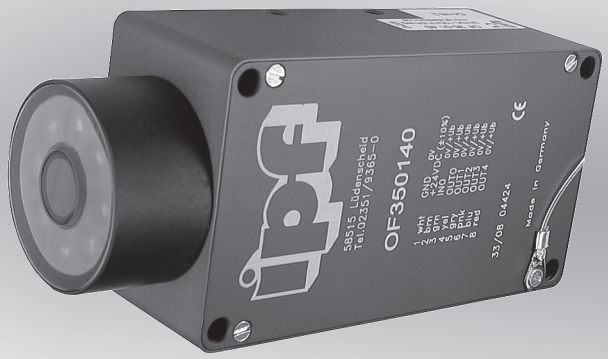
- norm design
- fiber optics design

color sensors

special optical sensors

1200 color sensors

design		**50 x 35 x 108mm**
measuring range	diffuse illumination	**10 ... 60mm**
	focused illumination	**10 ... 150mm**
	polarizing filter versions	**10 ... 40mm**



- ✓ **color and grey scale recognition**
- ✓ **external light shielded**
- ✓ **brightness readjustment shiftable**
- ✓ **several teach-possibilities (via PC, PLC or button)**
- ✓ **different evaluation algorithms**
- ✓ **color diagrams in Windows**

31 colors storeable differentiation of tones

description

ipf color sensors enable shades of color which lie close to one another to be differentiated with a high level of accuracy. With the aid of pulsed white-light LEDs, a light spot is projected onto the surface to be controlled. At the same time, 30kHz is modulated and an extremely high degree of independence from external light is achieved with the aid of lock-in technology.

Part of the light radiated back from the measured object is now directed to a color-sensitive detector element by means of a receiver lens. At the same time, the received light is split up according to the 3-color range system (red, green, blue). In each case, evaluation takes place with 12 bit. The color recognition either works continuously or is started by an external PLC trigger signal. The color recognized in each case is applied as a binary code at the five digital outputs, or can be sent straight to the outputs if only up to five colors are to be recognized. At the same time, the recognized color code is visualized with the aid of five LEDs on the device housing.

Parameterizing of the color sensors takes place via the Windows® series interface (RS232). This way, up to 31 colors can be learned and stored in the sensor. Versions with diverse illumination units are available for reducing the effects of shine as well as variants with focused light sources for matt or dark surfaces.

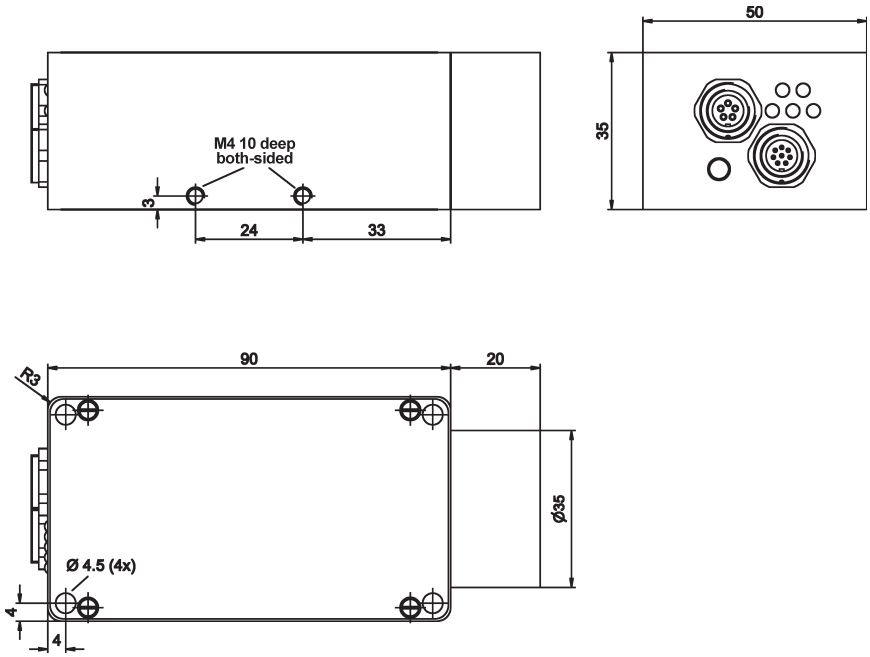
Similarly, polarizing filter systems for controlling high-sheen surfaces or for transmitted light applications e.g. for differentiating the shades of color in panes of glass are just as much part of the range we offer as special color detectors which emulate the sensitivity of the human eye. For these devices, apart from the special color detectors, a light source adapted to daylight (D65) is used. These so-called 'true color' systems have been specially designed in order to safely differentiate similar shades of color.

If a small light spot for checking components is necessary, so-called 'spotlight' sensors can be used in this type of applications.

application examples

- in connection with installed parts, for monitoring the color of the shades
- color control of lacquered components, leather imitations, plastics and textiles for automobile interiors
- filtering out faulty parts on the basis of color markings
- sorting of materials on the basis of color markings
- controlling the sequence of connection wires
- use as a trigger sensor in the printing industry (detecting print marks)
- detecting the color of inserts in production systems
- differentiating the shades of color in panes of glass

type	diffuse reflection sensor	diffuse reflection sensor
article-no.	OF350140	OF350141
version (light beam)	diffuse	diffuse, true color



