



**FACTORY AUTOMATION
PHOTOELECTRIC SENSORS
TUBULAR LINE**

PHOTOELECTRIC SENSORS - TUBULAR LINE

- Photosensor, reflective and Thru-beam
- Sensitivity- adjustment
- Plastic or metal tube versions
- LED output signaling available on all models



Sensing

OS 300

1 2

Housing

18 GI 70

1 2 3

Output

A - V1 - J - 6

1 2 3 4

Sensing

1 - Model	2 - Sensing Distance (mm)
OS - Photosensor	OS - 100, 300 and 500
OR - Reflective	OR - 2.000 and 4.000
TR - Thru-beam	TR - 10.000 and 20.000

Housing

1 - Tube Diameter	2 - Tube Type	3 - Tube Length
Threaded tube: M18x1	GI - Nickel plated brass, threaded and back led GP - Engineering plastic, threaded tube and back led	M18 - 70; 80 mm

Output

1 - Electrical Configuration	2 - Connection	3 - Adjustment	4 - Complement
A - Direct current, 4 wires, NPN, NO+NC	- - Cable PVC 2 m (standard)	J - Sensitivity adjustment	- - Standard
A2 - Direct current, 4 wires, PNP, NO+NC	V1 - Connector M12 male, 4 pins		6 - PVC Cable 6m
UZ3L - Direct or alternate current, NO, 3 wires and short circuit protection			10 - PVC Cable 10m
UZ3D - Direct or alternate current, NC, 3 wires and short circuit protection			15 - PVC Cable 15m
			20 - PVC Cable 20m
			25 - PVC Cable 625m
			PU - PU Cable 2m

NOTE: Not all key codes combinations are possible.

OS

- Direct current
- 4 wires
- Sensitivity adjustment
- Cable

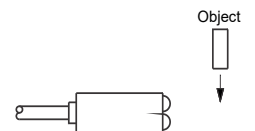


NO + NC - NPN	OS100-18GI70-A-J	OS300-18GI70-A-J	OS500-18GI70-A-J
NO + NC - PNP	OS100-18GI70-A2-J	OS300-18GI70-A2-J	OS500-18GI70-A2-J
System	photosensor		
Sensing distance	100 mm	300 mm	500 mm
Standard target	200 x 200 mm white paper		
Signaling	Illuminated rear		
Weight	155 g		
Connection	cable 2 m PVC, 4 wires 0,31 mm ²		

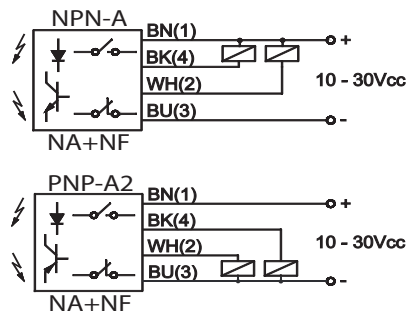
Mechanical dimensions			
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Common Technical Features	
Emitted light	infrared
Sensitivity adjustment	yes
Mini. detectable object	6 mm
Hysteresis	10 %
Operating voltage	10 to 30 Vcc
Ripple	± 10 %
Max. switching current	200 mA
Consumption current	≤ 30 mA
Output voltage drop	≤ 2 V
Response time	< 20 ms
Output protection	short-circuit and reversal polarity
Sunlight immunity	10.000 lux (front)
Incandescent light immunity	3.500 lux (front)
Operating temperature	0°C to 60°C
Protection degree	IP67
Housing options	GP

Code	Housing
GI	Nickel plated brass
GP	Thermoplastic tube
70	70 mm tube



Connection Diagram



Cable Colors

- BN - brown / positive
- BU - blue / negative
- BK - black / charge
- WH - white / charge

OS

- Direct current
- 4 wires
- Sensitivity adjustment
- Connector



NO + NC - NPN	OS100-18GI70-A-V1-J	OS300-18GI70-A-V1-J	OS500-18GI70-A-V1-J
NO + NC - PNP	OS100-18GI70-A2-V1-J	OS300-18GI70-A2-V1-J	OS500-18GI70-A2-V1-J
System	photosensor		
Sensing distance	100 mm	300 mm	500 mm
Standard target	200 x 200 mm white paper		
Signaling	4 microled in connector		
Weight	75 g		
Connection	connector M12, 4 pins		

