

### 1200 color sensors

dectrouic

design

#### 50 x 35 x 108mm

measuring rangediffuse illumination10 ... 60mmfocused illumination10 ... 150mmpolarizing filter versions10 ... 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<sup>®</sup> 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





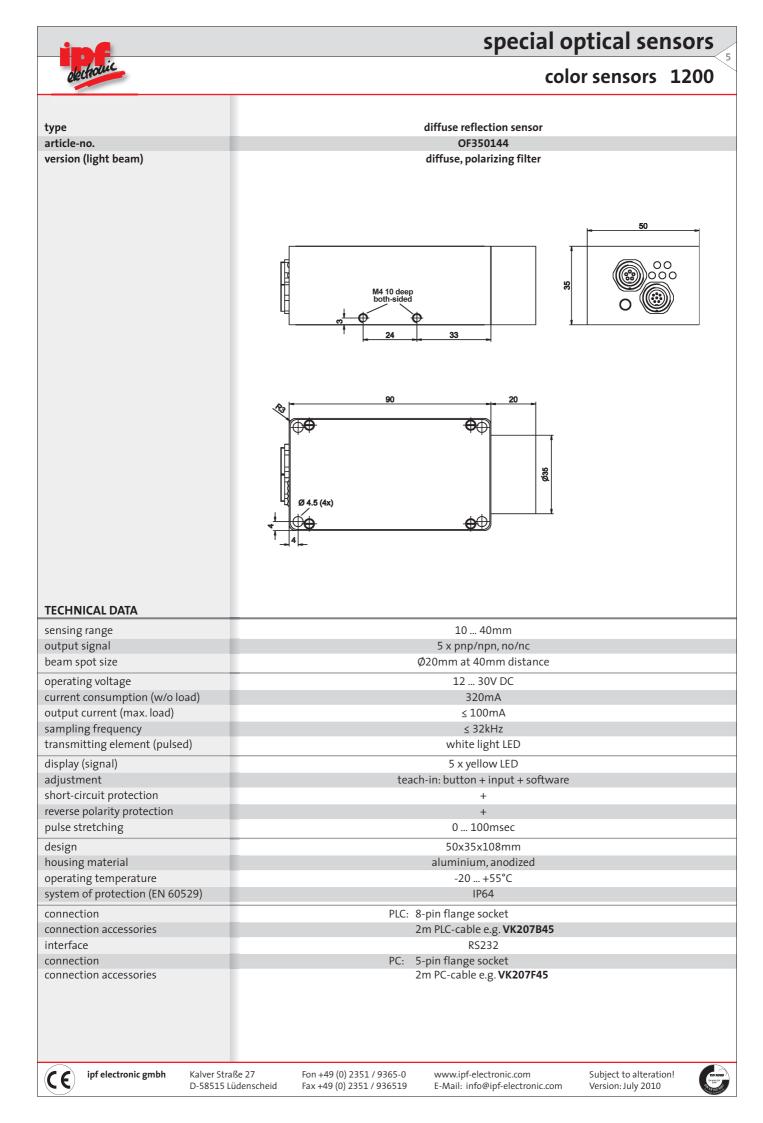


Dulse stretching0 100msec0 100msecdesign50x35x108mm50x35x108mmhousing materialaluminium, anodizedaluminium, anodizedoperating temperature-20 +55°C-20 +55°Csystem of protection (EN 60529)IP64IP64operationPLC: 8-pin flange socketPLC: 8-pin flange socketconnection accessories2m PLC-cable e.g. VK207B452m PLC-cable e.g. VK207B45			color sensors 120
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type	diffuse reflection sensor	diffuse reflection sensor
article-no.	OF350142	OF350143
version (light beam)	diffuse, spotlight	diffuse, spotlight, true color
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	90 90 Ø 4.5 (4x)	Solution and the second s
	<sup>†</sup>  4	
TECHNICAL DATA	<sup>†</sup>  4	
	⁺4   10 60mm	10 60mm
sensing range output signal	5 x pnp/npn, no/nc	5 x pnp/npn, no/nc
sensing range output signal oeam spot size	5 x pnp/npn, no/nc Ø10mm at 40mm distance	5 x pnp/npn, no/nc Ø10mm at 40mm distance
ensing range output signal peam spot size operating voltage	5 x pnp/npn, no/nc Ø10mm at 40mm distance 12 30V DC	5 x pnp/npn, no/nc Ø10mm at 40mm distance 12 30V DC
sensing range output signal oeam spot size operating voltage current consumption (w/o load)	5 x pnp/npn, no/nc Ø10mm at 40mm distance 12 30V DC 320mA	5 x pnp/npn, no/nc Ø10mm at 40mm distance 12 30V DC 320mA
sensing range output signal oeam spot size operating voltage current consumption (w/o load) output current (max.load)	5 x pnp/npn, no/nc Ø10mm at 40mm distance 12 30V DC 320mA ≤ 100mA	5 x pnp/npn, no/nc Ø10mm at 40mm distance 12 30V DC 320mA ≤ 100mA
sensing range output signal oeam spot size operating voltage current consumption (w/o load) output current (max. load) sampling frequency	5 x pnp/npn, no/nc Ø10mm at 40mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz	5 x pnp/npn, no/nc Ø10mm at 40mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz
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sensing range output signal beam spot size operating voltage current consumption (w/o load) output current (max. load) sampling frequency transmitting element (pulsed) display (signal)	5 x pnp/npn, no/nc Ø10mm at 40mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED	5 x pnp/npn, no/nc Ø10mm at 40mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED
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sensing range putput signal beam spot size operating voltage current consumption (w/o load) putput current (max. load) sampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection pulse stretching design housing material operating temperature	5 x pnp/npn, no/nc Ø10mm at 40mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + + 0 100msec 50x35x108mm aluminium, anodized	5 x pnp/npn, no/nc         Ø10mm at 40mm distance         12 30V DC         320mA         ≤ 100mA         ≤ 32kHz         white light LED         5 x yellow LED         teach-in: button + input + software         +         0 100msec         50x35x108mm         aluminium, anodized
sensing range output signal beam spot size operating voltage current consumption (w/o load) output current (max.load) sampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection pulse stretching design housing material operating temperature system of protection (EN 60529)	5 x pnp/npn, no/nc Ø10mm at 40mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + + 0 100msec 50x35x108mm aluminium, anodized -20 +55°C IP64 PLC: 8-pin flange socket	5 x pnp/npn, no/nc Ø10mm at 40mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + + 0 100msec 50x35x108mm aluminium, anodized -20 +55°C IP64 PLC: 8-pin flange socket
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TECHNICAL DATA sensing range output signal beam spot size operating voltage current consumption (w/o load) output current (max. load) sampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection pulse stretching design housing material operating temperature system of protection (EN 60529) connection connection accessories interface	5 x pnp/npn, no/nc         Ø10mm at 40mm distance         12 30V DC         320mA         ≤ 100mA         ≤ 32kHz         white light LED         5 x yellow LED         teach-in: button + input + software         +         0 100msec         50x35x108mm         aluminium, anodized         -20 +55°C         IP64         PLC: 8-pin flange socket         2m PLC-cable e.g. VK207B45         RS232	5 x pnp/npn, no/nc         Ø10mm at 40mm distance         12 30V DC         320mA         ≤ 100mA         ≤ 32kHz         white light LED         5 x yellow LED         teach-in: button + input + software         +         0 100msec         50x35x108mm         aluminium, anodized         -20 +55°C         IP64         PLC: 8-pin flange socket         2m PLC-cable e.g. VK207B45         RS232
sensing range output signal beam spot size operating voltage current consumption (w/o load) output current (max. load) sampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection pulse stretching design housing material operating temperature system of protection (EN 60529) connection	5 x pnp/npn, no/nc         Ø10mm at 40mm distance         12 30V DC         320mA         ≤ 100mA         ≤ 32kHz         white light LED         5 x yellow LED         teach-in: button + input + software         +         0 100msec         50x35x108mm         aluminium, anodized         -20 +55°C         IP64         PLC: 8-pin flange socket         2m PLC-cable e.g. VK207B45	5 x pnp/npn, no/nc         Ø10mm at 40mm distance         12 30V DC         320mA         ≤ 100mA         ≤ 32kHz         white light LED         5 x yellow LED         teach-in: button + input + software         +         0 100msec         50x35x108mm         aluminium, anodized         -20 +55°C         IP64         PLC: 8-pin flange socket         2m PLC-cable e.g. VK207B45







