Photo-electric sensors
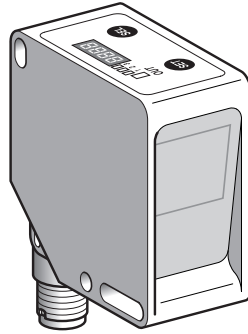## OsiSense XU Application, packaging series
Compact design, 50 x 50
For colour detection (1)
DC supply. Solid-state output

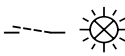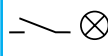### Compact design, 50 x 50

System	Diffuse
Type of transmission	White LED (400-700 nm)
Type of colour processing	RGB
Nominal sensing distance (Sn)	**20 mm** (Operational distance, see curve on page 5/91)

References

3-wire, PNP + 1 synchro input	NO function	**XUKC1PSMM12**
3-wire, NPN + 1 synchro input	NO function	**XUKC1NSMM12**
Weight (kg)		0.085

Characteristics

Product certifications		C€, cULus
Ambient air temperature	For operation	- 10…+ 55 °C
	For storage	- 20…+ 70 °C
Vibration resistance	Conforming to IEC 60068-2-6	7 gn, amplitude ± 0.5 mm (f = 10...55 Hz for each axis)
Shock resistance	Conforming to IEC 60068-2-27	30 gn, duration 11 ms, 6 shocks on each axis
Degree of protection	Conforming to IEC 60529	IP 65
Connection		M12, 8-pin connector; can be set at 90°
Materials	Case	ABS
	Lenses	Glass (window tilted, anti-reflective glass)
Spot diameter		At 20 mm: Ø 4 mm
Adjustment	Teach mode	Teaching using SET (adjustment) and SEL (Selection) buttons
	Operating mode	C (colour) or C+I (colour + intensity), independent for each channel
	Tolerance level	Selectable tolerance for varying shades of colour from TOL 0 to TOL 9
Auxiliary functions		External synchronisation, locking
Indicator lights and display	Display	4-digit
	Output active	3 green LEDs: output 1, 2 or 3
	Output state "OUT"	Yellow LED if one output (1, 2 or 3) activated
Rated supply voltage		⎓ **12…24 V**
Voltage limits		⎓ 10…30 V (including ripple)
Switching capacity (sealed)		**≤ 100 mA with protection against reverse polarity, overload and short-circuit**
Voltage drop, closed state		≤ 2 V
Current consumption, no-load		≤ 60 mA
Maximum switching frequency		1.5 kHz
Delay		335 μs for response and recovery
Time delay		Selectable (5, 10, 20, 30 or 40 ms)

Function table for each channel (3 channels) NO function	Colour recognised by sensor	Colour not recognised by sensor
Output state (PNP or NPN) indicator (illuminated when sensor output is ON)	⊶ ☼	⟋ ⊗

(1) Applications: OsiSense XU "Full colour" is a colour sensor that can recognise up to 3 colours. It can be used to sort objects by colour or to monitor colours, and is insensitive to surface finishes (matt or reflective), as well as ambient lighting. The sensor is suitable for use in many industrial sectors, such as packaging machines, printing machines, etc.

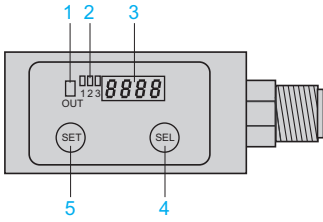# Photo-electric sensors
OsiSense XU Application, packaging series
Compact design, 50 x 50
For colour detection
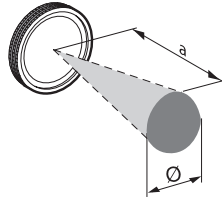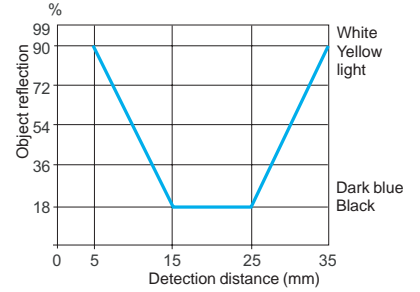DC supply. Solid-state output

Presentation

Description

1 Output LED
2 OUT1, OUT2 and OUT3 LEDs
3 Display (green, 4-digit)
4 SEL button (adjustment)
5 SET button

Detection zone and spot size
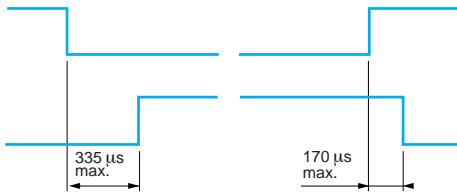

	a (mm)	Ø (mm)
XUKC1●SMM12	20	4

Detection curve

Detection distance related to object's degree of reflection

Diagram

SYNC passive = VDC, SYNC active = 0 V



335 µs max.   170 µs max.