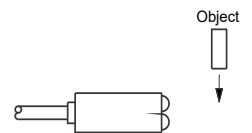
Mechanical dimensions			
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Common Technical Features

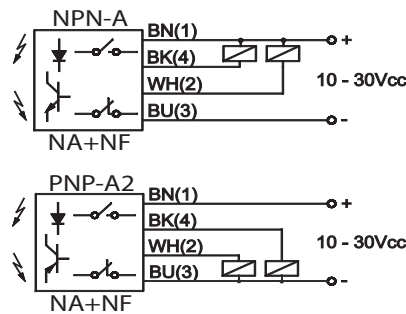
Emitted light	infrared
Sensitivity adjustment	yes
Mini. object	6 mm
Hysteresis	10 %
Operating voltage	10 to 30 Vcc
Ripple	± 10 %
Max. switching current	200 mA
Consumption current	≤ 30 mA
Output voltage drop	≤ 2 V
Response time	< 20 ms
Output protection	short-circuit and reversal polarity
Sunlight immunity	10.000 lux (front)
Incandescent light immunity	3.500 lux (front)
Operating temperature	0°C to 60°C
Protection degree	IP67
Housing options	GP

Code Housing

GI	Nickel plated brass
GP	Thermoplastic tube
70	70 mm tube



Connection Diagram



Connector V1



Cable Colors

- BN - brown / positive
- BU - blue / negative
- BK - black / charge
- WH - white / charge

OS



- CA / CC current
- Protection
- Cable

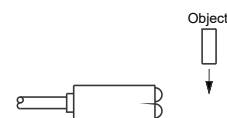
NO	OS300-18GP80-UZ3L-J	OS300-18GI80-UZ3L-J
NC	OS300-18GP80-UZ3D-J	OS300-18GI80-UZ3D-J
System	photosensor	
Sensing distance	300 mm	
Standard target	200 x 200 mm white paper	
Signaling	rear led	
Weight	145 g	155 g
Connection	cable 2 m PVC, 3 wires 0,31 mm ²	
Mechanical dimensions		

Common Technical Features

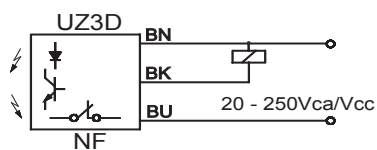
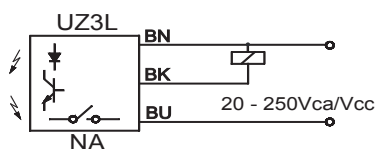
Emitted light	infrared
Sensitivity adjustment	red
Hysteresis	≤ 20 %
Consumption current	≤ 5 mA
Operating voltage	20 to 250 Vca / Vcc
Ripple	10 %
Network frequency	50 or 60 Hz
Max. switching current	300 mA
Output voltage drop	≤ 2 V
Output protection	short-circuit and overload
sunlight immunity	10.000 lux (front)
Incandescent light immunity	3.500 lux (front)
Operating temperature	- 10°C to + 60°C
Protection degree	IP67
Housing options	GI / GP