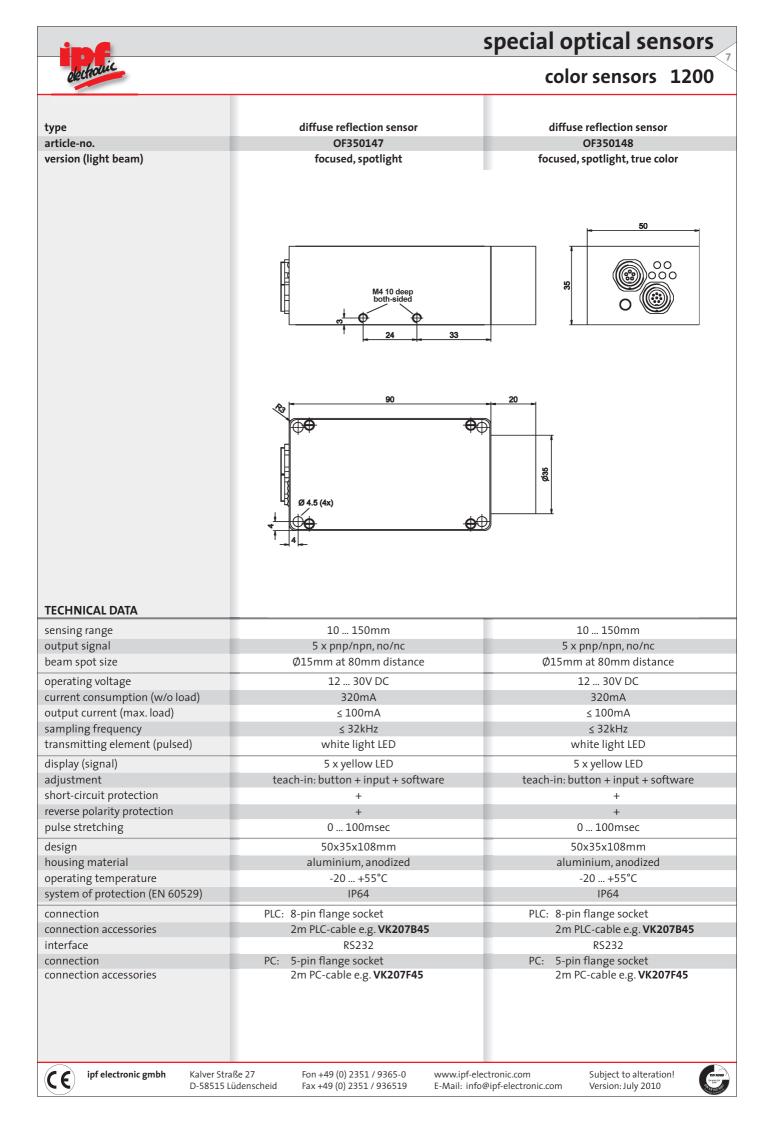
## 1200 color sensors

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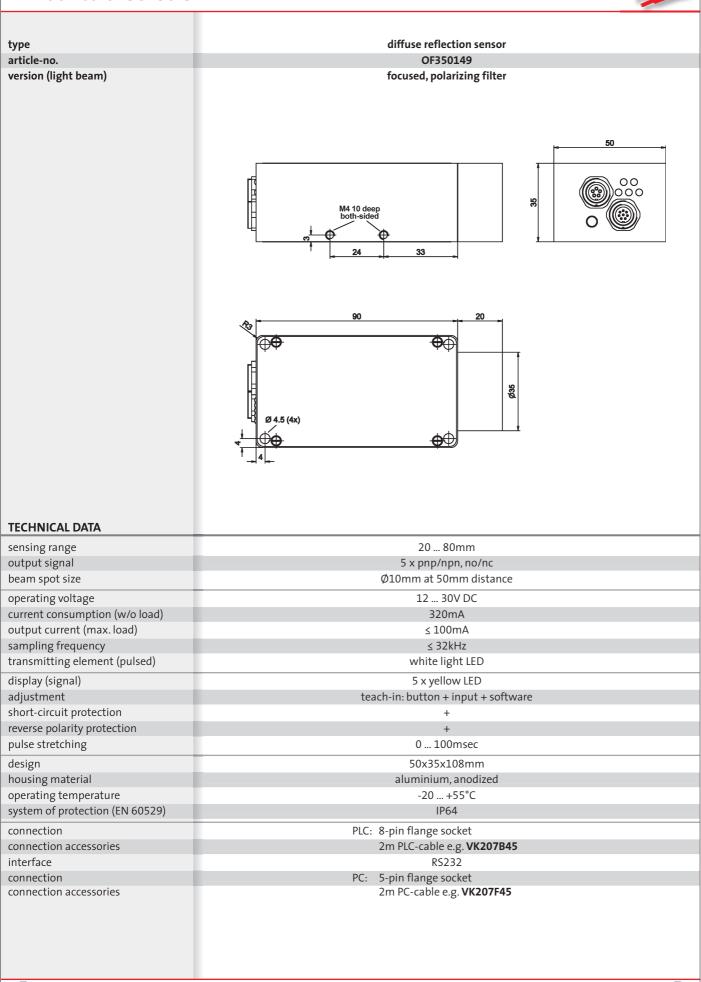
уре	diffuse reflection sensor	diffuse reflection sensor
article-no.	OF350145	OF350146
version (light beam)	focused	focused, true color
	M4 10 deep both-sided	
		88
ECHNICAL DATA		
sensing range	10 150mm	10 150mm
putput signal peam spot size	5 x pnp/npn, no/nc Ø31mm at 100mm distance	5 x pnp/npn, no/nc Ø31mm at 100mm distance
operating voltage current consumption (w/o load)	12 30V DC 320mA	12 30V DC 320mA
	≤ 100mA	≤ 100mA
utput current (max load)	2 10011A	
sampling frequency	≤ 32kHz white light LED	≤ 32kHz white light LED
sampling frequency transmitting element (pulsed)	≤ 32kHz white light LED	≤ 32kHz white light LED
sampling frequency transmitting element (pulsed) display (signal)	≤ 32kHz	≤ 32kHz
sampling frequency transmitting element (pulsed) display (signal) adjustment	≤ 32kHz white light LED 5 x yellow LED	≤ 32kHz white light LED 5 x yellow LED
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sampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection pulse stretching design	≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + + 0 100msec 50x35x108mm	≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + + 0 100msec 50x35x108mm
sampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection pulse stretching design nousing material	≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + 0100msec 50x35x108mm aluminium, anodized	≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + + 0 100msec 50x35x108mm aluminium, anodized
ampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection everse polarity protection pulse stretching design nousing material operating temperature	≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + 0 100msec 50x35x108mm aluminium, anodized -20 +55°C	≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + 0 100msec 50x35x108mm aluminium, anodized -20 +55°C
ampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection pulse stretching design nousing material operating temperature system of protection (EN 60529)	≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + 0 100msec 50x35x108mm aluminium, anodized -20 +55°C IP64	≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + 0 100msec 50x35x108mm aluminium, anodized -20 +55°C IP64
ampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection everse polarity protection oulse stretching design nousing material operating temperature system of protection (EN 60529) connection	≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + 0 100msec 50x35x108mm aluminium, anodized -20 +55°C IP64 PLC: 8-pin flange socket	≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + 0 100msec 50x35x108mm aluminium, anodized -20 +55°C IP64 PLC: 8-pin flange socket
sampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection oulse stretching design nousing material operating temperature system of protection (EN 60529) connection connection accessories	≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + 0 100msec 50x35x108mm aluminium, anodized -20 +55°C IP64 PLC: 8-pin flange socket 2m PLC-cable e.g. <b>VK207B45</b>	≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + 0 100msec 50x35x108mm aluminium, anodized -20 +55°C IP64 PLC: 8-pin flange socket 2m PLC-cable e.g. <b>VK207B45</b>
sampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection pulse stretching design housing material operating temperature system of protection (EN 60529) connection connection accessories interface	≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + 0 100msec 50x35x108mm aluminium, anodized -20 +55°C IP64 PLC: 8-pin flange socket 2m PLC-cable e.g. <b>VK207B45</b> RS232	≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + 0 100msec 50x35x108mm aluminium, anodized -20 +55°C IP64 PLC: 8-pin flange socket 2m PLC-cable e.g. <b>VK207B45</b> RS232
output current (max. load) sampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection pulse stretching design housing material operating temperature system of protection (EN 60529) connection connection accessories interface connection connection accessories	≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + 0 100msec 50x35x108mm aluminium, anodized -20 +55°C IP64 PLC: 8-pin flange socket 2m PLC-cable e.g. <b>VK207B45</b>	≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + 0 100msec 50x35x108mm aluminium, anodized -20 +55°C IP64 PLC: 8-pin flange socket 2m PLC-cable e.g. <b>VK207B45</b>