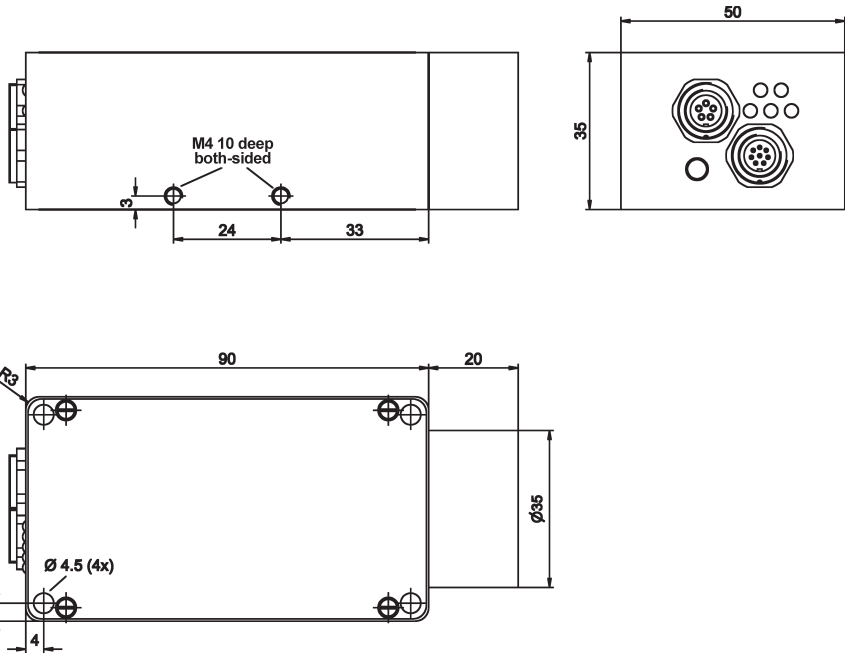
TECHNICAL DATA

sensing range	10 ... 60mm	10 ... 60mm
output signal	5 x pnp/npn, no/nc	5 x pnp/npn, no/nc
beam spot size	Ø20mm at 40mm distance	Ø20mm at 40mm distance
operating voltage	12 ... 30V DC	12 ... 30V DC
current consumption (w/o load)	320mA	320mA
output current (max. load)	≤ 100mA	≤ 100mA
sampling frequency	≤ 32kHz	≤ 32kHz
transmitting element (pulsed)	white light LED	white light LED
display (signal)	5 x yellow LED	5 x yellow LED
adjustment	teach-in: button + input + software	teach-in: button + input + software
short-circuit protection	+	+
reverse polarity protection	+	+
pulse stretching	0 ... 100msec	0 ... 100msec
design	50x35x108mm	50x35x108mm
housing material	aluminium, anodized	aluminium, anodized
operating temperature	-20 ... +55°C	-20 ... +55°C
system of protection (EN 60529)	IP64	IP64
connection	PLC: 8-pin flange socket	PLC: 8-pin flange socket
connection accessories	2m PLC-cable e.g. **VK207B45**	2m PLC-cable e.g. **VK207B45**
interface	RS232	RS232
connection	PC: 5-pin flange socket	PC: 5-pin flange socket
connection accessories	2m PC-cable e.g. **VK207F45**	2m PC-cable e.g. **VK207F45**

special optical sensors

1200 color sensors

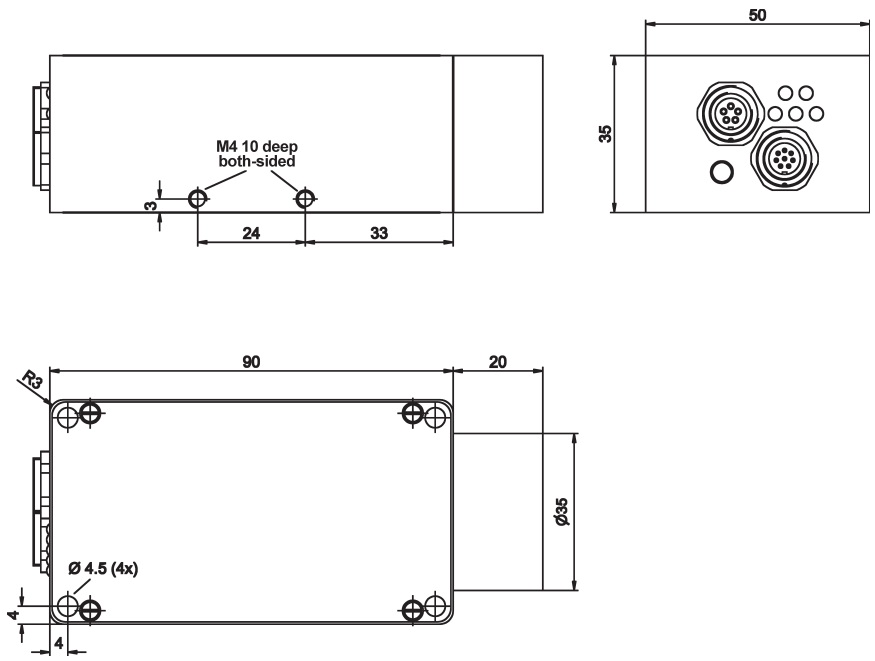
type	diffuse reflection sensor	diffuse reflection sensor
article-no.	OF350142	OF350143
version (light beam)	diffuse, spotlight	diffuse, spotlight, true color



TECHNICAL DATA

sensing range	10 ... 60mm	10 ... 60mm
output signal	5 x pnp/npn, no/nc	5 x pnp/npn, no/nc
beam spot size	Ø10mm at 40mm distance	Ø10mm at 40mm distance
operating voltage	12 ... 30V DC	12 ... 30V DC
current consumption (w/o load)	320mA	320mA
output current (max. load)	≤ 100mA	≤ 100mA
sampling frequency	≤ 32kHz	≤ 32kHz
transmitting element (pulsed)	white light LED	white light LED
display (signal)	5 x yellow LED	5 x yellow LED
adjustment	teach-in: button + input + software	teach-in: button + input + software
short-circuit protection	+	+
reverse polarity protection	+	+
pulse stretching	0 ... 100msec	0 ... 100msec
design	50x35x108mm	50x35x108mm
housing material	aluminium, anodized	aluminium, anodized
operating temperature	-20 ... +55°C	-20 ... +55°C
system of protection (EN 60529)	IP64	IP64
connection	PLC: 8-pin flange socket	PLC: 8-pin flange socket
connection accessories	2m PLC-cable e.g. **VK207B45**	2m PLC-cable e.g. **VK207B45**
interface	RS232	RS232
connection	PC: 5-pin flange socket	PC: 5-pin flange socket
connection accessories	2m PC-cable e.g. **VK207F45**	2m PC-cable e.g. **VK207F45**

type	**diffuse reflection sensor**
article-no.	**OF350144**
version (light beam)	**diffuse, polarizing filter**



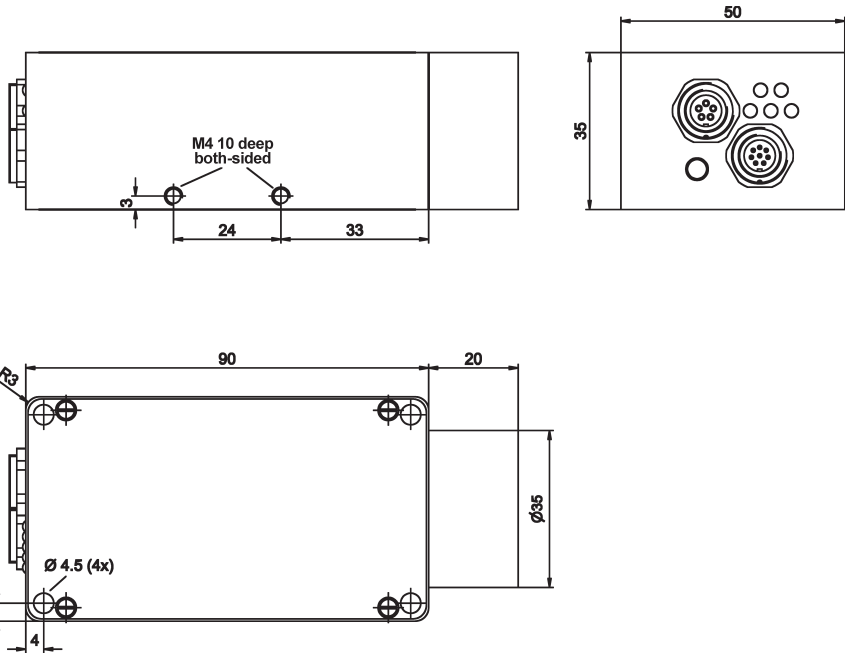
TECHNICAL DATA

sensing range	10 ... 40mm
output signal	5 x pnp/npn, no/nc
beam spot size	Ø20mm at 40mm distance
operating voltage	12 ... 30V DC
current consumption (w/o load)	320mA
output current (max. load)	≤ 100mA
sampling frequency	≤ 32kHz
transmitting element (pulsed)	white light LED
display (signal)	5 x yellow LED
adjustment	teach-in: button + input + software
short-circuit protection	+
reverse polarity protection	+
pulse stretching	0 ... 100msec
design	50x35x108mm
housing material	aluminium, anodized
operating temperature	-20 ... +55°C
system of protection (EN 60529)	IP64
connection	PLC: 8-pin flange socket
connection accessories	2m PLC-cable e.g. **VK207B45**
interface	RS232
connection	PC: 5-pin flange socket
connection accessories	2m PC-cable e.g. **VK207F45**