Code Housing

GI	Nickel plated brass
GP	Thermoplastic tube
80	80 mm tube



Connection Diagram

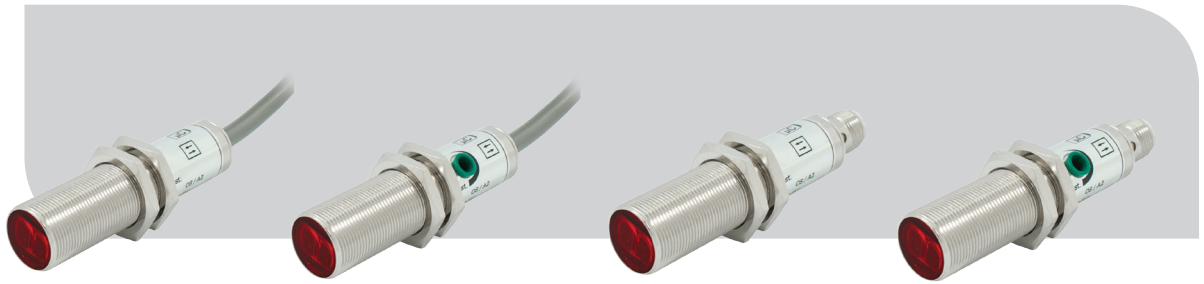


Cable Colors

- BN - brown
- BU - blue
- BK - black

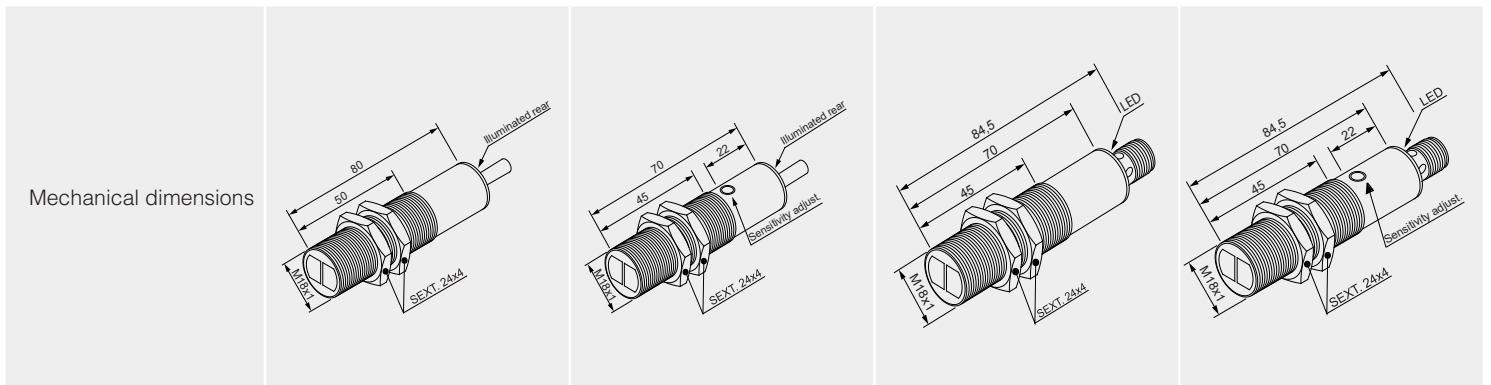
OR

- Direct Current
- 4 Wires
- With or Without Adjustment
- Cable or Connector
- Polarized Filter



NO + NC - NPN	OR2KF-18GI70-A	OR2KF-18GI70-A-J	OR2KF-18GI70-A-V1	OR2KF-18GI70-A-V1-J
NO + NC - PNP	OR2KF-18GI70-A2	OR2KF-18GI70-A2-J	OR2KF-18GI70-A2-V1	OR2KF-18GI70-A2-V1-J

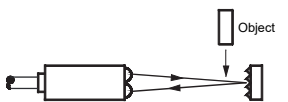
System	polarized reflective			
Sensing distance	2 m			
Standard target	mirror 50 x 60 (pag. 11.2)			
Sensitivity adjustment	no	yes	no	yes
Signaling	illuminated rear		4 microled in connector	
Weight	155 g		75 g	
Connection	cable 2 m PVC, 4 wires 0,31 mm ²		connector M12, 4 pins	



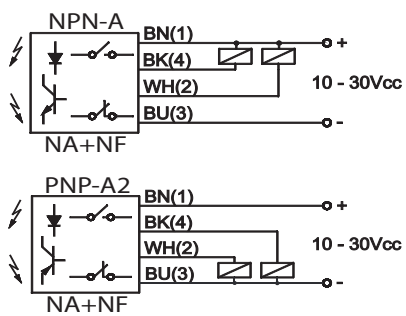
Common Technical Features	
Emitted light	red
Mini. detectable object	Ø > 10 mm
Hysteresis	10 %
Operating voltage	10 to 30 Vcc
Ripple	± 10 %
Max. switching current	200 mA
Consumption current	≤ 30 mA
Output voltage drop	≤ 2 V
Response time	< 20 ms
Output protection	short-circuit and reversal polarity
Sunlight immunity	10.000 lux (front)
Incandescent light immunity	3.500 lux (front)
Operating temperature	0°C to + 60°C
Protection degree	IP67
Housing options	GP

Code	Housing
GI	Nickel plated brass
GP	Thermoplastic tube
70	70 mm tube

*Note: The ESP 50x60 mirror must be ordered separately.



