

through-beam, retro-reflective, dif. reflection sensors 1400

dimensions M18 x 1mm

through-beam sensor retro-reflective sensor diffuse reflection sensor sensing range

operating distance up to 20m operating distance up to 2m up to 0.6m



- ✓ robust metal housing
- √ glass lens
- ✓ integrated amplifier, adjustable diffuse reflection sensor
- √ diffuse reflection sensor with background suppression by triangulation
- √ retro-reflective sensor with polarizing filter
- ✓ short-circuit and reverse polarity protected
- √ high sampling frequency and sensing ranges
- ✓ visible red light
- ✓ connection with cable and M12-connector











up to 20m operating distance lateral light emission









description

Optoelectronic sensors are indispensable components in all automated production processes. They are used in all applications where parts are to be detected, counted, measured or positioned in a way which does not involve contact and which is reliable and fast.

The devices feature a brass housing and are often used in connection with a PLC for automatic production processes and machines. For example, they detect objects made from metal, glass, plastic, wood and paper.

Functional monitoring of the sensor is possible for throughbeam sensors using the test input in the transmitter. For this, the operating voltage potential is applied to the corresponding contact.

 $Objects\ are\ reliably\ recognized, regardless\ of\ their\ color. The$ functional principle behind these sensing devices is based

on triangulation principle, in which the position of the object is determined by the light reflected from it.

The sensors all work with visible red light and consequently, enable reliable and simple adjustment.

The yellow LED display lights up if the output is securely switched. If the green LED flashes when the output is switched, the respective device is working without sufficient functional reserve, e.g. through soiling or maladjustment.

application examples

- checking the presence of various objects
- avoiding collision, in the case of feeding movements
- monitoring object and stack heights
- ▶ limit switches, position switches and pulse generators





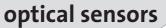
1400 through-beam, retro-reflective, dif. reflection sensors



article-no.	OE18040A	OS18000A	OE18042A	OS18002A
version	receiver	transmitter	receiver	transmitter
	through-beam sensor	through-beam sensor	through-beam sensor	through-beam sensor
operating distance	20m	-	20m	-
output signal	pnp light-on/ dark-on mode		pnp light-on/ dark-on mode	
connection	cable	cable	connector	connector
	M18x1 SW 24 Sychology ellow yellow LED	M18x1 SW 24 95	SW 24 green LED Ø16.4 green LED	M18x1 W18x1 SW 24 W12x1
TECHNICAL DATA operating distance	20m		20m	
output signal	pnp		pnp	-
	light-on/dark-on mode		light-on/dark-on mode	
operating voltage	10 36V DC	10 36V DC	10 36V DC	10 36V DC
current consumption (w/o load)	≤ 10mA	≤ 15mA	≤ 10mA	≤ 15mA
output current (max. load)	200mA	-	200mA	-
voltage drop (max. load)	2.0V DC		2.0V DC	-
transmitting element	-	LED, red light	-	LED, red light
wave length (transmitter)	-	660nm	-	660nm
hysteresis	≤ 10%	≤ 10%	≤ 10%	≤ 10%
readiness delay	20ms	20ms	20ms	20ms
sampling frequency	1kHz	-	1kHz	
display (signal / reserve)	yellow LED / green LED	-/-	yellow LED / green LED	-/-
sensitivity adjustment	-		-	-
test input	-	+	-	+
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design length (thread/complete)	M18x1mm 50mm/50mm	M18x1mm 50mm/50mm	M18x1mm 42mm/63.5mm	M18x1mm 42mm/63.5mm
housing material				
lens material	chrome-plated brass glass	chrome-plated brass	chrome-plated brass	chrome-plated brass
operating temperature	-25 +55°C	glass -25 +55°C	glass -25 +55°C	glass -25 +55°C
degree of protection (EN60529)	-25 +55 C	-25 +55 C IP67	-25 +55 C	-25 +55 C IP67
connection connection accessories	2m PVC-cable, 4-wire	2m PVC-cable, 3-wire	M12-connector, 4-pin	M12-connector, 3-pin
mounting accessories	-	-	e.g. VK200325	e.g. VK200025
(universal holder)	AY000117	AY000117	AY000117	AY000117
mounting accessories (clip)	AY000061	AY000061	AY000061	AY000061