special optical sensors

1200 color sensors

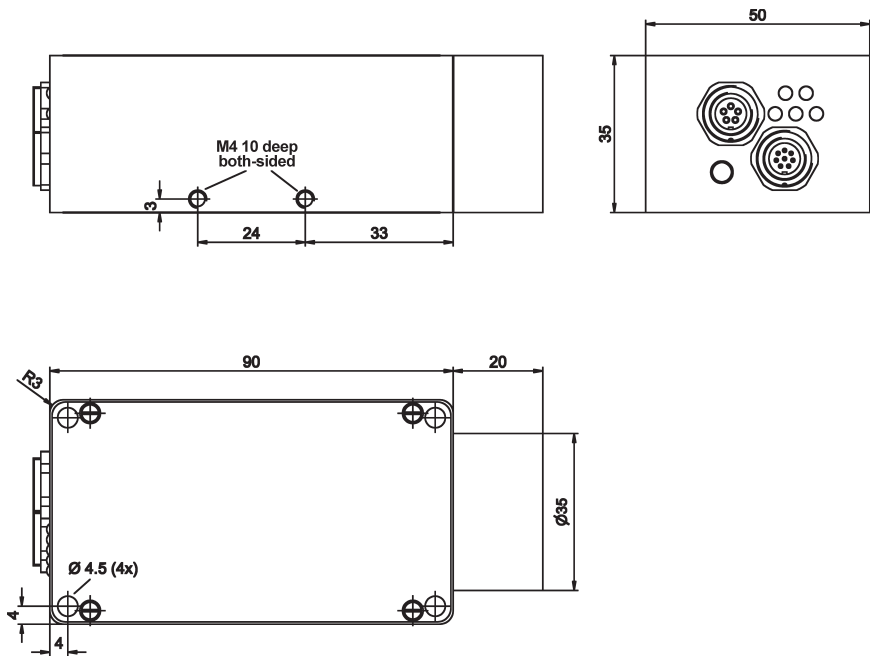
type	diffuse reflection sensor	diffuse reflection sensor
article-no.	OF350145	OF350146
version (light beam)	focused	focused, true color



TECHNICAL DATA

sensing range	10 ... 150mm	10 ... 150mm
output signal	5 x pnp/npn, no/nc	5 x pnp/npn, no/nc
beam spot size	Ø31mm at 100mm distance	Ø31mm at 100mm distance
operating voltage	12 ... 30V DC	12 ... 30V DC
current consumption (w/o load)	320mA	320mA
output current (max. load)	≤ 100mA	≤ 100mA
sampling frequency	≤ 32kHz	≤ 32kHz
transmitting element (pulsed)	white light LED	white light LED
display (signal)	5 x yellow LED	5 x yellow LED
adjustment	teach-in: button + input + software	teach-in: button + input + software
short-circuit protection	+	+
reverse polarity protection	+	+
pulse stretching	0 ... 100msec	0 ... 100msec
design	50x35x108mm	50x35x108mm
housing material	aluminium, anodized	aluminium, anodized
operating temperature	-20 ... +55°C	-20 ... +55°C
system of protection (EN 60529)	IP64	IP64
connection	PLC: 8-pin flange socket	PLC: 8-pin flange socket
connection accessories	2m PLC-cable e.g. **VK207B45**	2m PLC-cable e.g. **VK207B45**
interface	RS232	RS232
connection	PC: 5-pin flange socket	PC: 5-pin flange socket
connection accessories	2m PC-cable e.g. **VK207F45**	2m PC-cable e.g. **VK207F45**

type	**diffuse reflection sensor**	**diffuse reflection sensor**
article-no.	**OF350147**	**OF350148**
version (light beam)	**focused, spotlight**	**focused, spotlight, true color**



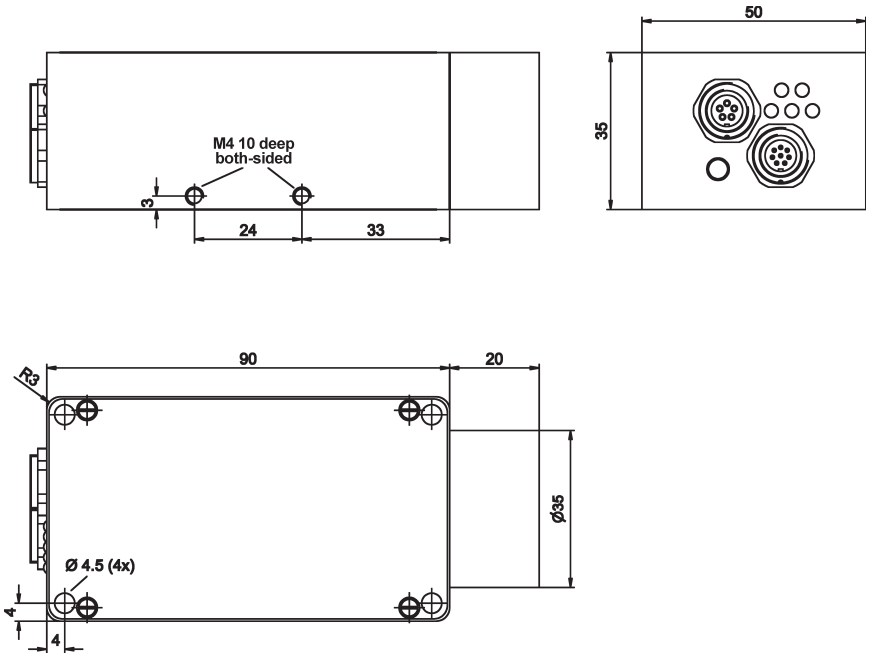
TECHNICAL DATA

sensing range	10 ... 150mm	10 ... 150mm
output signal	5 x pnp/npn, no/nc	5 x pnp/npn, no/nc
beam spot size	Ø15mm at 80mm distance	Ø15mm at 80mm distance
operating voltage	12 ... 30V DC	12 ... 30V DC
current consumption (w/o load)	320mA	320mA
output current (max. load)	≤ 100mA	≤ 100mA
sampling frequency	≤ 32kHz	≤ 32kHz
transmitting element (pulsed)	white light LED	white light LED
display (signal)	5 x yellow LED	5 x yellow LED
adjustment	teach-in: button + input + software	teach-in: button + input + software
short-circuit protection	+	+
reverse polarity protection	+	+
pulse stretching	0 ... 100msec	0 ... 100msec
design	50x35x108mm	50x35x108mm
housing material	aluminium, anodized	aluminium, anodized
operating temperature	-20 ... +55°C	-20 ... +55°C
system of protection (EN 60529)	IP64	IP64
connection	PLC: 8-pin flange socket	PLC: 8-pin flange socket
connection accessories	2m PLC-cable e.g. **VK207B45**	2m PLC-cable e.g. **VK207B45**
interface	RS232	RS232
connection	PC: 5-pin flange socket	PC: 5-pin flange socket
connection accessories	2m PC-cable e.g. **VK207F45**	2m PC-cable e.g. **VK207F45**

special optical sensors

1200 color sensors

type	**diffuse reflection sensor**
article-no.	**OF350149**
version (light beam)	**focused, polarizing filter**