### 1200 color sensors



CE

Subject to alteration! Version: July 2010





#### color sensors 1200

design

#### Ø65 x 115mm

measuring rangediffuse illumination50 ... 300mmfocused illumination50 ... 400mmpolarizing filter versions50 ... 200mm



## 31 colors storeable differentiation of tones

#### description

C

*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<sup>®</sup> 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 sour-

ces 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

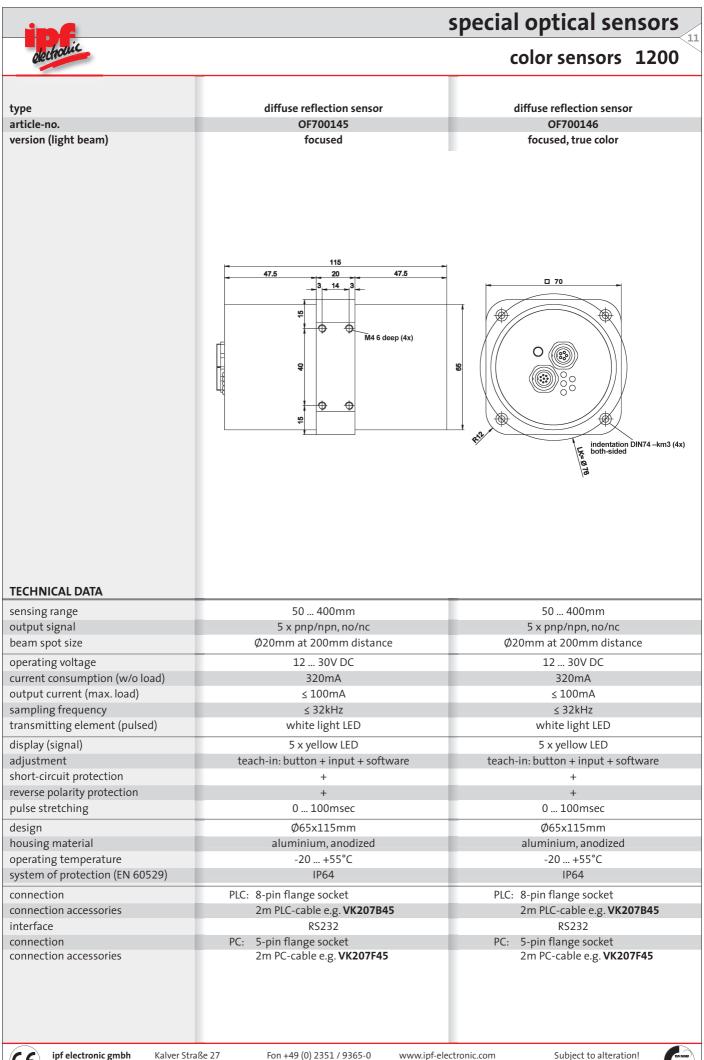
- in connection with installed parts, for monitoring the color of the shades
- color control of lacquered components, leather imitations, plastics and textiles for automobile interiors
- filtering out faulty parts on the basis of color markings
- sorting of materials on the basis of color markings
- 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

<b>E</b>	ipf electronic gmbh	Kalver Straße 27 D-58515 Lüdenscheid	Fon +49 (0) 2351 / 9365-0 Fax +49 (0) 2351 / 936519	www.ipf-electronic.com E-Mail: info@ipf-electronic.com	Subject to alteration! Version: July 2010	
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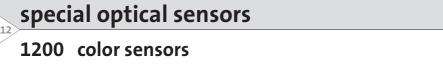
## 12