Accessories

| Description	Diameter mm	Length m	Reference	Weight kg
Pre-wired M12, 8-pin connectors, shielded cable *(1)*	6.5	3	XSZMCR03	0.230
		10	XSZMCR10	0.715
Metal fixing bracket (2 screws, 2 nuts and 2 washers included)	–	–	XUZK2000	0.040
Metal fixing bracket (2 screws, 2 nuts, 2 washers and 1 screwdriver included)	–	–	XUZA51	0.050

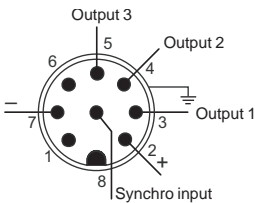## Dimensions

XUKC1●SMM12
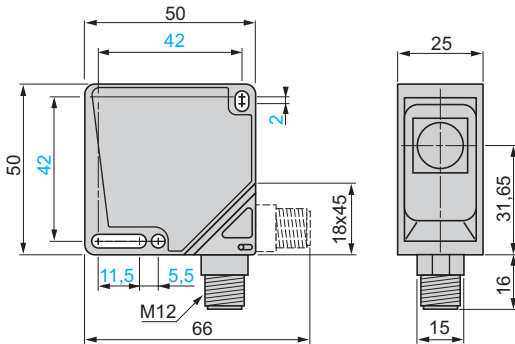
Fixing bracket XUZK2000
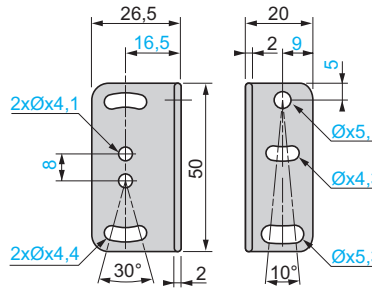
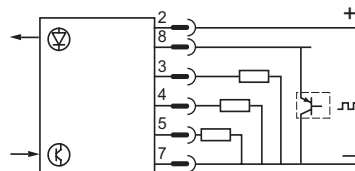### Fixing bracket XUZA51
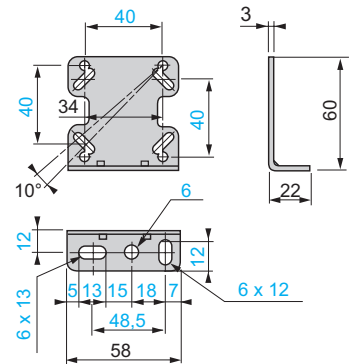
Wiring schemes
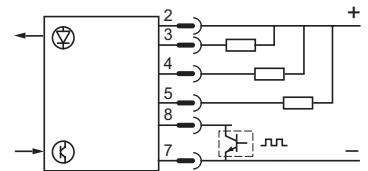
Pre-wired connector XSZMCR●●
Sensor connector pin view

Pin N°	Type	Colour *(2)*
1	–	WH (white)
2	--- 10...30 V	BN (brown)
3	Output 1	TAN (tan)
4	Output 2	YE (yellow)
5	Output 3	GY (grey)
6	–	PK (pink)
7	0 V	VT (violet)
8	Synchro	RD (red)
–	Screening	TR (transparent)

Wiring schemes
PNP output + synchro input

NPN output + synchro input

(1) The use of shielded cable is recommended in order ensure correct operation of the sensor, especially in environments subject to electromagnetic interference.
(2) With pre-wired connector XSZMCR●●.
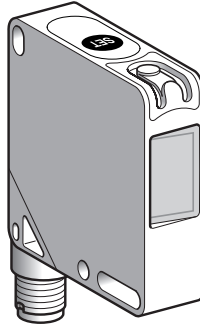
Photo-electric sensors