TECHNICAL DATA

sensing range	20 ... 80mm
output signal	5 x pnp/npn, no/nc
beam spot size	Ø10mm at 50mm distance
operating voltage	12 ... 30V DC
current consumption (w/o load)	320mA
output current (max. load)	≤ 100mA
sampling frequency	≤ 32kHz
transmitting element (pulsed)	white light LED
display (signal)	5 x yellow LED
adjustment	teach-in: button + input + software
short-circuit protection	+
reverse polarity protection	+
pulse stretching	0 ... 100msec
design	50x35x108mm
housing material	aluminium, anodized
operating temperature	-20 ... +55°C
system of protection (EN 60529)	IP64
connection	PLC: 8-pin flange socket
connection accessories	2m PLC-cable e.g. **VK207B45**
interface	RS232
connection	PC: 5-pin flange socket
connection accessories	2m PC-cable e.g. **VK207F45**

design	**Ø65 x 115mm**	
measuring range	diffuse illumination	**50 ... 300mm**
	focused illumination	**50 ... 400mm**
	polarizing filter versions	**50 ... 200mm**

31 colors storeable differentiation of tones

description

ipf color sensors enable shades of color which lie close to one another to be differentiated with a high level of accuracy. With the aid of pulsed white-light LEDs, a light spot is projected onto the surface to be controlled. At the same time, 30kHz is modulated and an extremely high degree of independence from external light is achieved with the aid of lock-in technology.

Part of the light radiated back from the measured object is now directed to a color-sensitive detector element by means of a receiver lens. At the same time, the received light is split up according to the 3-color range system (red, green, blue). In each case, evaluation takes place with 12 bit. The color recognition either works continuously or is started by an external PLC trigger signal. The color recognized in each case is applied as a binary code at the five digital outputs, or can be sent straight to the outputs if only up to five colors are to be recognized. At the same time, the recognized color code is visualized with the aid of five LEDs on the device housing.

Parameterizing of the color sensors takes place via the Windows® series interface (RS232). This way, up to 31 colors can be learned and stored in the sensor. Versions with diverse illumination units are available for reducing the effects of shine as well as variants with focused light sources for matt or dark surfaces.

Similarly, polarizing filter systems for controlling high-sheen surfaces or for transmitted light applications e.g. for differentiating the shades of color in panes of glass are just as much part of the range we offer as special color detectors which emulate the sensitivity of the human eye. For these devices, apart from the special color detectors, a light source adapted to daylight (D65) is used. These so-called 'true color' systems have been specially designed in order to safely differentiate similar shades of color.

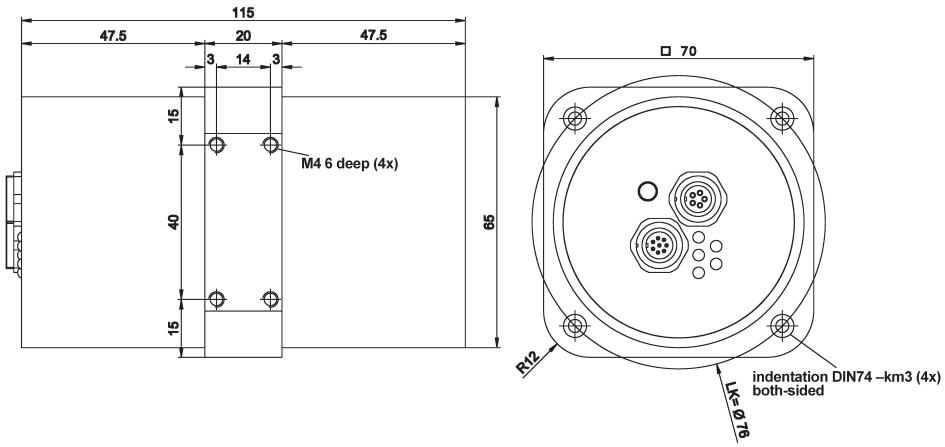
application examples

- in connection with installed parts, for monitoring the color of the shades
- color control of lacquered components, leather imitations, plastics and textiles for automobile interiors
- filtering out faulty parts on the basis of color markings
- sorting of materials on the basis of color markings
- controlling the sequence of connection wires
- use as a trigger sensor in the printing industry (detecting print marks)
- detecting the color of inserts in production systems
- differentiating the shades of color in panes of glass

special optical sensors

1200 color sensors

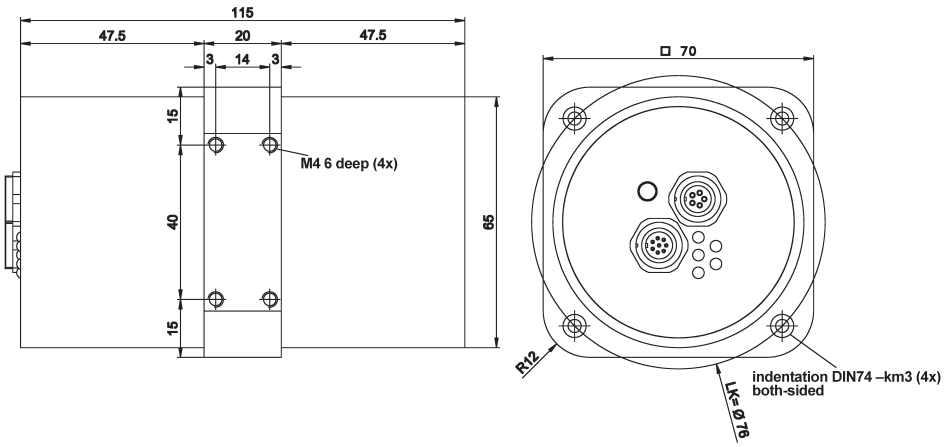
type	diffuse reflection sensor	diffuse reflection sensor
article-no.	OF700140	OF700141
version (light beam)	diffuse	diffuse, true color



