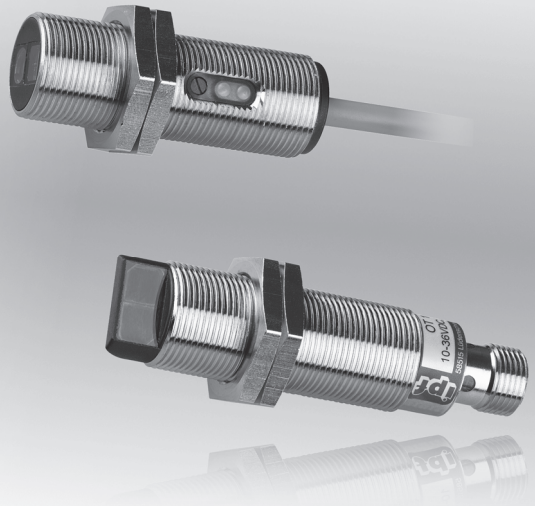
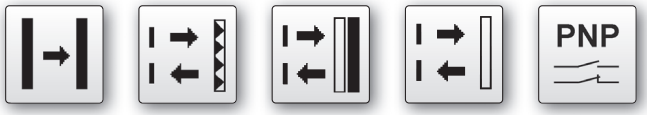
through-beam, retro-reflective, dif. reflection sensors 1400

dimensions		**M18 x 1mm**
through-beam sensor	operating distance	**up to 20m**
retro-reflective sensor	operating distance	**up to 2m**
diffuse reflection sensor	sensing range	**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

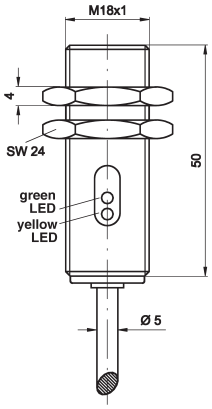
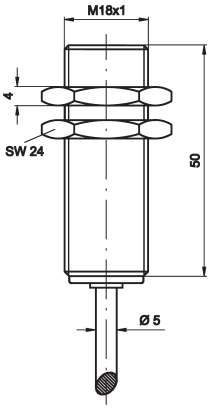
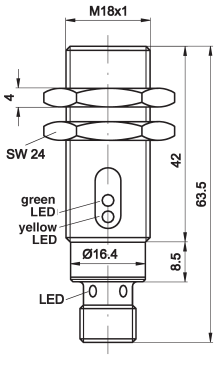
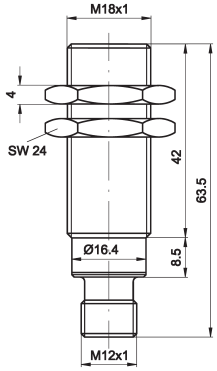
Optoelectronic sensors are indispensable components in all automated production processes. They are used in all applications where parts are to be detected, counted, measured or positioned in a way which does not involve contact and which is reliable and fast.
The devices feature a brass housing and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

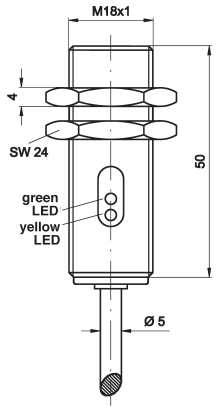
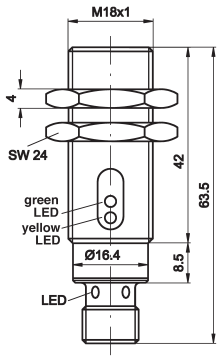
- checking the presence of various objects
- avoiding collision, in the case of feeding movements
- monitoring object and stack heights
- limit switches, position switches and pulse generators