Connection Diagram



Cable Colors
BN - brown / positive
BU - blue / negative
BK - black / charge
WH - white / charge

Connector V1



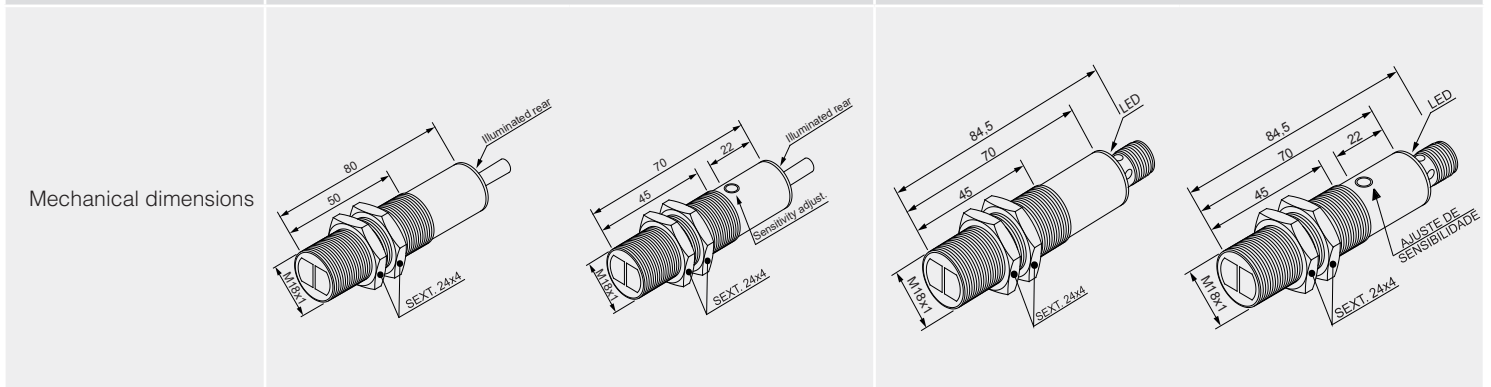
OR

- Direct current
- 4 wires
- With or without adjustment
- Cable or connector



NO + NC - NPN	OR4K-18GI70-A	OR4K-18GI70-A-J	OR4K-18GI70-A-V1	OR4K-18GI70-A-V1-J
NO + NC - PNP	OR4K-18GI70-A2	OR4K-18GI70-A2-J	OR4K-18GI70-A2-V1	OR4K-18GI70-A2-V1-J

System	reflective			
Sensing distance	4 m			
Standard target	mirror 50 x 60 (pag. 11.2)			
Sensitivity adjustment	no	yes	no	yes
Detectable object	opaque, translucent and transparent			
Signaling	illuminated rear		4 microled in connector	
Weight	155 g		75 g	
Connection	cable 2 m PVC, 4 wires 0,31 mm ²		connector M12, 4 pins	



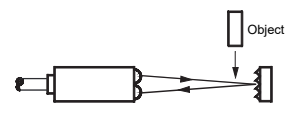
Common Technical Features

Emitted light	red
Mini. detectable object	Ø > 10 mm
Hysteresis	10 %
Operating voltage	10 to 30 Vcc
Ripple	± 10 %
Max. switching current	200 mA
Consumption current	≤ 30 mA
Output voltage drop	≤ 2 V
Response time	< 20 ms
Output protection	short-circuit and reversal polarity
Sunlight immunity	10.000 lux (front)
Incandescent light immunity	3.500 lux (front)
Operating temperature	0°C a + 60°C
Protection degree	IP67
Housing options	GP

Code Housing

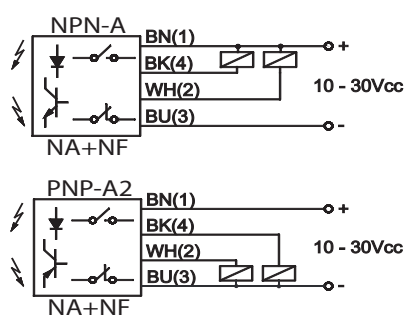
GI	Nickel plated brass
GP	Thermoplastic tube
70	70 mm tude

*Note: The ESP 50x60 mirror must be ordered separately.



*Models with sensitivity adjustment.