TECHNICAL DATA

sensing range	50 ... 300mm	50 ... 300mm
output signal	5 x pnp/npn, no/nc	5 x pnp/npn, no/nc
beam spot size	Ø20mm at 200mm distance	Ø20mm at 200mm distance
operating voltage	12 ... 30V DC	12 ... 30V DC
current consumption (w/o load)	320mA	320mA
output current (max. load)	≤ 100mA	≤ 100mA
sampling frequency	≤ 32kHz	≤ 32kHz
transmitting element (pulsed)	white light LED	white light LED
display (signal)	5 x yellow LED	5 x yellow LED
adjustment	teach-in: button + input + software	teach-in: button + input + software
short-circuit protection	+	+
reverse polarity protection	+	+
pulse stretching	0 ... 100msec	0 ... 100msec
design	Ø65x115mm	Ø65x115mm
housing material	aluminium, anodized	aluminium, anodized
operating temperature	-20 ... +55°C	-20 ... +55°C
system of protection (EN 60529)	IP64	IP64
connection	PLC: 8-pin flange socket	PLC: 8-pin flange socket
connection accessories	2m PLC-cable e.g. **VK207B45**	2m PLC-cable e.g. **VK207B45**
interface	RS232	RS232
connection	PC: 5-pin flange socket	PC: 5-pin flange socket
connection accessories	2m PC-cable e.g. **VK207F45**	2m PC-cable e.g. **VK207F45**

type	**diffuse reflection sensor**	**diffuse reflection sensor**
article-no.	**OF700145**	**OF700146**
version (light beam)	**focused**	**focused, true color**



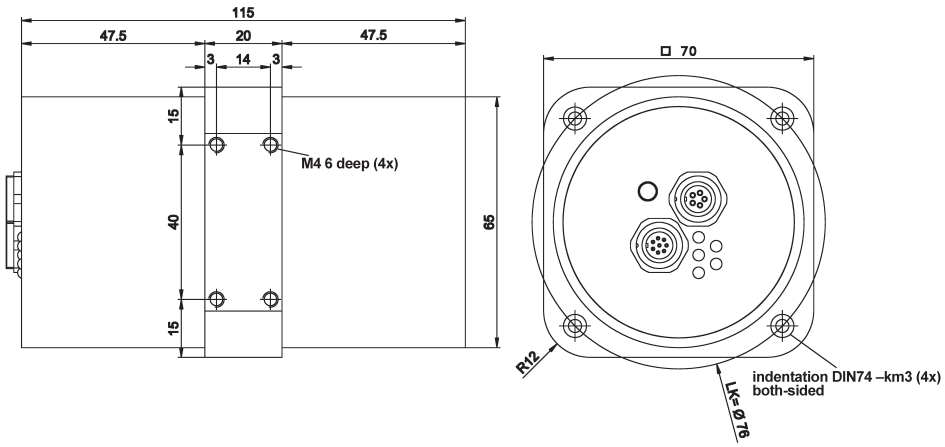
TECHNICAL DATA

sensing range	50 ... 400mm	50 ... 400mm
output signal	5 x pnp/npn, no/nc	5 x pnp/npn, no/nc
beam spot size	Ø20mm at 200mm distance	Ø20mm at 200mm distance
operating voltage	12 ... 30V DC	12 ... 30V DC
current consumption (w/o load)	320mA	320mA
output current (max. load)	≤ 100mA	≤ 100mA
sampling frequency	≤ 32kHz	≤ 32kHz
transmitting element (pulsed)	white light LED	white light LED
display (signal)	5 x yellow LED	5 x yellow LED
adjustment	teach-in: button + input + software	teach-in: button + input + software
short-circuit protection	+	+
reverse polarity protection	+	+
pulse stretching	0 ... 100msec	0 ... 100msec
design	Ø65x115mm	Ø65x115mm
housing material	aluminium, anodized	aluminium, anodized
operating temperature	-20 ... +55°C	-20 ... +55°C
system of protection (EN 60529)	IP64	IP64
connection	PLC: 8-pin flange socket	PLC: 8-pin flange socket
connection accessories	2m PLC-cable e.g. **VK207B45**	2m PLC-cable e.g. **VK207B45**
interface	RS232	RS232
connection	PC: 5-pin flange socket	PC: 5-pin flange socket
connection accessories	2m PC-cable e.g. **VK207F45**	2m PC-cable e.g. **VK207F45**

special optical sensors

1200 color sensors

type	**diffuse reflection sensor**
article-no.	**OF700149**
version (light beam)	**focused, polarizing filter**



TECHNICAL DATA

sensing range	20 ... 200mm
output signal	5 x pnp/npn, no/nc
beam spot size	Ø20mm at 200mm distance
operating voltage	12 ... 30V DC
current consumption (w/o load)	320mA
output current (max. load)	≤ 100mA
sampling frequency	≤ 32kHz
transmitting element (pulsed)	white light LED
display (signal)	5 x yellow LED
adjustment	teach-in: button + input + software
short-circuit protection	+
reverse polarity protection	+
pulse stretching	0 ... 100msec
design	Ø65x115mm
housing material	aluminium, anodized
operating temperature	-20 ... +55°C
system of protection (EN 60529)	IP64
connection	PLC: 8-pin flange socket
connection accessories	2m PLC-cable e.g. **VK207B45**
interface	RS232
connection	PC: 5-pin flange socket
connection accessories	2m PC-cable e.g. **VK207F45**

design	**50 x 35 x 90mm**	
measuring range	fiber optics dependant	**1 ... 25mm**

- ✓ **color and grey scale recognition**
- ✓ **external light shielded**
- ✓ **brightness readjustment shiftable**
- ✓ **several teach-possibilities (via PC, PLC or button)**
- ✓ **different evaluation algorithms**
- ✓ **color diagrams in Windows**

31 colors storeable differentiation of tones

description

ipf color sensors enable shades of color which lie close to one another to be differentiated with a high level of accuracy. Fiber optics are universal applicable and offer solutions in case of difficult problems in the optoelectronic s. A selection of standard sensing heads and different attachment optics enable flexible applications and an optimal adaptability to the spatial conditions. Thanks to the attachment optics smaller scanning beam spots can be realized, which enable precisely accurate evaluation of small parts or details.

The functional principle of the devices is that with the aid of pulsed white-light LEDs, a light spot is projected onto the surface to be controlled.

At the same time, 30kHz is modulated and an extremely high degree of independence from external light is achieved with the aid of lock-in technology.

Part of the light radiated back from the measured object is now directed to a color-sensitive detector element by means of a receiver lens. At the same time, the received light is split up according to the 3-color range system (red, green, blue). In each case, evaluation takes place with 12 bit. The color recognition either works continuously or is started by an external PLC trigger signal. The color recognized in each case is applied as a binary code at the five digital outputs, or can be sent straight to the outputs if only up to five colors are to be recognized. At the same time, the recognized color code is visualized with the aid of five LEDs on the device housing.

Parameterizing of the color sensors takes place via the Windows® series interface (RS232). This way, up to 31 colors can be learned and stored in the sensor.

Another component of our product range are special color detectors which emulate the sensitivity of the human eye. For these devices, apart from the special color detectors, a light source adapted to daylight (D65) is used. These so-called 'true color' systems have been specially designed in order to safely differentiate similar shades of color.