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article-no.	OR180106	OR180126	
version	retro-reflective sensor	retro-reflective sensor	
VEISION	polarizing filter	polarizing filter	
operating distance	2m	2m	
output signal	pnp	pnp	
	dark-on mode	dark-on mode	
connection	cable	connector	
	SW 24 green LED yellow LED Ø 5	SW 24 green LED Ø16.4 Ø LED Ø 16.4 Ø LED Ø 16.4 Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø	
TECHNICAL DATA operating distance	2m	2m	
output signal	pnp	pnp	
output signal	dark-on mode	dark-on mode	
operating voltage	10 36V DC	10 36V DC	
current consumption (w/o load)	≤ 15mA	≤ 15mA	
output current (max. load)	200mA	200mA	
voltage drop (max. load)	2.0V DC	2.0V DC	
transmitting element	red LED	red LED	
wavelength (transmitter)	660	660nm	
wavelength (transmitter)	660nm	660nm	
hysteresis	660nm ≤ 10%	660nm ≤10%	
hysteresis readiness delay	≤ 10% 20ms		
hysteresis	≤ 10%	≤ 10%	
hysteresis readiness delay	≤ 10% 20ms	≤ 10% 20ms	
hysteresis readiness delay sampling frequency display (signal / reserve) sensitivity adjustment	≤ 10% 20ms 1kHz	≤ 10% 20ms 1kHz	
hysteresis readiness delay sampling frequency display (signal / reserve) sensitivity adjustment test input	≤ 10% 20ms 1kHz yellow LED / green LED	≤ 10% 20ms 1kHz yellow LED / green LED	
hysteresis readiness delay sampling frequency display (signal / reserve) sensitivity adjustment test input short-circuit protection	≤ 10% 20ms 1kHz yellow LED / green LED -	≤ 10% 20ms 1kHz yellow LED / green LED -	
hysteresis readiness delay sampling frequency display (signal / reserve) sensitivity adjustment test input	≤ 10% 20ms 1kHz yellow LED / green LED	≤ 10% 20ms 1kHz yellow LED / green LED - -	
hysteresis readiness delay sampling frequency display (signal / reserve) sensitivity adjustment test input short-circuit protection	≤ 10% 20ms 1kHz yellow LED / green LED +	≤ 10% 20ms 1kHz yellow LED / green LED - - +	
hysteresis readiness delay sampling frequency display (signal / reserve) sensitivity adjustment test input short-circuit protection reverse polarity protection	≤ 10% 20ms 1kHz yellow LED / green LED + +	≤ 10% 20ms 1kHz yellow LED / green LED + +	
hysteresis readiness delay sampling frequency display (signal / reserve) sensitivity adjustment test input short-circuit protection reverse polarity protection design length (thread/complete) housing material	≤ 10% 20ms 1kHz yellow LED / green LED + + M18x1mm 50mm/50mm chrome-plated brass	≤ 10% 20ms 1kHz yellow LED / green LED + + M18x1mm 42mm/63.5mm chrome-plated brass	
hysteresis readiness delay sampling frequency display (signal / reserve) sensitivity adjustment test input short-circuit protection reverse polarity protection design length (thread/complete) housing material lens material	≤ 10% 20ms 1kHz yellow LED / green LED + + M18x1mm 50mm/50mm chrome-plated brass glass	≤ 10% 20ms 1kHz yellow LED / green LED - + + M18x1mm 42mm/63.5mm chrome-plated brass glass	
hysteresis readiness delay sampling frequency display (signal / reserve) sensitivity adjustment test input short-circuit protection reverse polarity protection design length (thread/complete) housing material lens material operating temperature	≤ 10% 20ms 1kHz yellow LED / green LED + + M18x1mm 50mm/50mm chrome-plated brass glass -25 +55°C	≤ 10% 20ms 1kHz yellow LED / green LED + + M18x1mm 42mm/63.5mm chrome-plated brass glass -25 +55°C	
hysteresis readiness delay sampling frequency display (signal / reserve) sensitivity adjustment test input short-circuit protection reverse polarity protection design length (thread/complete) housing material lens material operating temperature degree of protection (EN 60529)	≤ 10% 20ms 1kHz yellow LED / green LED + + M18x1mm 50mm/50mm chrome-plated brass glass -25 +55°C IP67	≤ 10% 20ms 1kHz yellow LED / green LED + + M18x1mm 42mm/63.5mm chrome-plated brass glass -25 +55°C IP67	
hysteresis readiness delay sampling frequency display (signal / reserve) sensitivity adjustment test input short-circuit protection reverse polarity protection design length (thread/complete) housing material lens material operating temperature degree of protection (EN 60529) connection	≤ 10% 20ms 1kHz yellow LED / green LED + + M18x1mm 50mm/50mm chrome-plated brass glass -25 +55°C	≤ 10% 20ms 1kHz yellow LED / green LED + + M18x1mm 42mm/63.5mm chrome-plated brass glass -25 +55°C IP67 M12-connector, 3-pin	
hysteresis readiness delay sampling frequency display (signal / reserve) sensitivity adjustment test input short-circuit protection reverse polarity protection design length (thread/complete) housing material lens material operating temperature degree of protection (EN 60529) connection connection accessories	≤ 10% 20ms 1kHz yellow LED / green LED + + M18x1mm 50mm/50mm chrome-plated brass glass -25 +55°C IP67	≤ 10% 20ms 1kHz yellow LED / green LED + + M18x1mm 42mm/63.5mm chrome-plated brass glass -25 +55°C IP67	
hysteresis readiness delay sampling frequency display (signal / reserve) sensitivity adjustment test input short-circuit protection reverse polarity protection design length (thread/complete) housing material lens material operating temperature degree of protection (EN 60529) connection	≤ 10% 20ms 1kHz yellow LED / green LED + + M18x1mm 50mm/50mm chrome-plated brass glass -25 +55°C IP67 2m PVC-cable, 3-wire	≤ 10% 20ms 1kHz yellow LED / green LED + + M18x1mm 42mm/63.5mm chrome-plated brass glass -25 +55°C IP67 M12-connector, 3-pin	







