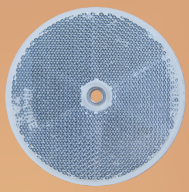
"ESA Control" Ltd



REFLECTIVE

PHOTOELECTRIC SENSORS

for direct current

DC

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M12 reflective photoelectric sensor for direct current (DC)

ORP1-12

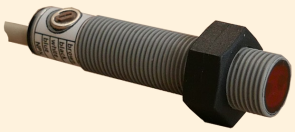


fig.1

Application and operating principle

The M12 presented reflective photoelectric sensor serves to switch direct current circuits. The sensor emits infrared modulated ray of light which reflects on a reflector and returns back to the sensor. When an object passes between the sensor and the reflector, the ray of light becomes disconnected and the output of the sensor change state. When there is reflector in front of the sensor, the output indicator is on. The sensor has a potentiometer to adjust the sensitivity.

Technical parameters

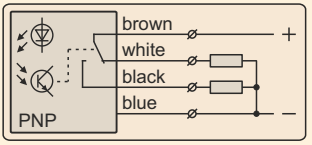
Operating distance, *Sn*	
- with reflector Ø82 mm (BRT84)	0,01 ÷ 1,50 m
- with reflector 51x51 mm (BRT69x51)	0,01 ÷ 0,60 m
- with reflective tape 55x55 mm (M31H55)	0,02 ÷ 0,50 m
Supply voltage, *Us*	9…36VDC (Ripple ±10 %)
Residual voltage (max), *Ures*	0,8 V (I = 250 mA)
Load current (max), *Iout*	250 mA
Protection of output (scanning), *Iprot*	350 mA (25ºC)
Current consumption, *Is*	10 mA
Switching frequency (max), *fo*	200 Hz
Spectrum area of operating	850…950 nm
Operating ambient illumination	0...10'000 Lx
Operating temperature range, *Tamb*	-25º…+70ºC
Degree of protection	IP54
Output light indicator	LED
Connection cable	4x0.25 mm², L=2 m
Overall dimensions	M12x1, L=56mm
Housing - plastic	PVC

Full protection to 40V:
Protection against incorrect connection of cables, current overload and short-circuit at the outputs.

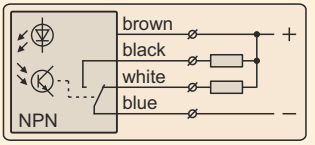
Type parameters

Type	Output function	Scheme of connection
ORP1-12.10.FKT	PNP / NO+NC	10
ORP1-12.20.FKT	NPN / NO+NC	20

Schemes of connection



Scheme 10



Scheme 20

M18 reflective photoelectric sensor for direct current (DC)

ORP1-18

fig.1

Application and operating principle

The M18 presented reflective photoelectric sensor serves to switch direct current circuits. The sensor emits infrared modulated ray of light which reflects on a reflector and returns back to the sensor. When an object passes between the sensor and the reflector, the ray of light becomes disconnected and the output of the sensor change state. When there is reflector in front of the sensor, the output indicator is on. The sensor has a potentiometer to adjust the sensitivity.

Technical parameters

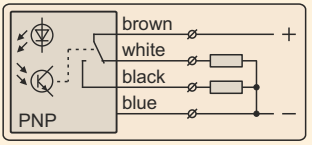
Operating distance, *Sn*	
- with reflector Ø82 mm (BRT84)	0,02 ÷ 2,50 m
- with reflector 51x51 mm (BRT69x51)	0,02 ÷ 0,80 m
- with reflective tape 55x55 mm (M31H55)	0,02 ÷ 0,70 m
Supply voltage, *Us*	9…36VDC (Ripple ±10 %)
Residual voltage (max), *Ures*	0,8 V (I = 250 mA)
Load current (max), *Iout*	250 mA
Protection of output (scanning), *Iprot*	350 mA (25ºC)
Current consumption, *Is*	10 mA
Switching frequency (max), *fo*	200 Hz
Spectrum area of operating	850…950 nm
Operating ambient illumination	0...10'000 Lx
Operating temperature range, *Tamb*	-25º…+70ºC
Degree of protection	IP54
Output light indicator	LED
Connection cable	4x0.25 mm², L=2 m
Overall dimensions	M18x1, L=65 mm
Housing - plastic	PVC

Full protection to 40V:
Protection against incorrect connection of cables, current overload and short-circuit at the outputs.