OsiSense XU Application, packaging series
Compact design, 50 x 50
Colour mark readers (1)
DC supply. Solid-state output

Compact design, 50 x 50

System		Diffuse
Type of transmission		White LED (400-700 nm)
Nominal sensing distance (Sn)		**19 mm**

References

Description		Reference
3-wire, PNP or NPN	PNP output	**XUKR1PSMM12**
	NPN output	**XUKR1NSMM12**
Weight (kg)		0.045

Characteristics

Product certifications		$C \epsilon$, cULus
Ambient air temperature	For operation	- 10…+ 55 °C
	For storage	- 20…+ 70 °C
Vibration resistance	Conforming to IEC 60068-2-6	Amplitude ± 0.5 mm, f = 10...55 Hz for each axis
Shock resistance	Conforming to IEC 60068-2-27	30 gn, duration 11 ms, 6 shocks on each axis
Degree of protection	Conforming to IEC 60529	IP 67
Connection		M12, 4-pin connector; can be set at 90°
Materials	Case	ABS
	Lenses	Glass (window tilted, anti-reflective glass)
Spot diameter		At 19 mm: Ø 3.5 mm
Resolution		0.5 mm
Depth of field		± 2 mm
Adjustment		Teach mode using button or remotely using "remote" wire
Indicator lights	Output	Yellow LED
	Stability	Green LED: Ready Flashing green/red: error
Rated supply voltage		**--- 12…24 V**
Voltage limits		--- 10…30 V (including ripple)
Switching capacity (sealed)		**⩽ 100 mA with protection against reverse polarity, overload and short-circuit**
Voltage drop, closed state (saturation voltage)		⩽ 2 V
Current consumption, no-load		⩽ 30 mA
Maximum linear speed of mark		2.5 m/s for 1 mm wide mark
Maximum switching frequency		5 kHz
Delay		100 μs for response and recovery
Time delay	Time delay function	Minimum time output active: 20 ms
	Auxiliary functions	Remote teaching via "remote" wire; teach mode button locking
	Operating mode	Standard teaching: output activated on dark mark

(1) Applications: detection of contrasting colours on reflective, matt or embossed surfaces. Colour mark and index mark reading function on automated packaging and filling systems and on labelling, heat sealing, thermo-forming and printing machines, etc.

5

Photo-electric sensors

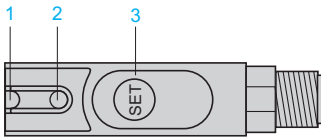OsiSense XU Application, packaging series
Compact design, 50 x 50
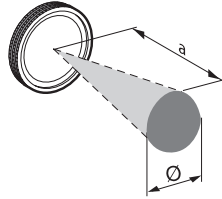Colour mark readers
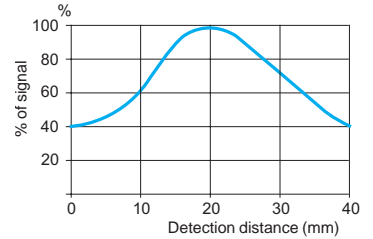DC supply. Solid-state output

Presentation

Description

1 Output LED
2 Dual colour stability LED
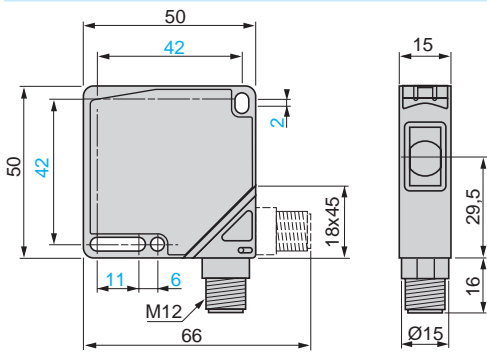**3** SET button

Detection zone and spot size

	a (mm)	Ø (mm)
XUKR1●SMM12	19	3.5

Detection curve

Fixing accessories

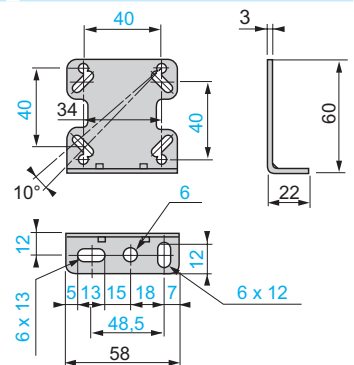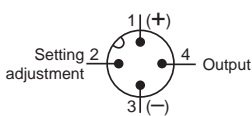| Description	Reference	Weight kg
Metal fixing bracket (2 screws, 2 nuts and 2 washers included)	**XUZK2000**	0.040
Metal fixing bracket (2 screws, 2 nuts, 2 washers and 1 screwdriver included)	**XUZA51**	0.050