optical sensors

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

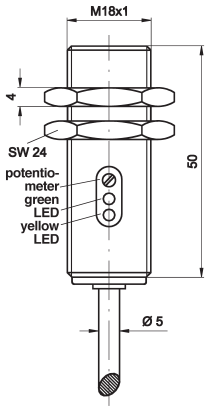
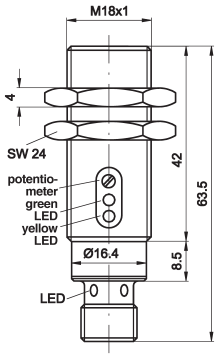
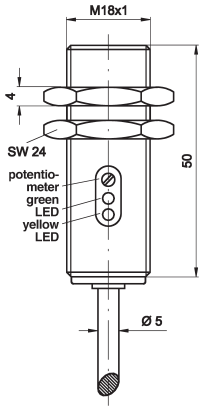
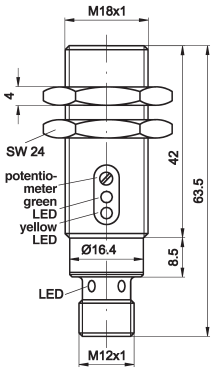
article-no.	OE18040A	OS18000A	OE18042A	OS18002A
version	receiver through-beam sensor	transmitter through-beam sensor	receiver through-beam sensor	transmitter through-beam sensor
operating distance	20m	-	20m	-
output signal	pnp light-on/ dark-on mode	-	pnp light-on/ dark-on mode	-
connection	cable	cable	connector	connector
				
TECHNICAL DATA				
operating distance	20m	-	20m	-
output signal	pnp light-on/dark-on mode	-	pnp 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	M18x1mm	M18x1mm	M18x1mm	M18x1mm
length (thread/complete)	50mm/50mm	50mm/50mm	42mm/63.5mm	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-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)	**AY000117**	**AY000117**	**AY000117**	**AY000117**
mounting accessories (clip)	**AY000061**	**AY000061**	**AY000061**	**AY000061**

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

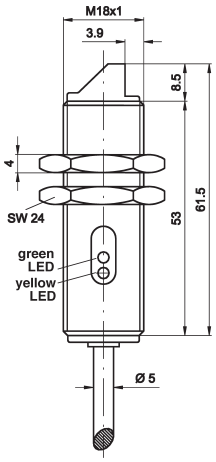
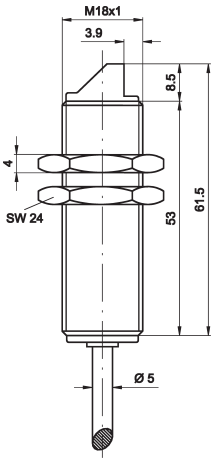
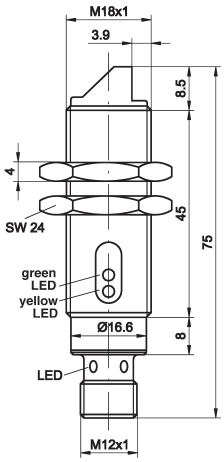
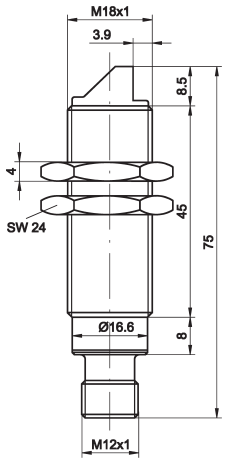
article-no.	**OR180106**	**OR180126**
version	**retro-reflective sensor polarizing filter**	**retro-reflective sensor polarizing filter**
operating distance	**2m**	**2m**
output signal	**pnp dark-on mode**	**pnp dark-on mode**
connection	**cable**	**connector**
		
TECHNICAL DATA		
operating distance	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
transmitting element	red LED	red LED
wavelength (transmitter)	660nm	660nm
hysteresis	≤ 10%	≤ 10%
readiness delay	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	M18x1mm	M18x1mm
length (thread/complete)	50mm/50mm	42mm/63.5mm
housing material	chrome-plated brass	chrome-plated brass
lens 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 (universal holder)	**AY000117**	**AY000117**
mounting accessories (clip)	**AY000061**	**AY000061**

optical sensors

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

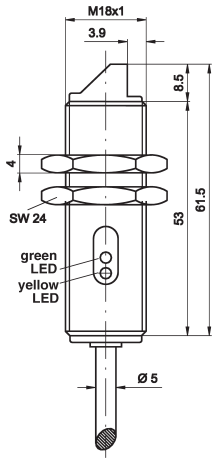
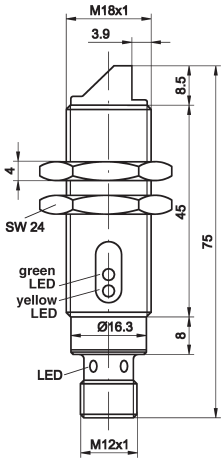
article-no.	**OT180405**	**OT180425**	**OT180106**	**OT180126**
version	**dif. reflection sensor**	**dif. reflection sensor**	**dif. reflection sensor, background suppression**	**dif. reflection sensor, background suppression**
sensitivity adjustment	**potentiometer**	**potentiometer**	**potentiometer**	**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**
				