type article-no. version (light beam)	diffuse reflection sensor OF700140 diffuse	diffuse reflection sensor OF700141 diffuse, true color
	115 47.5 20 47.5 47.5 47.5 47.5 47.5 47.5 47.5 47.5	B B C C C C C C C C C C C C C
	50	50
ensing range	50 300mm	50 300mm
ensing range utput signal	50 300mm 5 x pnp/npn, no/nc Ø20mm at 200mm distance	50 300mm 5 x pnp/npn, no/nc Ø20mm at 200mm distance
ensing range utput signal eam spot size	5 x pnp/npn, no/nc	5 x pnp/npn, no/nc Ø20mm at 200mm distance
ensing range utput signal eam spot size perating voltage	5 x pnp/npn, no/nc Ø20mm at 200mm distance	5 x pnp/npn, no/nc
ensing range utput signal eam spot size perating voltage urrent consumption (w/o load)	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC
ensing range output signal beam spot size operating voltage urrent consumption (w/o load) output current (max. load) ampling frequency	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz
sensing range butput signal beam spot size operating voltage current consumption (w/o load) butput current (max. load) sampling frequency cransmitting element (pulsed)	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED
sensing range butput signal beam spot size operating voltage current consumption (w/o load) butput current (max. load) sampling frequency cransmitting element (pulsed) display (signal)	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED
sensing range output signal oeam spot size operating voltage current consumption (w/o load) output current (max. load) sampling frequency cransmitting element (pulsed) display (signal) adjustment	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software
eensing range output signal oeam spot size operating voltage current consumption (w/o load) output current (max. load) output current (max. load) campling frequency ransmitting element (pulsed) display (signal) odjustment chort-circuit protection	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software +	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software +
sensing range putput signal peam spot size operating voltage current consumption (w/o load) putput current (max. load) sampling frequency cransmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + +	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + +
sensing range putput signal peam spot size operating voltage current consumption (w/o load) putput current (max. load) sampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection pulse stretching	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + + 0 100msec	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + + 0 100msec
sensing range butput signal beam spot size operating voltage current consumption (w/o load) butput current (max. load) sampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection bulse stretching design	5 x pnp/npn, no/nc         Ø20mm at 200mm distance         12 30V DC         320mA         ≤ 100mA         ≤ 32kHz         white light LED         5 x yellow LED         teach-in: button + input + software         +         0 100msec         Ø65x115mm	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + + 0 100msec Ø65x115mm
sensing range putput signal peam spot size operating voltage current consumption (w/o load) putput current (max. load) sampling frequency cransmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection pulse stretching design nousing material	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + + 0 100msec	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + + 0 100msec
sensing range putput signal peam spot size operating voltage current consumption (w/o load) putput current (max. load) sampling frequency cransmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection pulse stretching design nousing material operating temperature	5 x pnp/npn, no/nc         Ø20mm at 200mm distance         12 30V DC         320mA         ≤ 100mA         ≤ 32kHz         white light LED         5 x yellow LED         teach-in: button + input + software         +         0 100msec         Ø65x115mm         aluminium, anodized	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + + 0 100msec Ø65x115mm aluminium, anodized
sensing range putput signal peam spot size operating voltage current consumption (w/o load) putput current (max. load) sampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection pulse stretching design nousing material operating temperature system of protection (EN 60529)	$5 \times pnp/npn, no/nc$ Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 $\times$ yellow LED teach-in: button + input + software + 0 100msec Ø65x115mm aluminium, anodized -20 +55°C IP64	$5 \times pnp/npn, no/nc$ $\emptyset 20mm at 200mm distance$ $12 \dots 30V DC$ $320mA$ $\leq 100mA$ $\leq 32kHz$ white light LED $5 \times yellow LED$ teach-in: button + input + software + $+$ $0 \dots 100msec$ $\emptyset 65 \times 115mm$ aluminium, anodized $-20 \dots +55^{\circ}C$ IP64
sensing range putput signal peam spot size operating voltage current consumption (w/o load) poutput current (max. load) sampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection pulse stretching design nousing material operating temperature system of protection (EN 60529) connection	5 x pnp/npn, no/nc         Ø20mm at 200mm distance         12 30V DC         320mA         ≤ 100mA         ≤ 32kHz         white light LED         5 x yellow LED         teach-in: button + input + software         +         0 100msec         Ø65x115mm         aluminium, anodized         -20 +55°C	5 x pnp/npn, no/nc
sensing range output signal beam spot size operating voltage current consumption (w/o load) output current (max. load) sampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection pulse stretching design housing material operating temperature system of protection (EN 60529) connection	5 x pnp/npn, no/nc         Ø20mm at 200mm distance         12 30V DC         320mA         ≤ 100mA         ≤ 32kHz         white light LED         5 x yellow LED         teach-in: button + input + software         +         0 100msec         Ø65x115mm         aluminium, anodized         -20 +55°C         IP64         PLC: 8-pin flange socket         2m PLC-cable e.g. VK207B45         RS232	5 x pnp/npn, no/nc Ø20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + + 0 100msec Ø65x115mm aluminium, anodized -20 +55°C IP64 PLC: 8-pin flange socket 2m PLC-cable e.g. VK207B45 RS232
TECHNICAL DATA sensing range output signal beam spot size operating voltage current consumption (w/o load) output current (max. load) sampling frequency transmitting element (pulsed) display (signal) adjustment short-circuit protection reverse polarity protection pulse stretching design housing material operating temperature system of protection (EN 60529) connection connection accessories interface connection	5 x pnp/npn, no/nc         Ø20mm at 200mm distance         12 30V DC         320mA         ≤ 100mA         ≤ 32kHz         white light LED         5 x yellow LED         teach-in: button + input + software         +         0 100msec         Ø65x115mm         aluminium, anodized         -20 +55°C         IP64         PLC: 8-pin flange socket         2m PLC-cable e.g. VK207B45	5 x pnp/npn, no/nc $\emptyset$ 20mm at 200mm distance 12 30V DC 320mA ≤ 100mA ≤ 32kHz white light LED 5 x yellow LED teach-in: button + input + software + + 0 100msec $\emptyset$ 65x115mm aluminium, anodized -20 +55°C IP64 PLC: 8-pin flange socket 2m PLC-cable e.g. <b>VK207B45</b>









diffuse reflection sensor type OF700149 article-no. version (light beam) focused, polarizing filter 115 47.5 47.5 20 D 70 14 5 ð ¢ ¢ M4 6 deep (4x) 85 ŝ œ 40 ¢\$ indentation DIN74 -km3 (4x) both-sided LK= 078 **TECHNICAL DATA** 20 ... 200mm sensing range output signal 5 x pnp/npn, no/nc beam spot size Ø20mm at 200mm distance 12 ... 30V DC operating voltage 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 Ø65x115mm design 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 5-pin flange socket PC: connection accessories 2m PC-cable e.g. VK207F45



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#### color sensors 1200

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.