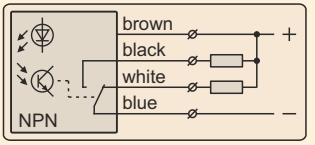
Type parameters

Type	Output function	Scheme of connection
ORP1-18.10.FKT	PNP / NO+NC	10
ORP1-18.20.FKT	NPN / NO+NC	20

Schemes of connection



Scheme 10



Scheme 20

ORP3-60.A reflective photoelectric sensor for direct current (DC)

ORP3-60.A

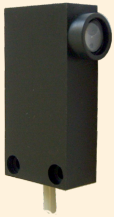


fig.1

Application and operating principle

The ORP3-60.A presented reflective photoelectric sensor serves to switch direct current circuits. The sensor emits infrared modulated ray of light which reflects on a reflector and returns back to the sensor. When an object passes between the sensor and the reflector, the ray of light becomes disconnected and the output of the sensor change state. When there is reflector in front of the sensor, the output indicator is on. The sensor has a potentiometer to adjust the sensitivity.

Technical parameters

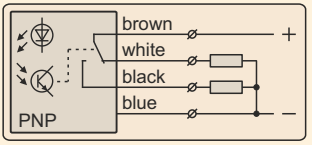
Operating distance, *Sn*	
- with reflector Ø82 mm (BRT84)	0,02 ÷ 2,50 m
- with reflector 51x51 mm (BRT69x51)	0,02 ÷ 0,80 m
- with reflective tape 55x55 mm (M31H55)	0,02 ÷ 0,70 m
Supply voltage, *Us*	9…36VDC (Ripple ±10 %)
Residual voltage (max), *Ures*	0,8 V (I = 250 mA)
Load current (max), *Iout*	250 mA
Protection of output (scanning), *Iprot*	350 mA (25ºC)
Current consumption, *Is*	10 mA
Switching frequency (max), *fo*	200 Hz
Spectrum area of operating	850…950 nm
Operating ambient illumination	0...10'000 Lx
Operating temperature range, *Tamb*	-25º…+70ºC
Degree of protection	IP54
Output light indicator	LED
Connection cable	4x0.25 mm², L=2 m
Overall dimensions	36x15x60 mm
Housing - plastic	PA6 (Polyamide)

Full protection to 40V:
Protection against incorrect connection of cables, current overload and short-circuit at the outputs.

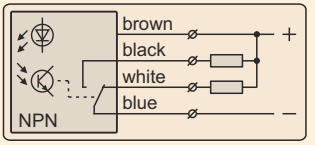
Type parameters

Type	Output function	Scheme of connection
ORP3-60.10.FKTA	PNP / NO+NC	10
ORP3-60.20.FKTA	NPN / NO+NC	20

Schemes of connection



Scheme 10



Scheme 20

M30 reflective photoelectric sensor for direct current (DC)

ORP1-30

fig.1

Application and operating principle

The M30 presented reflective photoelectric sensor serves to switch direct current circuits. The sensor emits infrared modulated ray of light which reflects on a reflector and returns back to the sensor. When an object passes between the sensor and the reflector, the ray of light becomes disconnected and the output of the sensor change state. When there is reflector in front of the sensor, the output indicator is on. The sensor has a potentiometer to adjust the sensitivity.

Technical parameters

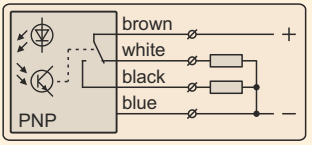
Operating distance, *Sn*	
- with reflector Ø82 mm (BRT84)	0,05 ÷ 5,00 m
- with reflector 51x51 mm (BRT69x51)	0,06 ÷ 3,00 m
- with reflective tape 55x55 mm (M31H55)	0,06 ÷ 2,20 m
Supply voltage, *Us*	9…36 VDC (Ripple ±10 %)
Residual voltage (max), *Ures*	0,8 V (I = 250 mA)
Load current (max), *Iout*	250 mA
Protection of output (scanning), *Iprot*	350 mA (25ºC)
Current consumption, *Is*	10 mA
Switching frequency (max), *fo*	200 Hz
Spectrum area of operating	850…950 nm
Operating ambient illumination	0...10'000 Lx
Operating temperature range, *Tamb*	-25º…+70ºC
Degree of protection	IP54
Output light indicator	LED
Connection cable	4x0.25 mm², L=2 m
Overall dimensions	M30x1.5, L=69 mm
Housing - plastic	PVC

Full protection to 40V:
Protection against incorrect connection of cables, current overload and short-circuit at the outputs.

