R
15 mm	NPN	Light or Dark	Green	10 to 30 VDC	100 mA	2 M (6.6') Cable	XUMJ15353G

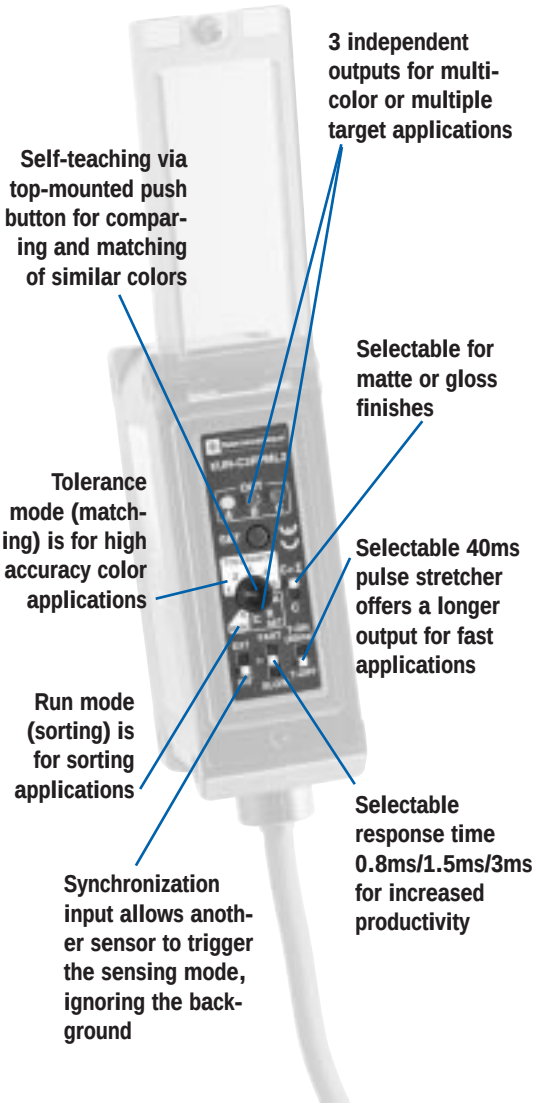
XUVK Advanced Label Color Mark Detector

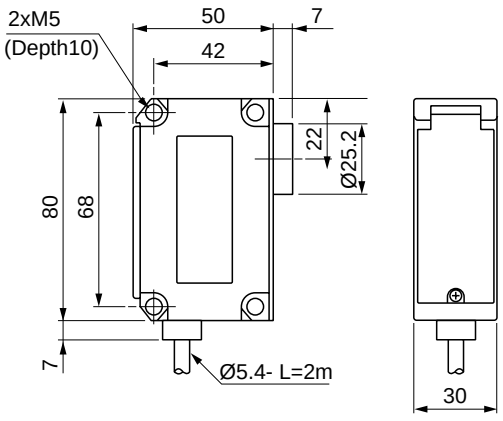
Ideal for applications such as cut to length, sorting, and label detection and printed film. Self- teaching with just a push of a button for fast and easy set-up. The push button set-up makes all of the decisions for the user (Light or Dark Operate, Red or Green emission for color version). Infrared or Red/Green emission for selective applications. PNP and NPN, and Light or Dark Outputs for reduced inventory. 10KHz for extremely fast applications with small registration marks.

Sensing Distance	Circuit Type	Output Mode	Emission	Voltage Range	Load Current Max.	Connection	Catalog Number
2 mm	PNP and NPN	Light or Dark (self-teaching)	Infrared	10 to 30 VDC	100 mA	4 Pin Nano Style DC Connector	XUVK0252S
2 mm	PNP and NPN	Light or Dark (self-teaching)	Red or Green (self-teaching)	10 to 30 VDC	100 mA	4 Pin Nano Style DC Connector	XUVK0252VS