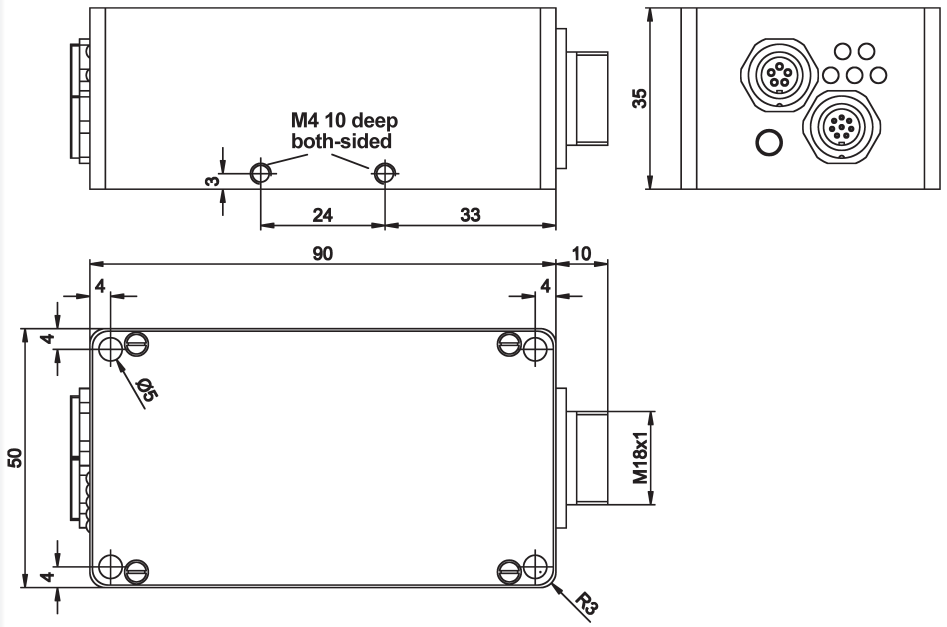
application examples

- in connection with installed parts, for monitoring the color of the shades
- color control of lacquered components, leather imitations, plastics and textiles for automobile interiors
- filtering out faulty parts on the basis of color markings
- sorting of materials on the basis of color markings
- controlling the sequence of connection wires
- use as a trigger sensor in the printing industry (detecting print marks)
- detecting the color of inserts in production systems
- differentiating the shades of color in panes of glass

special optical sensors

1200 color sensors

type	fiber optic	fiber optic
article-no.	OF350180	OF350181
version (light beam)	-	true color



TECHNICAL DATA

sensing range	1 ... 25mm	1 ... 25mm
output signal	5 x pnp/npn, no/nc	5 x pnp/npn, no/nc
operating voltage	24V DC ± 10%	24V DC ± 10%
current consumption (w/o load)	320mA	320mA
output current (max. load)	≤ 100mA	≤ 100mA
sampling frequency	≤ 32kHz	≤ 32kHz
transmitting element (pulsed)	white light LED	white light LED
display (signal)	5 x yellow LED	5 x yellow LED
adjustment	teach-in: button + input + software	teach-in: button + input + software
short-circuit protection	+	+
reverse polarity protection	+	+
pulse stretching	0 ... 100msec	0 ... 100msec
design	50x35x90mm	50x35x90mm
housing material	aluminium, anodized	aluminium, anodized
operating temperature	-20 ... +55°C	-20 ... +55°C
system of protection (EN 60529)	IP64	IP64
connection	PLC: 8-pin flange socket	PLC: 8-pin flange socket
connection accessories	2m PLC-cable e.g. **VK207B45**	2m PLC-cable e.g. **VK207B45**
interface	RS232	RS232
connection	PC: 5-pin flange socket	PC: 5-pin flange socket
connection accessories	2m PC-cable e.g. **VK207F45**	2m PC-cable e.g. **VK207F45**

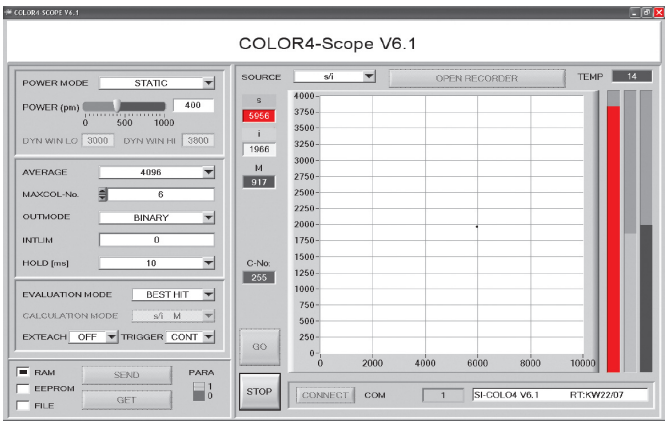
connection

PLC-connection line

pin:	wire color:	configuration:
1	white	GND (0V)
2	brown	12 ... 30V DC
3	green	input
4	yellow	switching output 0
5	grey	switching output 1
6	pink	switching output 2
7	blue	switching output 3
8	red	switching output 4

visualization

With the aid of five yellow LEDs, the number of recognized colors is displayed on the housing and, at the same time, sent as a 5-bit binary information to the digital outputs 0 to 4.
The Windows interface facilitates the adjustment process for the sensor and supports the operator in adjusting the color sensor as well as putting it into service. In a simple way, various evaluation techniques can be selected for evaluating the colors.
The color value display takes place in a graphical form with the aid of a color triangle as well as in the alpha-numeric output fields.
The representation of the actual raw data (red, green, blue) from the color detector is by means of a bar chart.



connection accessories

PLC-connection line

article-no.	description
VK207B41	connection line 2m, 8-pin, angular
VK207B45	connection line 2m, 8-pin, straight
VK507B45	connection line 5m, 8-pin, straight
VKA07B45	connection line 10m, 8-pin, straight

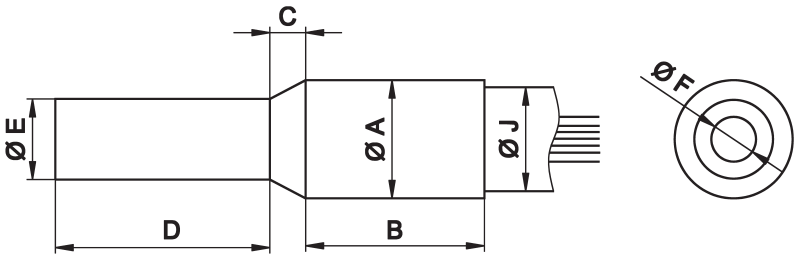
PC-connection line

article-no.	description
VK207F41	connection line 2m, 5-pin, angular
VK207F45	connection line 2m, 5-pin, straight