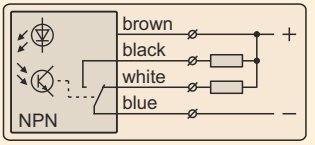
Type parameters

Type	Output function	Scheme of connection
ORP1-30.10.FKT	PNP / NO+NC	10
ORP1-30.20.FKT	NPN / NO+NC	20

Schemes of connection



Scheme 10



Scheme 20

M30 reflective photoelectric sensor for direct current (DC)

ORP1-30/L

fig.1

Application and operating principle

The M30/L presented reflective photoelectric sensor is used for operation in a wide range of ambient light - from dark to direct sunlight without changing its sensitivity and operating distance (Sn). It is designed for switching direct current electrical circuits. The sensor emits infrared modulated ray of light which reflects on a reflector and returns back to the sensor. When an object passes between the sensor and the reflector, the ray of light becomes disconnected and the output of the sensor change state. When there is reflector in front of the sensor, the output indicator is on. The sensor has a potentiometer to adjust the sensitivity.

Technical parameters

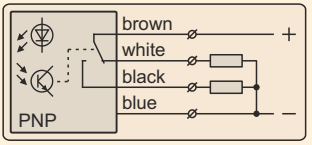
Operating distance, *Sn*	
- with reflector Ø82 mm (BRT84)	0,05 ÷ 6,00 m
- with reflector 51x51 mm (BRT69x51)	0,06 ÷ 3,30 m
- with reflective tape 55x55 mm (M31H55)	0,06 ÷ 2,50 m
Supply voltage, *Us*	9…36 VDC (Ripple ±10 %)
Residual voltage (max), *Ures*	0,8 V (I = 250 mA)
Load current (max), *Iout*	250 mA
Protection of output (scanning), *Iprot*	350 mA (25ºC)
Current consumption, *Is*	10 mA
Switching frequency (max), *fo*	200 Hz
Spectrum area of operating	850…950 nm
Operating ambient illumination	0 ... 180'000 Lx
Operating temperature range, *Tamb*	-25º…+70ºC
Degree of protection	IP54
Output light indicator	LED
Connection cable	4x0.25 mm², L=2 m
Overall dimensions	M30x1.5, L=69 mm
Housing - plastic	PVC

Full protection to 40V:
Protection against incorrect connection of cables, current overload and short-circuit at the outputs.

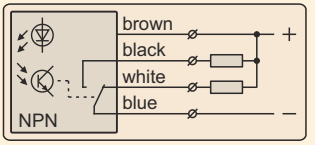
Type parameters

Type	Output function	Scheme of connection
ORP1-30.10.FKT-L	PNP / NO+NC	10
ORP1-30.20.FKT-L	NPN / NO+NC	20

Schemes of connection



Scheme 10



Scheme 20

ORP3-60 reflective photoelectric sensor for direct current (DC)

ORP3-60

fig.1

Application and operating principle

The ORP3-60 presented reflective photoelectric sensor serves to switch direct current circuits. The sensor emits infrared modulated ray of light which reflects on a reflector and returns back to the sensor. When an object passes between the sensor and the reflector, the ray of light becomes disconnected and the output of the sensor change state. When there is reflector in front of the sensor, the output indicator is on. The sensor has a potentiometer to adjust the sensitivity.

Technical parameters

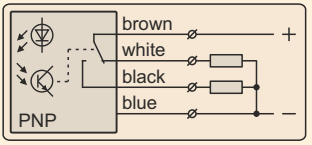
Operating distance, *Sn*	
- with reflector Ø82 mm (BRT84)	0,05 ÷ 5,00 m
- with reflector 51x51 mm (BRT69x51)	0,06 ÷ 3,00 m
- with reflective tape 55x55 mm (M31H55)	0,06 ÷ 2,20 m
Supply voltage, *Us*	9…36 VDC (Ripple ±10 %)
Residual voltage (max), *Ures*	0,8 V (I = 250 mA)
Load current (max), *Iout*	250 mA
Protection of output (scanning), *Iprot*	350 mA (25ºC)
Current consumption, *Is*	10 mA
Switching frequency (max), *fo*	200 Hz
Spectrum area of operating	850…950 nm
Operating ambient illumination	0...10'000 Lx
Operating temperature range, *Tamb*	-25º…+70ºC
Degree of protection	IP54
Output light indicator	LED
Connection cable	4x0.25 mm², L=2 m
Overall dimensions	38x15x60 mm
Housing - plastic	PA6 (Polyamide)

Full protection to 40V:
Protection against incorrect connection of cables, current overload and short-circuit at the outputs.