Connection Diagram



Cable Colors

- BN - brown / positive
- BU - blue / negative
- BK - black / charge
- WH - white / charge

Connector V1



M18

OR

- CA and CC current
- With protection
- Cable



NO	OR4K-18GP80-UZ3L	OR4K-18GI80-UZ3L-J
NC	OR4K-18GP80-UZ3D	OR4K-18GI80-UZ3D-J
System	reflective	
Sensing distance	4 m	
Standard target	mirror 50 x 60 (pag. 11.2)	
Sensitivity adjustment	no	yes
Signaling	rear led	
Weight	145 g	155 g
Connection	cable 2 m PVC, 3 wires 0,31 mm ²	
Housing options	GP	GI
Mechanical dimensions		

Common Technical Features

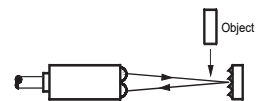
Emitted light	red
Mini. detectable object	Ø 10 mm
Hysteresis / consumption current	≤ 10 % / ≤ 5 mA
Operating voltage	20 to 250 Vca / Vcc
Ripple	± 10 %
Network frequency	50 or 60 Hz
Max. switching current	300 mA
Output voltage drop	≤ 2 V
Output protection	short-circuit and overload
Sunlight immunity	10.000 lux (front)
Incandescent light immunity	3.500 lux (front)
Operating temperature	- 10°C to + 60°C
Protection degree	IP67

Code

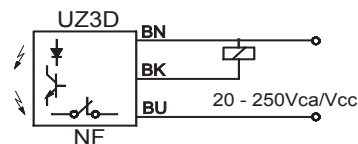
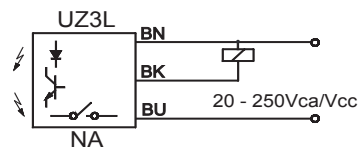
Housing

GI	Nickel plated brass
GP	Thermoplastic tube
80	80 mm tube

*Note: The ESP 50x60 mirror must be ordered separately.