article-no. version sensitivity adjustment sensing range output signal connection	OT180405 dif. reflection sensor potentiometer 40 600mm pnp light-on/ dark-on mode cable	OT180425 dif. reflection sensor potentiometer 40 600mm pnp light-on/ dark-on mode connector	OT180106 dif. reflection sensor, background suppression potentiometer 10 120mm pnp light-on mode cable	OT180126 dif. reflection sensor, background suppression potentiometer 10 120mm pnp light-on mode connector
sensitivity adjustment sensing range output signal	potentiometer 40 600mm pnp light-on/ dark-on mode	potentiometer 40 600mm pnp light-on/ dark-on mode	potentiometer 10 120mm pnp light-on mode	background suppression potentiometer 10 120mm pnp light-on mode
sensing range output signal	40 600mm pnp light-on/ dark-on mode	40 600mm pnp light-on/ dark-on mode	potentiometer 10 120mm pnp light-on mode	potentiometer 10 120mm pnp light-on mode
sensing range output signal	40 600mm pnp light-on/ dark-on mode	40 600mm pnp light-on/ dark-on mode	10 120mm pnp light-on mode	10 120mm pnp light-on mode
output signal	pnp light-on/ dark-on mode	pnp light-on/ dark-on mode	pnp light-on mode	pnp light-on mode
	dark-on mode	dark-on mode	light-on mode	light-on mode
connection	cable	connector	cable	connectes
				connector
	M18x1 SW 24 potentio- meter green UED yellow LED Ø 5	M18x1 SW 24 potentio- meter green LED Ø16.4 Ø LED M LED Ø LED M LED Ø LED M LED M LED	M18x1 SW 24 potentio-meter green LED yellow LED yellow JED	M18x1 SW 24 potentionmeter green LED W16.4 W2 W12x1
TECHNICAL DATA sensing range	40 600mm	40 600mm	10 120mm	10 120mm
output signal	pnp	pnp	pnp	pnp
	light-on/dark-on mode	light-on/dark-on mode	light-on mode	light-on mode
operating voltage	10 36V DC	10 36V DC	10 36V DC	10 36V DC
current consumption (w/o load)	≤ 20mA	≤ 20mA	≤ 25mA	≤ 25mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
transmitting element	red LED	red LED	red LED	red LED
wave length (transmitter)	660nm	660nm	660nm	660nm
norm trimming plate	200x200mm white	200x200mm white	100x100mm white	100x100mm white
hysteresis	≤ 10%	≤ 10%	≤ 10%	≤ 10%
readiness delay	60ms	60ms	20ms	20ms
sampling frequency	1kHz	1kHz	500Hz	500Hz
display (signal / reserve) sensitivity adjustment	yellow LED / green LED potentiometer	yellow LED / green LED potentiometer	yellow LED / green LED potentiometer	yellow LED / green LED potentiometer
test input	-	-	-	•
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M18x1mm	M18x1mm	M18x1mm	M18x1mm
length (thread/complete)	50mm/50mm	42mm/63.5mm	50mm/50mm	42mm/63.5mm
housing material	chrome-plated brass	chrome-plated brass	chrome-plated brass	chrome-plated brass
lens material	glass	glass	glass	glass
operating temperature	-25 +55°C	-25 +55°C	-25 +55°C	-25 +55°C
degree of protection (EN60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 4-pin	M12-connector, 4-pin	2m PVC-cable, 3-pin	M12-connector, 3-pin
connection accessories	-	e.g. VK200325	-	e.g. VK200025
				J
mounting accessories	AV000117		AV000117	
mounting accessories (universal holder)	AY000117	AY000117	AY000117	AY000117
mounting accessories	AY000117 AY000061		AY000117 AY000061	