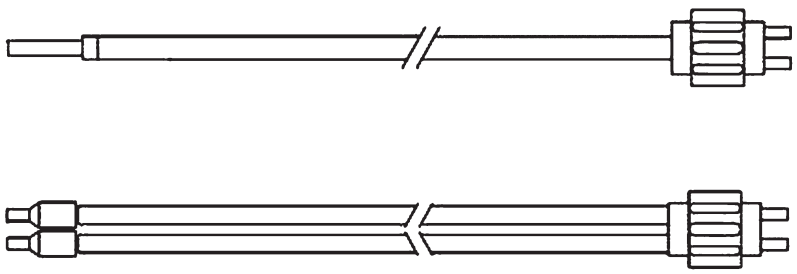
special optical sensors

1200 color sensors

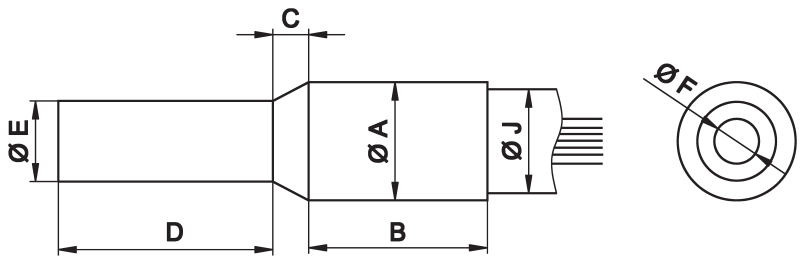
fiber optic versions		
version	**fiber optic, dif. reflection sensor**	**fiber optic, dif. reflection sensor**
article-no.	**LS060180**	**LS120180**
angle of beam spread	**22°**	**22°**
version	**fiber optic, dif. reflection sensor**	**fiber optic, dif. reflection sensor**
article-no.	**LT060181**	**LT120181**
angle of beam spread	**67°**	**67°**



TECHNICAL DATA		
standard lengths	600mm	1200mm
fiber strand diameter F	1.5mm	1.5mm
outer jacket material	silicone-metal jacket	silicone-metal jacket
end sleeve	stainless steel	stainless steel
diameter A	6.6mm	6.6mm
measurement B	8mm	8mm
measurement C	2mm	2mm
measurement D	11mm	11mm
diameter E	2.5mm	2.5mm
diameter J	4.4mm	4.4mm
bending radius	4 x measurement J	4 x measurement J



version	**fiber optic, dif. reflection sensor**	**fiber optic, dif. reflection sensor**
article-no.	**LT060380**	**LT12038**
angle of beam spread	**22°**	**22°**
version	**fiber optic, dif. reflection sensor**	**fiber optic, dif. reflection sensor**
article-no.	**LT060381**	**LT120381**
angle of beam spread	**67°**	**67°**



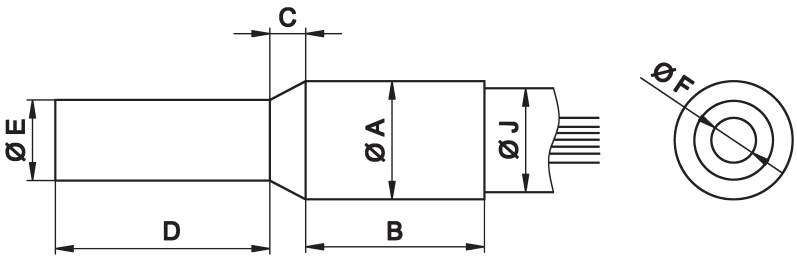
TECHNICAL DATA

standard lengths	600mm	1200mm
fiber strand diameter F	2.5mm	2.5mm
outer jacket material	silicone-metal jacket	silicone-metal jacket
end sleeve	stainless steel	stainless steel
diameter A	6.6mm	6.6mm
measurement B	10mm	10mm
measurement C	2mm	2mm
measurement D	12mm	12mm
diameter E	4.5mm	4.5mm
diameter J	5.8mm	5.8mm
bending radius	4 x measurement J	4 x measurement J

special optical sensors

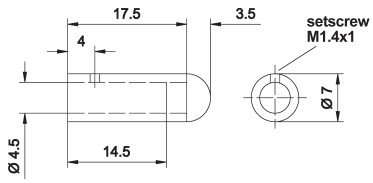
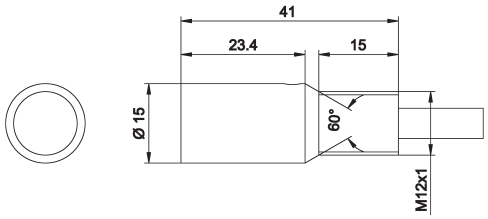
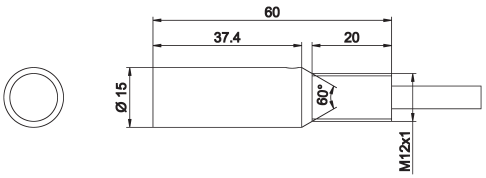
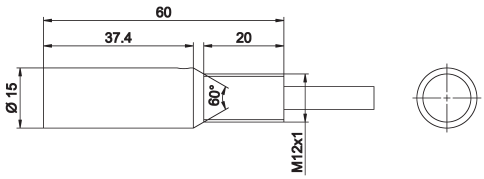
1200 color sensors

version	**fiber optic, through-beam sensor**	**fiber optic, through-beam sensor**
article-no.	**LS060380**	**LS120380**
angle of beam spread	**22°**	**22°**
version	**fiber optic, through-beam sensor**	**fiber optic, through-beam sensor**
article-no.	**LS060381**	**LS120381**
angle of beam spread	**67°**	**67°**

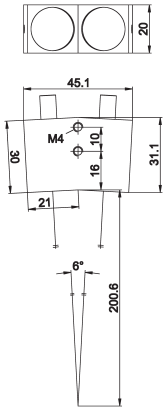
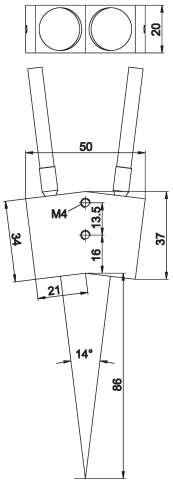


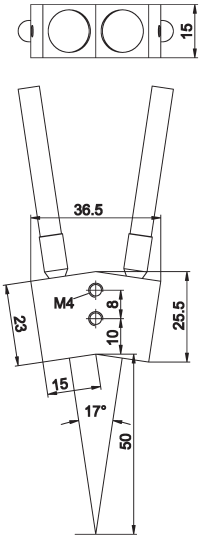
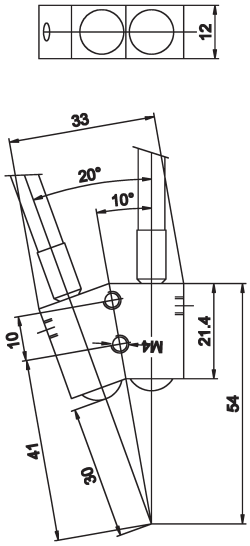
TECHNICAL DATA

standard lengths	600mm	1200mm
fiber strand diameter F	2.5mm	2.5mm
outer jacket material	silicone-metal jacket	silicone-metal jacket
end sleeve	stainless steel	stainless steel
diameter A	6.6mm	6.6mm
measurement B	10mm	10mm
measurement C	2mm	2mm
measurement D	12mm	12mm
diameter E	4.5mm	4.5mm
diameter J	5.8mm	5.8mm
bending radius	4 x measurement J	4 x measurement J