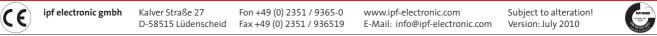
Part of the light radiated back from the measured object is now directed to a color-sensitive detector element by means of a receiver lens. At the same time, the received light is split up according to the 3-color range system (red, green, blue). In each case, evaluation takes place with 12 bit. The 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.

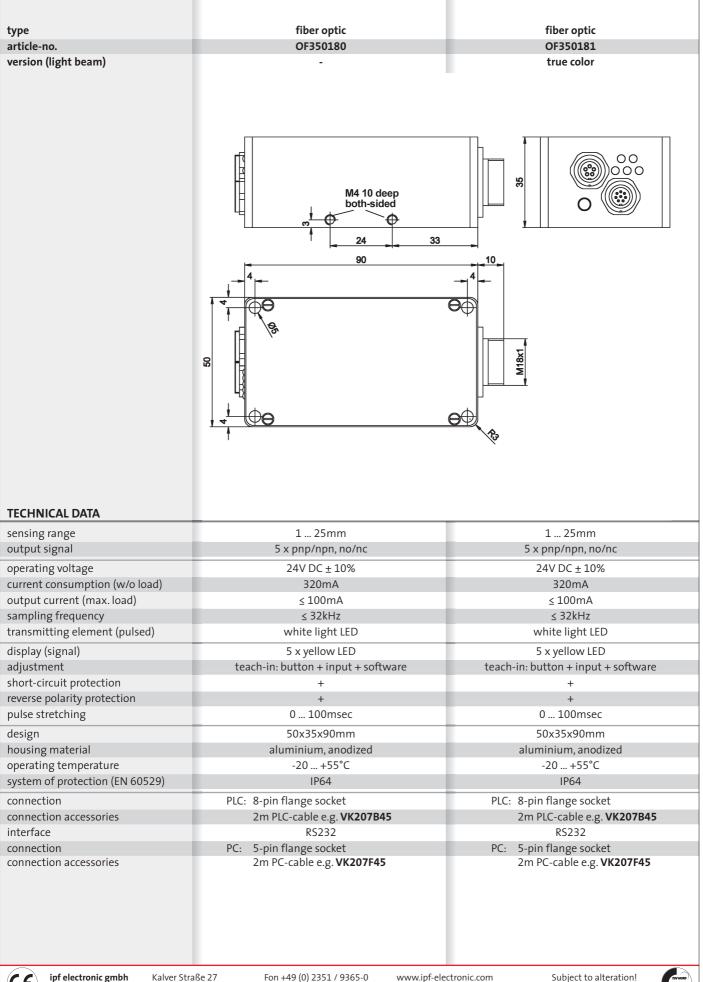
Parameterizing of the color sensors takes place via the Windows<sup>®</sup> series interface (RS232). This way, up to 31 colors can be learned and stored in the sensor.

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











#### color sensors 1200

#### 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.

POWER MODE	STATIC -	SOURCE	s/i	-	OPEN	RECORDER	TEMP	1
POWER (pm)	400	s 5956	4000- 3750- 3500-					
DYN WIN LO 3000 I		1966 M	3250- 3000-				- 10	
AVERAGE MAXCOL-No.	4096 <b>•</b>	917	2750- 2500-				- 11	
	BINARY V		2250- 2000- 1750-			•		
HOLD (ms)	10 -	C-No:	1500-				- 11	
EVALUATION MODE	BESTHT -		1000- 750-				- 10	
CALCULATION MODE		Go	500- 250-				- 10	

#### 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



### **1200** color sensors

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electronic

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

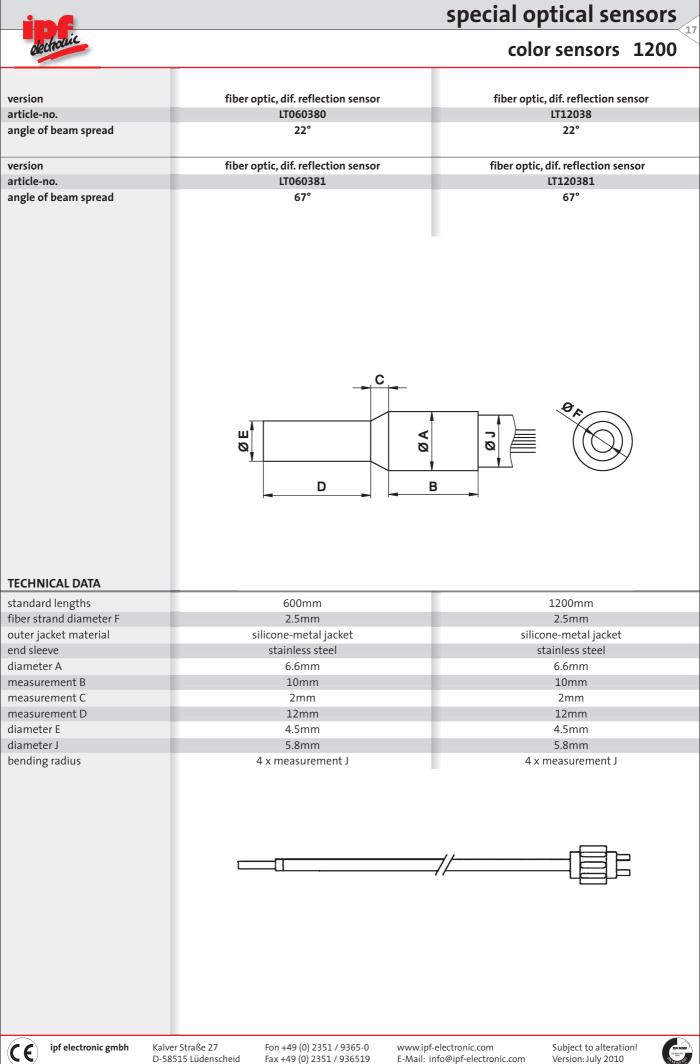
standard lengths	600mm	1200mm		
fiber strand diameter F	1.5mm	1.5mm		
outer jacket material	silicone-metal jacket	silicone-metal jacket		
end sleeve	stainless steel	stainless steel		
diameter A	6.6mm	6.6mm		
measurement B	8mm	8mm		
measurement C	2mm	2mm		
measurement D	11mm	11mm		
diameter E	2.5mm	2.5mm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