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article-no. version sensitivity adjustment	OE18040C receiver through-beam sensor	OS18000C transmitter through-beam sensor	OE18042C receiver through-beam sensor	OS18002C transmitter through-beam sensor
sensitivity adjustment			-	
operating distance	20m		20m	-
output signal	pnp light-on/ dark-on mode		pnp light-on/ dark-on mode	
connection	cable	cable	connector	connector
	M18x1 3.9 SW 24 Green LED yellow LED 95	M18x1 3.9 10 8 8 8	M18x1 3.9 SW 24 green LED Ø16.6 Ø LED Ø16.6 Ø M12x1	M18x1 3.9 3.9 8 8 916.6 8
TECHNICAL DATA				
operating distance output signal	20m pnp	-	20m pnp	-
	light-on/dark-on mode		light-on/dark-on mode	
operating voltage	10 36V DC	10 36V DC	10 36V DC	10 36V DC
current consumption (w/o load)	≤ 10mA	≤ 15mA	≤ 10mA	≤ 15mA
output current (max. load)	200mA	-	200mA	-
voltage drop (max. load)	2.0V DC	-	2.0V DC	-
transmitting element		LED, red light	-	LED, red light
wave length (transmitter)	-	660nm	-	660nm
norm trimming plate	-	-	-	-
hysteresis	≤ 10%	≤ 10%	≤ 10%	≤ 10%
readiness delay	20ms	20ms	20ms	20ms
sampling frequency	1kHz	-	1kHz	-
display (signal / reserve) sensitivity adjustment	yellow LED / green LED -	yellow LED / - -	yellow LED / green LED -	yellow LED / - -
test input	-	+	-	+
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M18x1mm	M18x1mm	M18x1mm	M18x1mm
length (thread/complete)	53mm/61.5mm	53mm/61.5mm	45mm/75mm	45mm/75mm
housing material	chrome-plated brass	chrome-plated brass	chrome-plated brass	chrome-plated brass
lens material	glass	glass	glass	glass
operating temperature	-25 +55°C	-25 +55°C	-25 +55°C	-25 +55°C
degree of protection (EN60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 4-wire	2m PVC-cable, 3-wire	M12-connector, 4-pin	M12-connector, 3-pin
connection accessories	-	-	e.g. VK200325	e.g. VK200025
mounting accessories (universal holder) mounting accessories (clip)	AY000117 AY000061	AY000117 AY000061	AY000117 AY000061	AY000117 AY000061