Dimensions

XUKR1●SMM12

Fixing bracket XUZK2000
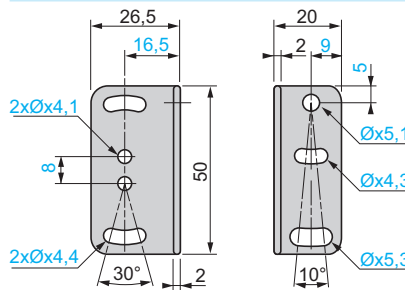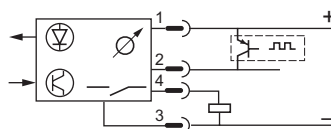

Fixing bracket XUZA51

Schemes

Connector scheme

Sensor connector pin view

Pin N°	Type	Colour
1	⎓ 10...30 V	Brown
2	Adjustment input *(1)*	White
3	0 V	Blue
4	Output	Black

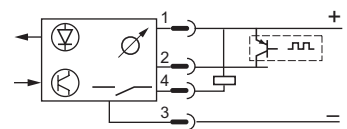*(1) Connecting the "Remote" adjustment input to + V DC is equivalent to pressing the SET button.*

Wiring schemes

Automatic NC or NO selection depending on chronological order of teaching for the mark and the background.

PNP output

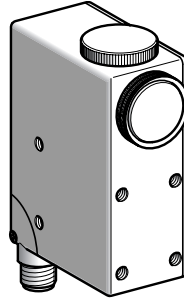**NPN output**

Photo-electric sensors
OsiSense XU Application, packaging series
Colour mark readers (1)
DC supply. Solid-state output

Compact design

System	Diffuse
Type of transmission (line of sight along case axis or at 90° depending on position of lens)	Red or green, automatically selected when using teach mode
Nominal sensing distance (Sn)	**9 mm (7 mm with XURZ02 or 18 mm with XURZ01)** (2)
Sensitivity adjustment	Automatic when using teach mode

References

3-wire, PNP or NPN programmable	NO or NC programmable function (3)	**XURK1KSMM12**
Weight (kg)		0.550

Characteristics

Product certifications		CE
Ambient air temperature		For operation: - 10…+ 55 °C. For storage: - 20…+ 70 °C
Vibration resistance	Conforming to IEC 60068-2-6	7 gn, amplitude ± 0.6 mm (f = 10…55 Hz)
Shock resistance	Conforming to IEC 60068-2-27	30 gn, duration 11 ms
Degree of protection	Conforming to IEC 60529	IP 67
Connection		M12 connector, can be set at 3 positions
		(suitable female connectors, including pre-wired versions, refer to page 5/28
Materials		Case: zinc alloy; lenses: glass
Spot dimensions		At 9 mm: 1.5 x 5 mm (with lens **XURZ0●** see table on page 5/79)
Minimum detectable width of mark		0.5 mm
Maximum vertical inclination of reader		20°
Maximum linear speed of mark		10 m/s (for 1 mm wide mark)
Rated supply voltage		**⎓ 12…24 V with protection against reverse polarity**
Voltage limits		⎓ 10…30 V (including ripple)
Switching capacity (sealed)		**≤ 200 mA with overload and short-circuit protection**
Voltage drop, closed state		≤ 1 V (NPN); ≤ 2 V (PNP)
Current consumption, no-load		≤ 80 mA
Maximum switching frequency		10 kHz
Delays		First-up: ≤ 100 ms; response: ≤ 50 μs; recovery: ≤ 50 μs
Time delay		"OFF delay": 20 ms, activated/deactivated by internal switch
Analogue output		⎓ 0…5.5 V (voltage proportional to light reflected by the object)