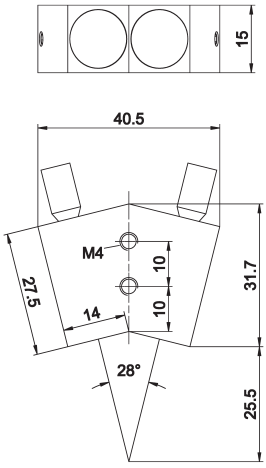
attachment optics		
operating range	-	-
article-no.	**AL000034**	**AL000035**
version	-	-
		
TECHNICAL DATA		
housing material	aluminium	aluminium
lens material	glass, scratch resistant	glass, scretch resistant
description	for fiber optic through-beam sensor 2 pieces required	for fiber optic through-beam sensor 2 pieces required
operating range	**10 ... 20mm**	**10 ... 15mm**
article-no.	**AL000036**	**AL000037**
version	**1mm spot**	**0.5mm spot**
		
TECHNICAL DATA		
beam spot size	1mm at 10mm distance	0.5mm at 10mm distance
operating range	10 ... 20mm	10 ... 15mm
housing material	aluminium	aluminium
lens material	glass, scratch resistant	glass, scretch resistant
description	for fiber optic diffuse reflection sensor	for fiber optic diffuse reflection sensor

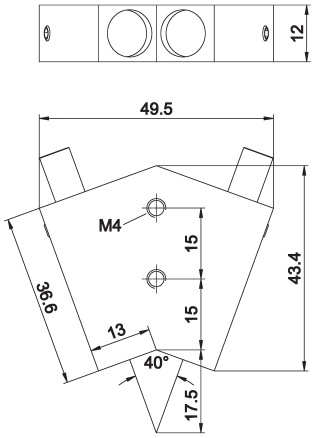
1200 color sensors

operating range	**100 ... 250mm**	**60 ... 120mm**
article-no.	**AL000038**	**AL000039**
version	**31mm spot**	**11mm spot**
		
TECHNICAL DATA		
beam spot size	31mm at 200mm distance	31mm at 200mm distance
operating range	100 ... 250mm	60 ... 120mm
housing material	aluminium	aluminium
lens material	glass, scratch resistant	glass, scratch resistant
description	for through-beam sensor	for through-beam sensor

operating range	**30 ... 80mm**	**20 ... 40mm**
article-no.	**AL000040**	**AL000041**
version	**14mm spot**	**7mm spot**
		
TECHNICAL DATA		
beam spot size	14mm at 50mm distance	7mm at 30mm distance
operating range	30 ... 80mm	20 ... 40mm
housing material	aluminium	aluminium
lens material	glass, scratch resistant	glass, scratch resistant
description	for through-beam sensor	for through-beam sensor

operating range	**20 ... 30mm**	**15 ... 25mm**
article-no.	**AL000042**	**AL000043**
version	**6mm spot**	**3mm spot**

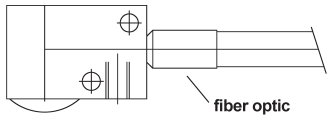


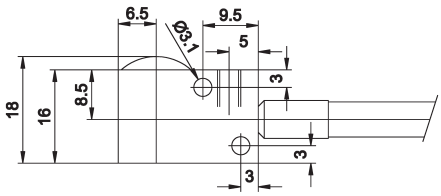


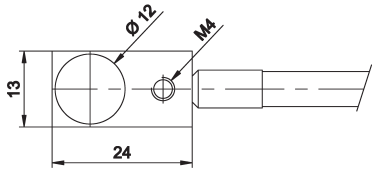
TECHNICAL DATA

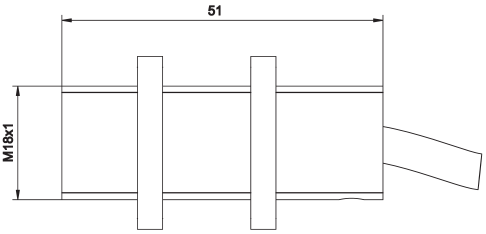
beam spot size	6mm at 25mm distance	3mm at 20mm distance
operating range	20 ... 30mm	15 ... 25mm
housing material	aluminium	aluminium
lens material	glass, scratch resistant	glass, scratch resistant
description	for through-beam sensor	for through-beam sensor

operating range	**10 ... 100mm**	**20 ... 65mm**
article-no.	**AL000044**	**AL000045**
version	**12mm spot**	**4.5mm spot**





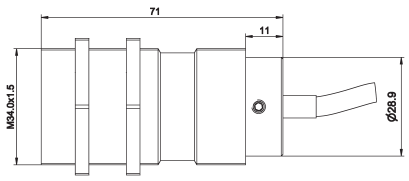
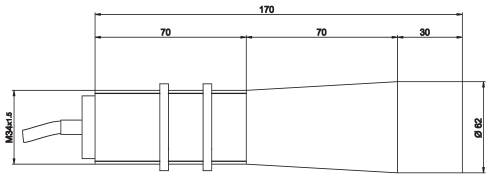


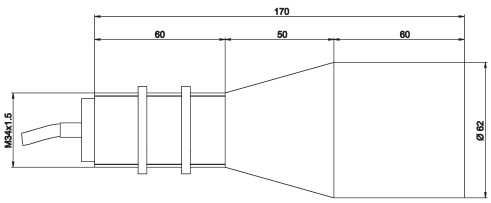


TECHNICAL DATA

beam spot size	12mm at 50mm distance	4.5mm at 65mm distance
operating range	10 ... 100mm	20 ... 65mm
housing material	aluminium	aluminium
lens material	glass, scratch resistant	glass, scratch resistant
description	for through-beam sensor	for through-beam sensor

1200 color sensors

operating range	**10 ... 250mm**	**80 ... 120mm**
article-no.	**AL000046**	**AL000047**
version	**3mm spot**	**3mm spot**
		
TECHNICAL DATA		
beam spot size	19mm at 200mm distance	3mm at 120mm distance
operating range	100 ... 250mm	80 ... 120mm
housing material	aluminium	aluminium
lens material	glass, scratch resistant	glass, scratch resistant
description	for through-beam sensor	for through-beam sensor

operating range	**80 ... 150mm**
article-no.	**AL000048**
version	**3mm spot**
	
TECHNICAL DATA	
beam spot size	3mm at 120mm distance
operating range	80 ... 150mm
housing material	aluminium
lens material	glass, scratch resistant
description	for through-beam sensor

selection table for fiber optics and attatchment optics

fiber optic type	ipf-article-number	AL000034	AL000035	AL000036	AL000037	AL000038	AL000039	AL000040	AL000041	AL000042	AL000043	AL000044	AL000045	AL000046	AL000047	AL000048
through-beam sensor	LS060380	X	X									X				
	LS120380	X	X									X				
	LS060381	X	X			X	X	X	X	X	X	X			X	X
	LS120381	X	X			X	X	X	X	X	X	X			X	X
dif. reflection sensor	LT060380			X												
	LT120380			X												
	LT060381			X									X	X		
	LT120381			X									X	X		
dif. reflection sensor	LT060180				X											
	LT120180				X											
	LT060181				X											
	LT120181				X											

notes

export division
Kalver Straße 27
D-58515 Lüdenscheid

Fon +49 (0) 2351 / 98597-0
Fax +49 (0) 2351 / 98597-29