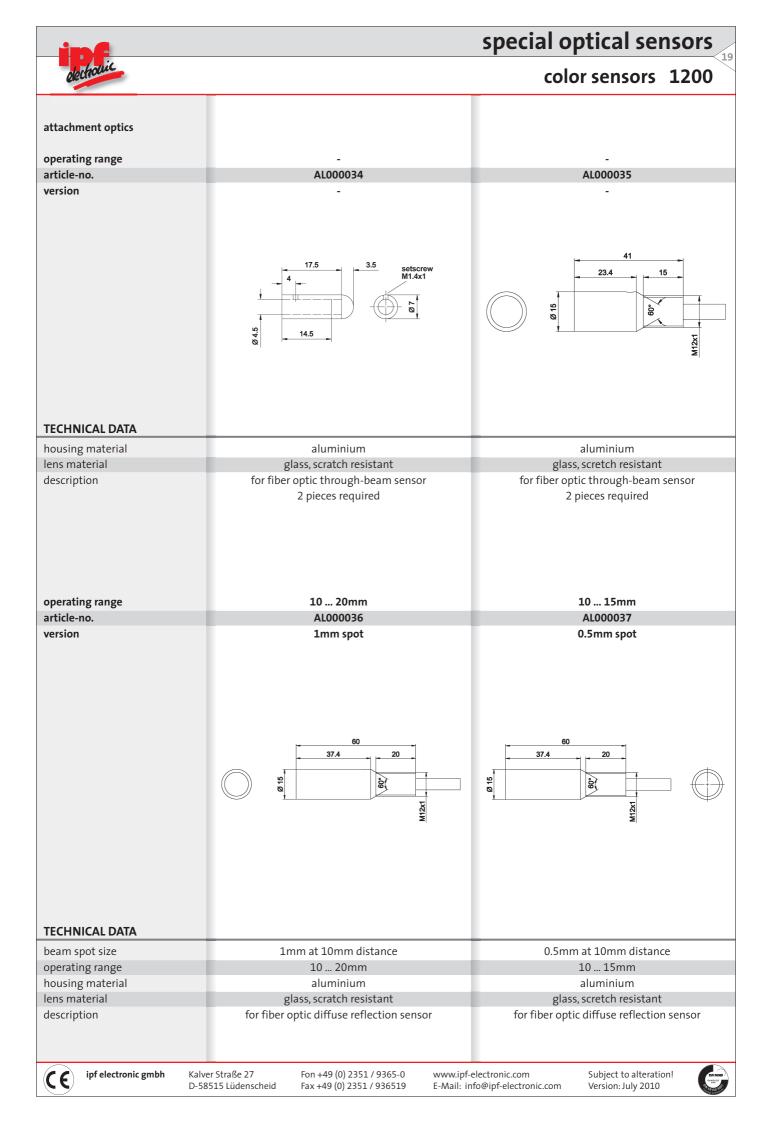
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	<b>A</b>	<b></b>	
version	fiber optic, through-beam sens		nsor
article-no.	LS060380	LS120380	
angle of beam spread	22°	22°	
version	fiber optic, through-beam sens	or fiber optic, through-beam ser	sor
article-no.	LS060381	LS120381	
ingle of beam spread	67°	67°	
			)
<b>TECHNICAL DATA</b> standard lengths fiber strand diameter F puter jacket material	600mm 2.5mm silicone-metal jacket	1200mm 2.5mm silicone-metal jacket	
end sleeve	stainless steel	stainless steel	
liameter 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	