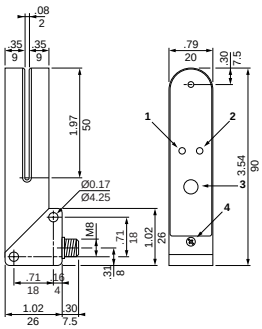
		XUVK	XURK	XUM	XUVK
Mechanical					
Temperature range	**Operation**	14° to 122° F (-10° to 50°C), 35 to 85% RH (without condensation)	14° to 131° F (-10° to 55°C)	-13° to 131°F (-25° to 55°C)	-32° to 131° F (0° to 55°C)
-		-22° to 158°F (-30° to 70°C)	-4° to 158°F (-20° to 70°C)	-22° to 158°F (-30° to 70°C)	-4° to 158°F (-20° to 70°C)
Enclosure rating	**CENCLEC Type**	IP 67 conforming to IEC 68-2-27 673, NCF 20-010	IP 67 conforming to IEC 529 and IP	IP 67 conforming to IEC 68-2-27	IP 65 conforming to IEC 68-2-27
Vibration		10 to 55 Hz, single amplitude: 0.75mm, 2 hours each on 3 axes (with power off)	7G amplitude ±6mm (f=10 to 55 Hz) conforming to IEC 68-2-27	7G amplitude ±1.5mm (f=10 to 55 Hz) conforming to IEC 68-2-27	7G amplitude ±1mm (f = 10 to 42 Hz) conforming to IEC 68-2-27
Enclosure material	**Case**	Aluminum	ZAMAC	ABS/PC	Zinc alloy
	Lens	Glass	Glass	PMMA/PC	Glass
Wiring		2 m (6.6') Cable style connector	Male 4 pin Micro	2 m (6.6') Cable style connector	Male 4 pin NANO
Electrical					
Voltage range		12 – 24 VDC	12 – 24 VDC	12 – 24 VDC	12 – 24 VDC
Voltage limit		10 – 30 VDC	10 – 30 VDC	10 – 30 VDC	10 – 30 VDC
Voltage drop (across switch, closed)		1.5 V	1.2 V NPN, 2.2V PNP	1.5 V	1.5 V
Load current (max.)		100 mA	200 mA	100 mA	100 mA
Current consumption (max.) (no load)		150 mA	80 mA	35 mA	50 mA
Operating frequency (max.)			10 kHz	500 Hz	10 kHz
Power-up delay (max.)			100 ms	1 ms	30 ms
On delay (max.)		0.8 ms/1.5 ms/6ms	50 µs	1 ms	100 µs
Off delay (max.)			0.8 ms/1.5 ms/6ms	50 µs	1 ms 100 µs
Physical Characteristics					
Minimum detectable mark width		4 mm at 40 mm, 6 mm at 50 mm, 8 mm at 60 mm	0.5 mm	1 mm	1 mm
Maximum linear speed of mark			10 m/s (for 1mm wide mark)	2 m/s (for 2 mm wide mark)	10 m/s (for 1mm wide mark)
Max. horizontal inclination of reader (to eliminate stray reflection)		15°	20°	30° (red), 15° (green)	N/A
Emitter wave length		635/565/480 nm (red/green/blue)	635/565 nm (red/green)	635/565 nm (red/green) (red/green)	880 nm (infrared) 635/565 nm
Protection circuitry	**Short circuit protection**	Yes, each channel	Yes	Yes	Yes
	Overload protection	No	Yes	Yes	Yes
	Reverse polarity protection	No	Yes	Yes	Yes
	Ambient light immunity	Sunlight 10,000 Lux Max., Halogen lamp 3,000 Lux. Max.	Sunlight 10,000 Lux. Max., Halogen lamp 3,000 Lux. Max.	Sunlight 10,000 Lux Max., Halogen lamp 3,000 Lux. Max.	Sunlight 10,000 Lux. Max., Halogen lamp 3,000 Lux. Max.
Agency approvals		CE	CE	CE	CE

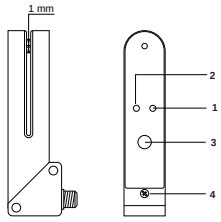
XURC





XUVK



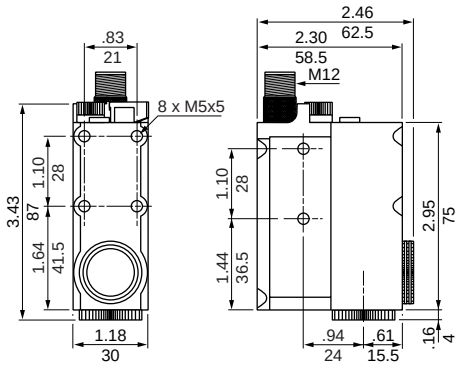


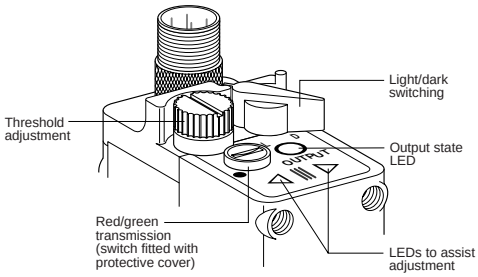
1 Yellow LED – output state indicator
2 Double color green/red LED – ready/Error
3 "Self-teaching" SET button
4 Locking screw

"Self-teaching" setting procedure

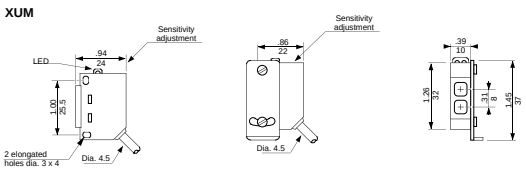
- Place the label to be detected in the beam of the optical fork. Press the SET button and hold down until the green LED (2) goes out.
- When the green LED flashes, the detector has learned the label. Place the item to which the label is affixed in the beam of the optical fork. Press the SET button and hold down until the green LED goes out.
- When the green LED illuminates as a steady light, the "self-teaching" setting procedure is completed and the detector is ready for operation.

XURK





XUM



XUM Color Mark Detector Selection Chart

Color of object (surface background)	Mark Color						
	Black	Red	Orange	Yellow	Green	Blue	White
White	G,R	G	–	–	G,R	G,R	
Blue	–	R	G,R	G,R		–	G,R
Green	–	R	G,R	G,R		–	G,R
Yellow	G,R	R	–		G,R	G,R	–
Orange	G,R	G		–	G,R	G,R	–
Red	R		R	G	R	R	R
Black		R	G,R	G,R	–	–	G,R

R = Red light G = Green light – = Marginal detection

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