1400 through-beam, retro-reflective, dif. reflection sensors



ticle-no. OR180108		OR180128		
version	retro-reflective sensor	retro-reflective sensor		
	polarizing filter	polarizing filter		
operating distance	2m	2m		
output signal	pnp	pnp		
	dark-on mode	dark-on mode		
connection	cable	connector		
	M18x1 3.9 SW 24 green LED yellow LED	SW 24 Green LED Windows Win		
pperating distance	2m	2m		
output signal	pnp dark-on mode	pnp dark-on mode		
operating voltage	10 36V DC	10 36V DC		
current consumption (w/o load)	≤ 15mA	≤ 15mA		
output current (max. load)	200mA	200mA		
voltage drop (max. load)	2.0V DC	2.0V DC		
ransmitting element	red LED	red LED		
vavelength (transmitter)	660nm	660nm		
norm trimming plate	-	-		
nysteresis	≤ 10%	≤ 10%		
eadiness delay	20ms	20ms		
campling frequency	1kHz	1kHz		
display (signal / reserve)		yellow LED / green LED		
sensitivity adjustment	yellow LED / green LED	yellow LED / green LED		
est input	-			
short-circuit protection	+	+		
reverse polarity protection	+	+		
design	M18x1mm	M18x1mm		
ength (thread/complete)	53mm/61.5mm	45mm/75mm		
nousing material	chrome-plated brass	chrome-plated brass		
ens material	glass	glass		
operating temperature	-25 +55°C	-25 +55°C		
degree of protection (EN 60529)	IP67	IP67		
connection	2m PVC-cable, 3-wire	M12-connector, 3-pin		
connection accessories	-	e.g. VK200025		
mounting accessories	AV000447	AV00044 =		
(universal holder)	AY000117	AY000117 AY000061		
mounting accessories (clip)	AY000061			