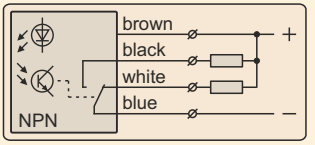
Type parameters

Type	Output function	Scheme of connection
ORP3-60.10.FKT	PNP / NO+NC	10
ORP3-60.20.FKT	NPN / NO+NC	20

Schemes of connection



Scheme 10



Scheme 20

Sensor Retroreflectors

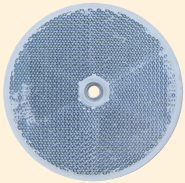


fig.1

fig.2

fig.3

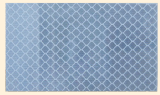
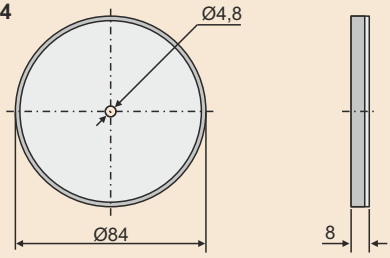
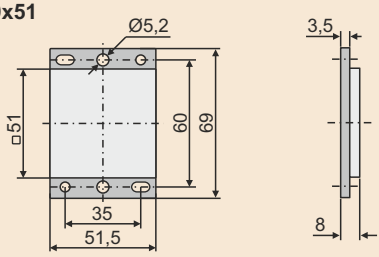
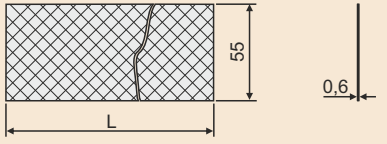
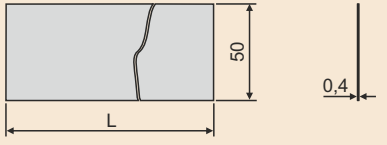
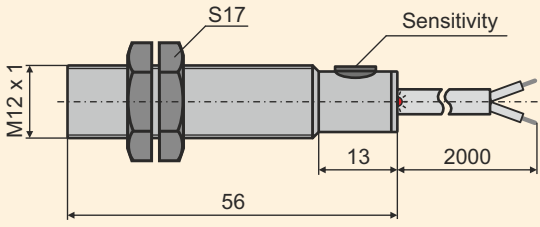


fig.4

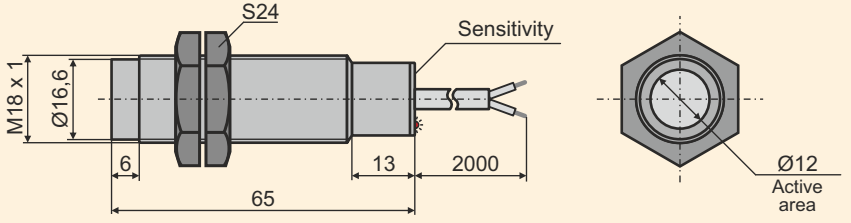
fig.5

Type / Sizes	Material	Operating temperature (max.)	Reflectivity factor	fig.
BRT84 	Acrylic	65°C	1,0	1
BRT69x51 	Acrylic	65°C	1,0	2
BRT25 	Acrylic	65°C	1,0	3
M31H55 	Synthetic resin (self-adhesive)	60°C	0,7	4
M32H50 	Textile	60°C	0,7	5

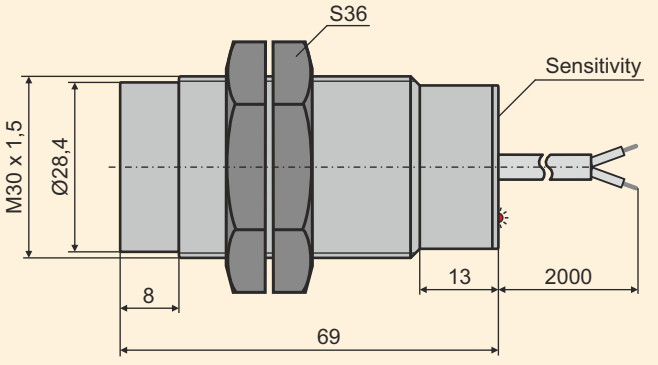
M12



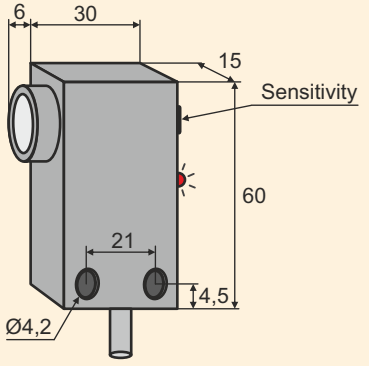
M18



M30



ORP3-60.A



ORP3-60