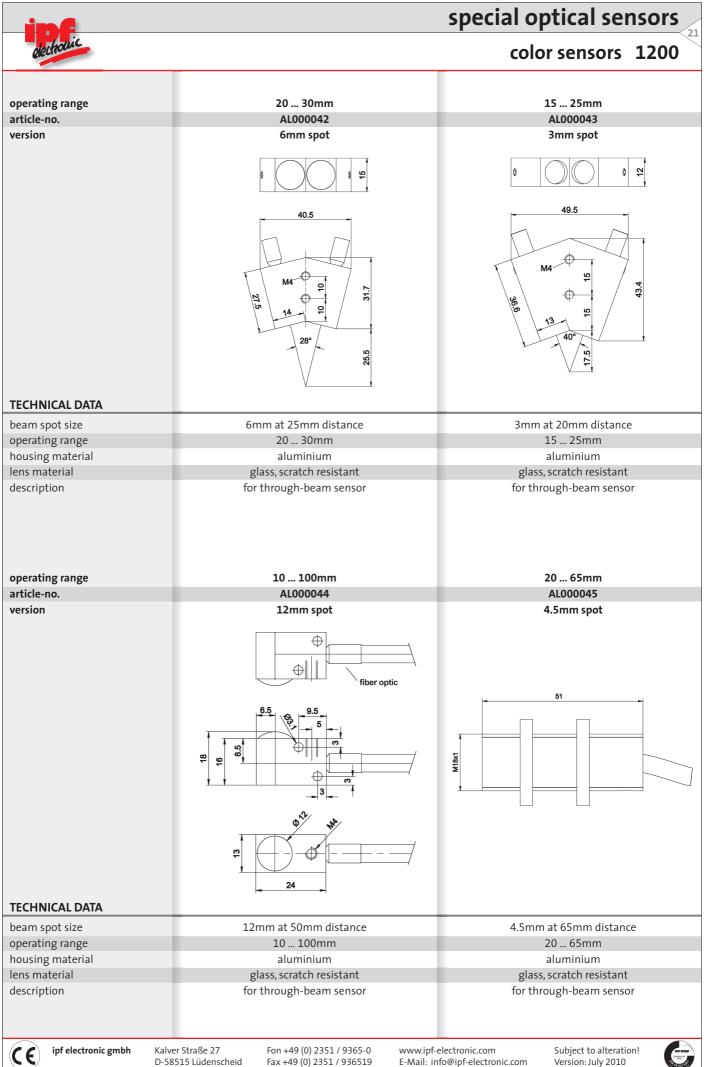


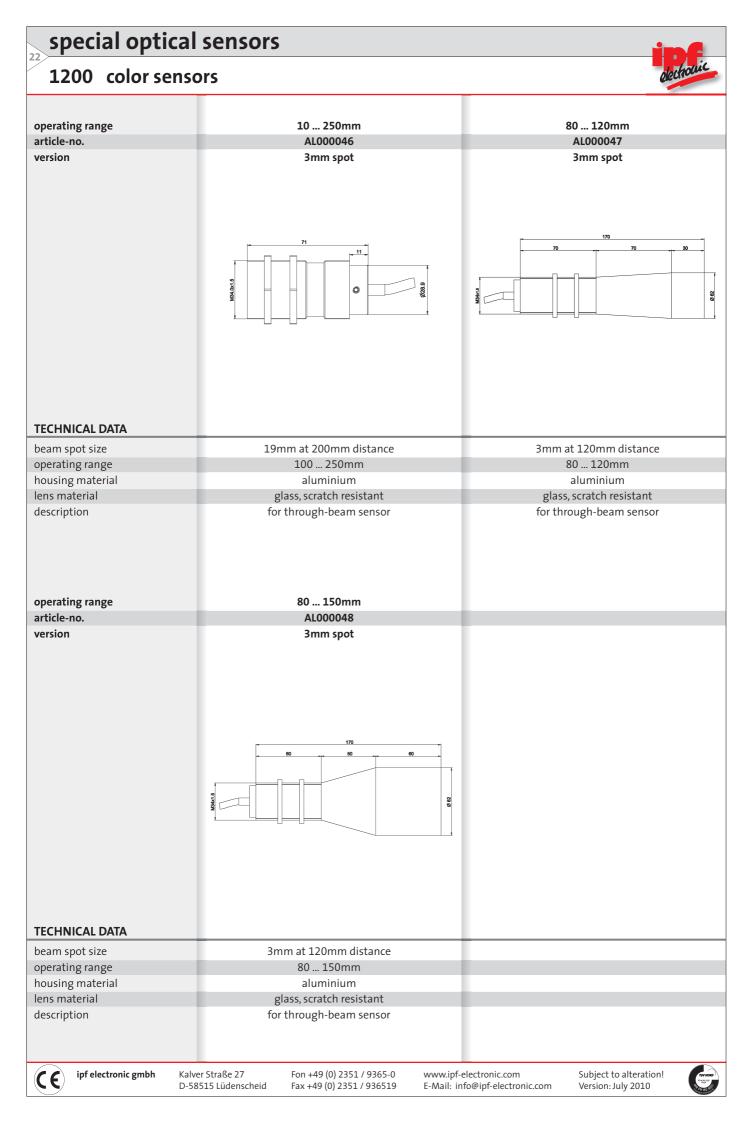


special optic	al sensors	inf
1200 color ser	isors	dechouic
operating range article-no. version	100 250mm AL000038 31mm spot	60 120mm AL000039 11mm spot
		50 50 50 50 50 50 50 50 50 50
TECHNICAL DATA		
beam spot size	31mm at 200mm distance	31mm at 200mm distance
operating range	100 250mm	60 120mm
housing material	aluminium	aluminium
lens material description	glass, scratch resistant for through-beam sensor	glass, scratch resistant for through-beam sensor
operating range	30 80mm	20 40mm
article-no.	AL000040	AL000041
version TECHNICAL DATA	14mm spot	7mm spot
beam spot size	14mm at 50mm distance	7mm at 30mm distance
operating range	30 80mm	20 40mm
housing material	aluminium	aluminium
lens material description	glass, scratch resistant for through-beam sensor	glass, scratch resistant for through-beam sensor
		of-electronic.com Subject to alteration! info@ipf-electronic.com Version: July 2010









selection	selection table for fiber optics and attatchment optics	r optics and	attatchme	nt optics												
fiber op- tic type	fiber op- ipf-article- tic type number		AL000034 AL000035 AL000036 AL000037	AL000036	AL000037	AL000038	AL000039	AL000038 AL000039 AL000040 AL000041 AL000042 AL000043 AL000044 AL000045 AL000046 AL000047 AL000048	AL000041	AL000042	AL000043	AL000044	AL000045	AL000046	AL000047	AL000048
4	LS060380	×	×									×				
-ugnouu	LS120380	×	×									×				
beam	LS060381	×	×			×	×	×	×	×	×	×			×	×
sensor	LS120381	×	×			×	×	×	×	×	×	×			×	×
7:17	LT060380			×												
	LT120380			×												
retiection	LT060381			×									×	×		
	LT120381			×									×	×		
Jif.	LT060180				×											
un.	LT120180				×											
renection	LT060181				×											
	LT120181				Х											







### **1200** color sensors

notes

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