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	≤ 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)	yellow LED / green LED	yellow LED / green LED	yellow LED / green LED	yellow LED / green LED
sensitivity adjustment	potentiometer	potentiometer	potentiometer	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**
mounting accessories (universal holder)	**AY000117**	**AY000117**	**AY000117**	**AY000117**
mounting accessories (clip)	**AY000061**	**AY000061**	**AY000061**	**AY000061**

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

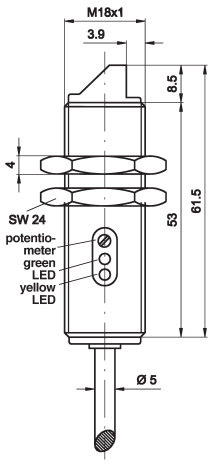
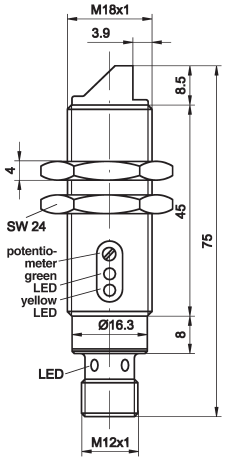
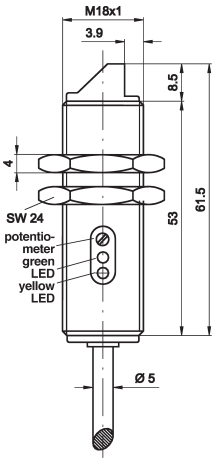
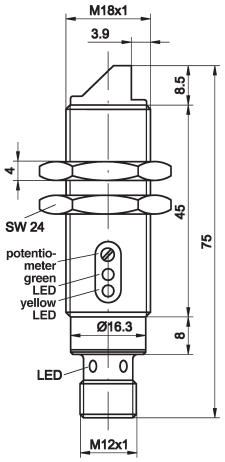
article-no.	OE18040C	OS18000C	OE18042C	OS18002C
version	receiver through-beam sensor	transmitter through-beam sensor	receiver through-beam sensor	transmitter through-beam sensor
sensitivity adjustment	-	-	-	-
operating distance	20m	-	20m	-
output signal	pnp light-on/ dark-on mode	-	pnp light-on/ dark-on mode	-
connection	cable	cable	connector	connector
				
TECHNICAL DATA				
operating distance	20m	-	20m	-
output signal	pnp light-on/dark-on mode	-	pnp 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)	yellow LED / green LED	yellow LED / -	yellow LED / green LED	yellow LED / -
sensitivity adjustment	-	-	-	-
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)	**AY000117**	**AY000117**	**AY000117**	**AY000117**
mounting accessories (clip)	**AY000061**	**AY000061**	**AY000061**	**AY000061**

optical sensors

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

article-no.	**OR180108**	**OR180128**
version	**retro-reflective sensor polarizing filter**	**retro-reflective sensor polarizing filter**
operating distance	**2m**	**2m**
output signal	**pnp dark-on mode**	**pnp dark-on mode**
connection	**cable**	**connector**
		
TECHNICAL DATA		
operating 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
transmitting element	red LED	red LED
wavelength (transmitter)	660nm	660nm
norm trimming plate	-	-
hysteresis	≤ 10%	≤ 10%
readiness delay	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	M18x1mm	M18x1mm
length (thread/complete)	53mm/61.5mm	45mm/75mm
housing material	chrome-plated brass	chrome-plated brass
lens 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 (universal holder)	**AY000117**	**AY000117**
mounting accessories (clip)	**AY000061**	**AY000061**

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

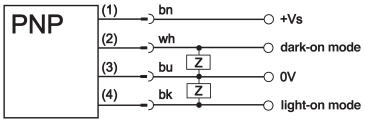
article-no.	**OT180407**	**OT180427**	**OT180108**	**OT180128**
version	**dif. reflection sensor**	**dif. reflection sensor**	**dif. reflection sensor, background suppression**	**dif. reflection sensor, background suppression**
sensitivity adjustment	**potentiometer**	**potentiometer**	**potentiometer**	**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**
				