Connection Diagram



Cable Colors

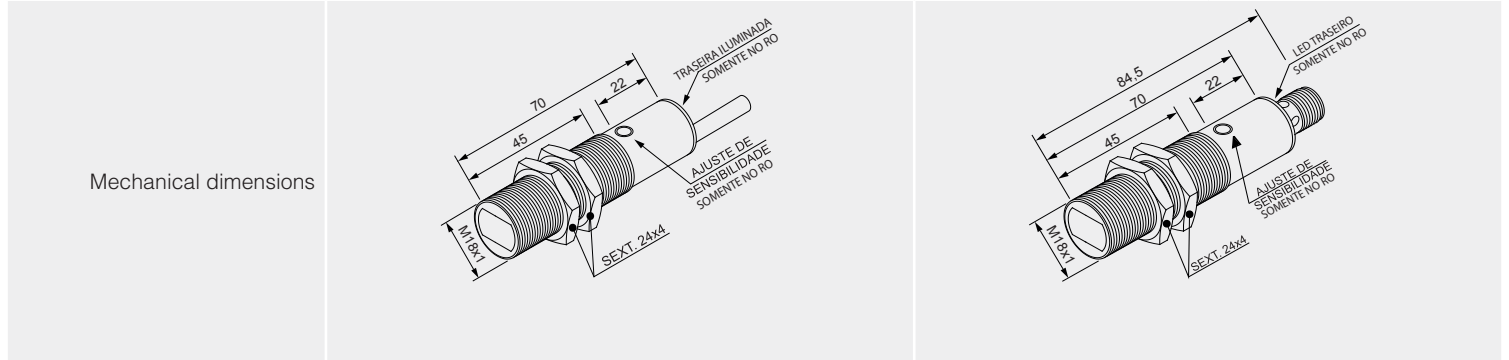
- BN - brown
- BU - blue
- BK - black

TR

- Direct current
- 2 wires / 4 wires
- Cable or connector



NO + NC - NPN	TR10K-18GI70-A-J		TR10K-18GI70-A-V1-J	
NO + NC - PNP	TR10K-18GI70-A2-J		TR10K-18GI70-A2-V1-J	
System	thru-beam (receiver)	thru-beam (transmitter)	thru-beam (receiver)	thru-beam (transmitter)
Sensing distance	10 m			
Sensitivity adjustment	yes	no	yes	no
Signaling	rear led	-	4 microled in connector	-
Weight	155 g		75 g	
Connection	cable 2 m PVC, 4 wires	cable 2 m PVC, 2 wires	connector M12, 4 pins	
Emitted light	-	red	-	red
Consumption current	≤ 30 mA	≤ 20 mA	≤ 30 mA	≤ 20 mA
Max. switching frequency	200 mA	-	200 mA	-
Output voltage drop	≤ 2 V	-	≤ 2 V	-
Response time	< 20 ms	-	< 20 ms	-
Output protection	short-circuit and reversal polarity	-	short-circuit and reversal polarity	-
Sunlight immunity	10.000 lux (front)	-	10.000 lux (front)	-
Incandescent light immunity	3.500 lux (front)	-	3.500 lux (front)	-

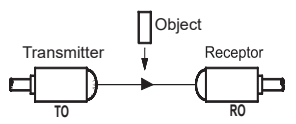
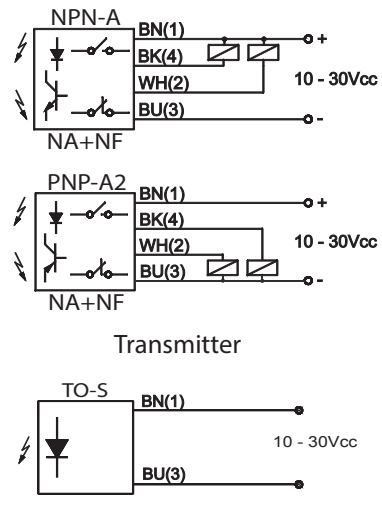


Common Technical Features

Detectable object	opaque
Mini. detectable object	Ø 8 mm
Operating voltage	10 to 30 Vcc
Ripple	± 10 %
Operating temperature	0°C to + 60°C
Protection degree	IP67
Housing options	GP

Code	Housing
GI	Nickel plated brass
GP	Thermoplastic tube
70	70 mm tube

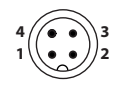
Connection Diagram



Cable Colors

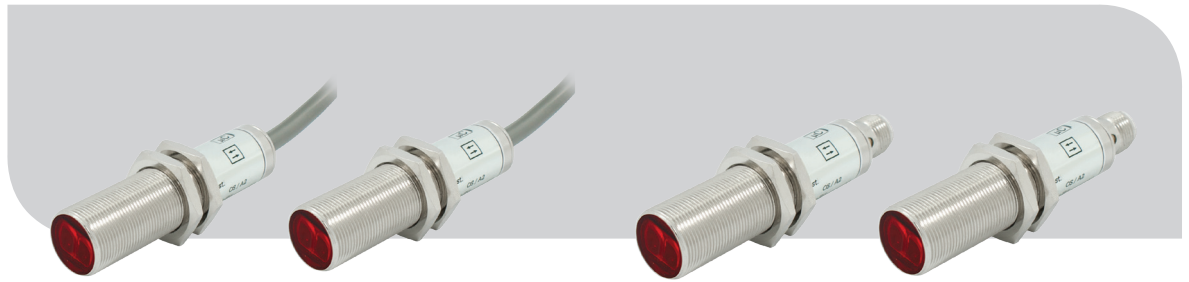
- BN - brown / positive
- BU - blue / negative
- BK - black / charge
- WH - white / charge

connector



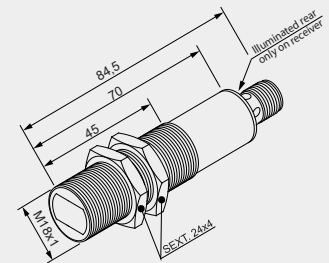
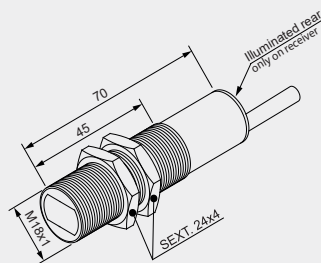
TR