Function table	Function	Detection of dark mark on light background		Function	Detection of light mark on dark background	
		No mark present in the beam	Mark present in the beam		No mark present in the beam	Mark present in the beam
Output state (PNP or NPN) indicator: red LED (illuminated when sensor output is ON)	NC			NO		
	NO			NC		

(1) Applications: detection of contrasting colours on reflective, matt or embossed surfaces. Colour mark and index mark reading function on automated packaging and filling systems and on labelling, heat sealing, thermo-forming and printing machines, etc.
(2) Lenses for reduction or magnification of spot (see page 5/161 and spot size table on page 5/79).
(3) Automatic programming depending on chronological order of teaching for the mark and the background.

Accessories :
page 5/158

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Photo-electric sensors

OsiSense XU Application, packaging series
Colour mark readers
DC supply. Solid-state output

XURK1KSMM12

Detection zone and spot size (mm)
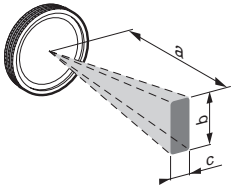
XUR	a	b	c
K●●●●●●●	9	5	1.5
K●●●●●●● + XURZ01	18	7	2
K●●●●●●● + XURZ02	7	4	1

Lenses **XURZ0●**, see page 5/161

Detection curve

1 XURK●●●●●●●
2 XURK●●●●●●● + XURZ02
3 XURK●●●●●●● + XURZ01

Vertical inclination

5° < α < 20°
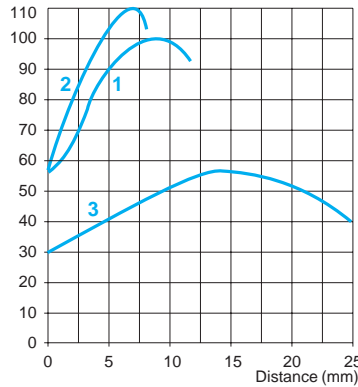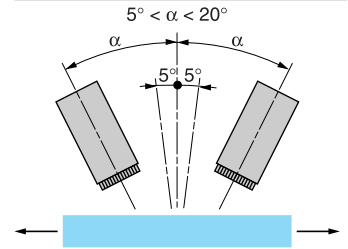
An angle of 5 to 10° from vertical is recommended for reflective or transparent surfaces.
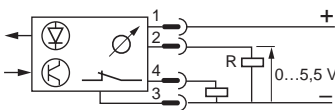Maximum vertical inclination: 20°.

Dimensions

XURK1KSMM12
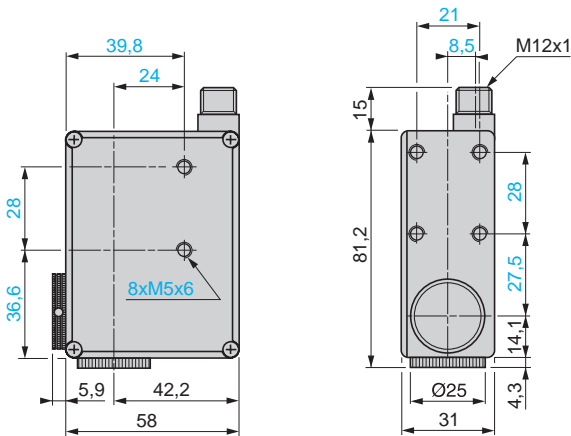
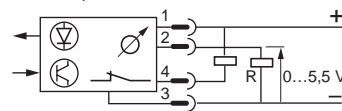## Wiring schemes (3-wire ⎓)

XURK1KSMM12

Automatic NC or NO selection depending on chronological order of teaching for the mark and the background
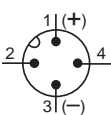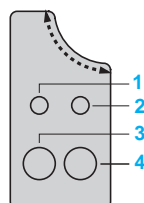
PNP output

NPN output

R = 2.2 kΩ

Connector scheme

(sensor connector pin view)

Functions

PNP/NPN programming and time delay by internal switches

1 Green LED, sensor in teach mode
2 Red LED, output state
3 Teach mode button for mark
Teach mode button for
4 background

Accessories :
page 5/158