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article-no.	OT180407	OT180427	OT180108	OT180128
version	dif. reflection sensor	dif. reflection sensor	dif. reflection sensor, background suppression	dif. reflection sensor, background suppression
sensitivity adjustment	potentiometer	potentiometer	potentiometer	potentiometer
sensing range	40 600mm	40 600mm	10 120mm	10 120mm
output signal	pnp light-on/ dark-on mode	pnp light-on/ dark-on mode	pnp light-on mode	pnp light-on mode
connection	cable	connector	cable	connector
	M18x1 3.9 SW 24 potentionmeter green LED yellow LED yellow	M18x1 3.9 SW 24 potentio-meter green LED Ø16.3 M12x1	M18x1 3.9 SW 24 potentionmeter green LED yellow LED Ø 5	M18x1 3.9 SW 24 potentio- meter green green green yellow LED Ø/16.3 Ø/16.3
TECHNICAL DATA				
sensing range	40 600mm	40 600mm	10 120mm	10 120mm
output signal	pnp light-on/dark-on mode	pnp light-on/dark-on mode	pnp light-on mode	pnp light-on mode
operating voltage	10 36V DC	10 36V DC	10 36V DC	10 36V DC
current consumption (w/o load)	≤ 20mA	≤ 200mA	≤ 25mA	≤ 25mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
transmitting element	red LED	red LED	red LED	red LED
wave length (transmitter)	660nm	660nm	660nm	660nm
norm trimming plate	200x200mm white	200x200mm white	100x100mm white	100x100mm white
hysteresis readiness delay	≤ 10% 60ms	≤ 10% 60ms	≤ 10% 20ms	≤ 10% 20ms
sampling frequency	1kHz	1kHz	500Hz	500Hz
, , , ,				
display (signal / reserve) sensitivity adjustment	yellow LED / green LED potentiometer	yellow LED / -	yellow LED / green LED potentiometer	yellow LED / -
test input	potentiometer	potentiometer +	potentiometer	potentiometer +
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M18x1mm	 M18x1mm	M18x1mm	 M18x1mm
length (thread/complete)	53mm/61.5mm	45mm/75mm	53mm/61.5mm	45mm/75mm
housing material	chrome-plated brass	chrome-plated brass	chrome-plated brass	chrome-plated brass
lens material	glass	glass	glass	glass
operating temperature	-25 +55°C	-25 +55°C	-25 +55°C	-25 +55°C
degree of protection (EN60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 4-pin	M12-connector, 4-pin	2m PVC-cable, 3-pin	M12-connector, 3-pin
connection accessories	Ziii i vC-cabic, 4-piii	e.g. VK200325	21111 vC-cable, 3-pill	e.g. VK200025
mounting accessories (universal holder)	AY000117	AY000117	AY000117	AY000117
mounting accessories (clip)				
mounting accessories (clip)	AY000061	AY000061	AY000061	AY000061



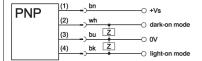


1400 through-beam, retro-reflective, dif. reflection sensors

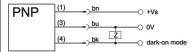


connection

receiver through-beam sensor, diffuse reflection sensor



retro-reflective sensor





transmitter through-beam sensor

bn = brown (1), wh = white (2), bu = blue (3), bk = black (4)

diffuse reflection sensor with background suppression

--○ +Vs

-0 0V

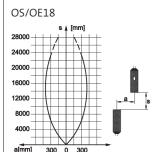
wire colors:

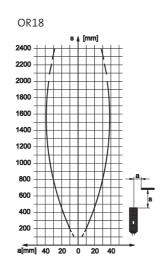
system test: connect the blue (3) and black (4) wire to disable the transmitter of a through-beam sensor.

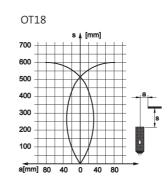
important note: if a cable socket with LED display has to be used for connection of the sensor, the black wire (4) must be permanently connected to +24V DC to prevent the transmitter being disabled via the LED!

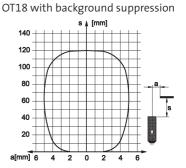
PNP

response curves

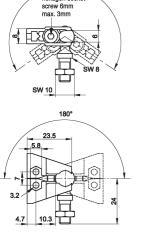


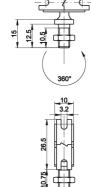




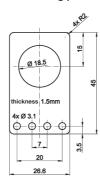


universal holder AY000117 consisting of base module ...





and fitting panel



This data sheet contains the standard versions only. Kindly request the availability of other output- and connection functions.

We will be pleased to supply the matching cable socket for your devices with connector. Please refer to the list in catalog chapter "accessories" under "cable sockets ipf-SENSORFLEX®" or search our website for "VK".

Warning: Never use these devices in applications where the safety of a person depends on their functionality.

This data sheet as well as your personal contact can be found at www.ipf-electronic.com