- Direct current
- 2 wires / 4 wires
- Cable or connector



NO + NC - NPN	TR20K-18GI70-A		TR20-K18GI70-A-V1	
NO + NC - PNP	TR20K-18GI70-A2		TR20K-18GI70-A2-V1	
System	thru-beam (receiver)	thru-beam (transmitter)	thru-beam (receiver)	thru-beam (transmitter)
Sensing distance	20 m			
Signaling	rear led	-	4 microled in connector	-
Weight	155 g	130 g	75 g	
Connection	cable 2 m PVC, 4 wires	cable 2 m PVC, 2 wires	connector M12, 4 pins	
Emitted light	-	red	-	red
Consumption current	≤ 30 mA	≤ 20 mA	≤ 30 mA	≤ 20 mA
Max. switching frequency	200 mA	-	200 mA	-
Output voltage drop		≤ 2 V		-
Response time	< 20 ms		20 ms	-
Output protection	short-circuit and reversal polarity	reversal polarity	short-circuit and reversal polarity	-
Sunlight immunity		10.000 lux (front)		-
Incandescent light immunity		3.500 lux (front)		-

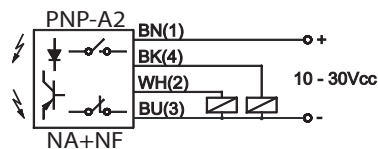
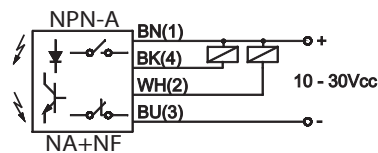
Mechanical dimensions



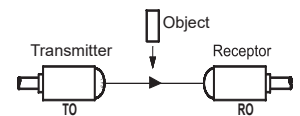
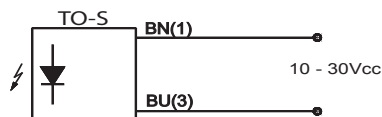
Common Technical Features

Sensitivity adjustment	no
Detectable object	opaque
Mini. detectable object	Ø 8 mm
Operating voltage	10 to 30 Vcc
Ripple	± 10 %
Operating temperature	0°C to + 60°C
Protection degree	IP67
Housing options	GP

Connection Diagram



Transmitter



Cable Colors

- BN - brown / positive
- BU - blue / negative
- BK - black / charge
- WH - white / charge

Connector V1



Code

Housing

GI	Nickel plated brass
GP	Thermoplastic tube
70	70 mm tube

TR



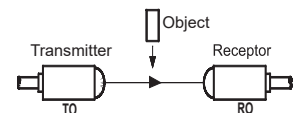
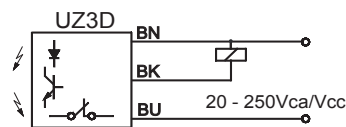
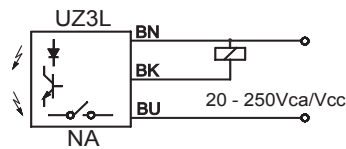
- CC / CA cCurrent
- With protection
- Cable

	NO - NPN	TR20K-18GP80-UZ3D	TR20K-18GI80-UZ3D-J
	NC - PNP	TR20K-18GP80-UZ3L	TR20K-18GI80-UZ3L-J
System	thru-beam (receiver)	thru-beam (transmitter)	thru-beam (receiver)
Sensing distance	20 m		
Signaling	rear led	-	rear led
Weight	145 g		155 g
Connection	cable 2 m PVC, 3 wires	cable 2 m PVC, 2 wires	cable 2 m PVC, 3 wires
Sensitivity adjustment	no		yes
Emitted light	-	red	-
Max. switching frequency	300 mA	-	300 mA
Output voltage drop	≤ 2 V	-	≤ 2 V
Response time	< 20 ms	-	< 20 ms
Output protection	short-circuit and overload	-	short-circuit and overload
Sunlight immunity	10.000 lux (front)	-	10.000 lux (front)
Incandescent light immunity	3.500 lux (front)	-	3.500 lux (front)
Housing options	GP		GI
Mechanical dimensions			

Common Technical Features

Detectable object	opaque
Mini. detectable object	∅ 20 mm
Operating voltage	20 to 250 Vca / Vcc
Ripple	± 10 %
Consumption current	≤ 5 mA
Operating temperature	0°C to + 60°C
Protection degree	IP67

Connection Diagram



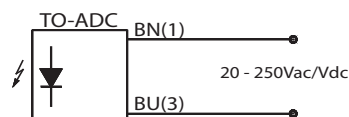
Cable Colors

- BN - brown
- BU - blue
- BK - black

Code Housing

GI	Nickel plated brass
GP	Thermoplastic tube
80	80 mm tube

Transmitter





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