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	≤ 10%	≤ 10%	≤ 10%	≤ 10%
readiness delay	60ms	60ms	20ms	20ms
sampling frequency	1kHz	1kHz	500Hz	500Hz
display (signal / reserve)	yellow LED / green LED	yellow LED / -	yellow LED / green LED	yellow LED / -
sensitivity adjustment	potentiometer	potentiometer	potentiometer	potentiometer
test input	-	+	-	+
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	-	e.g. **VK200325**	-	e.g. **VK200025**
mounting accessories (universal holder)	**AY000117**	**AY000117**	**AY000117**	**AY000117**
mounting accessories (clip)	**AY000061**	**AY000061**	**AY000061**	**AY000061**

optical sensors

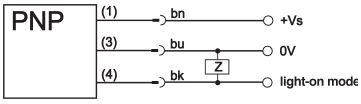
1400 through-beam, retro-reflective, dif. reflection sensors

connection

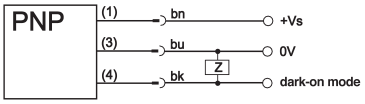
receiver through-beam sensor, diffuse reflection sensor



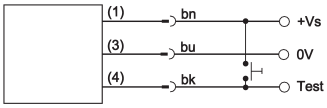
diffuse reflection sensor with background suppression



retro-reflective sensor



transmitter through-beam sensor



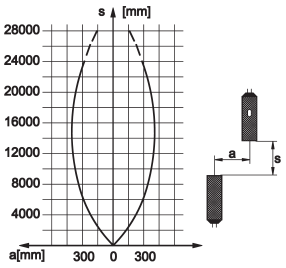
wire colors: bn = brown (1), wh = white (2), bu = blue (3), bk = black (4)

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

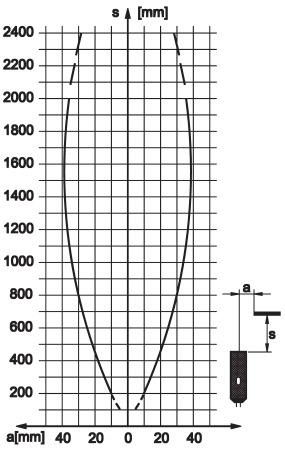
important note: if a cable socket with LED display has to be used for connection of the sensor, the black wire (4) must be permanently connected to +24V DC to prevent the transmitter being disabled via the LED!

response curves

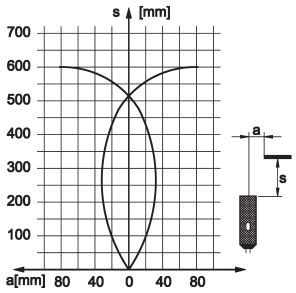
OS/OE18



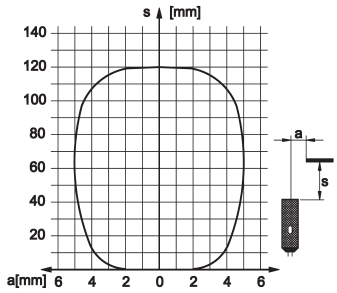
OR18



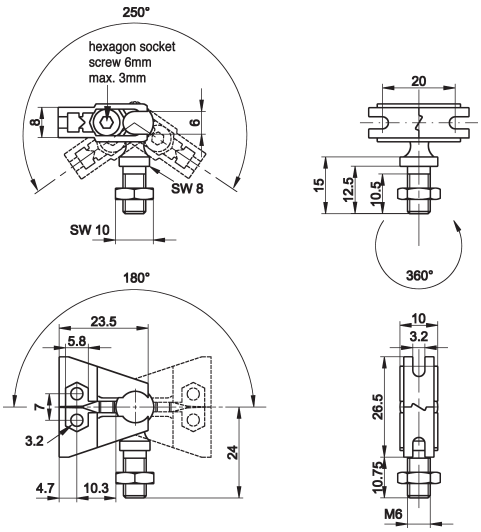
OT18



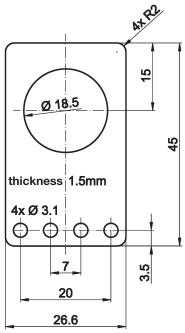
OT18 with background suppression



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.

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Subject to alteration!
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