

measurement systems 2100

dimensions

20.4 x 65 x 50mm

dif. reflection sensors (point) measuring range dif. reflection sensors (line) measuring range

ge up to 1000mm ge up to 1000mm

 color and soiling independent distance measurement via laser power tracking

- ✓ several measuring ranges
- excellent linearity thanks to integrated microprocessor
- ✓ high measurement resolution
- ✓ robust metal housing
- ✓ visible red light laser with glass lens
- ✓ laser protection class 2
- ✓ rotatable M12-connector, 5-pin

analog signal 4 to 20mA / 0 to 10V line and point-shaped laser beam





Alarm

65 00 20

description

ipf laser distance sensors of the PT65 series use the triangulation principle for measurement. The compact sensors with integrated microprocessor provide a precise output signal, which is proportional to the distance measured. An intelligent signal analysis enables the sensor to operate precisely irrespective of color and surface structure. This results in very exact measured values.

Distances to rough surfaces can be measured reliably using a device that operates with a fine laser line instead of a laser spot. The evaluation electronics calculate a mean value for the illuminated area.

When it is turned on, the sensor checks if a current is flowing at the current output. If this is the case, the current output is activated, if not, the voltage output is activated after 100msec.

The implemented power tracking of the laser exposure ensures that the same signal quality is always maintained on light and dark surfaces, making the sensor "color blind". In addition, that also compensates for possible soiling of the lens. A PNP switching signal triggers the alarm output if the measuring range is left. This is additionally signalled by a red LED lighting up.

With all triangulation sensors it must be ensured that the laser spot remains visible to the receiver lens at all times and that no obstacles are in front of the receiver lens. The sensor can always be aligned easily and exactly using

the sensor can always be aligned easily and exactly using the small, visible laser spot.

application examples

- monitoring and highly precise measurement of object heights
- contactless position and thickness measurement of small and large parts
- color independent recognition of position changes of miscellaneous objects
- precise measurement and positioning tasks in several application areas



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operating rangeIarticle-no.diffuversiondiffuoperating rangeII	se reflection sensor, laser spot 30 50mm PT653020 Ise reflection sensor, laser line 30 50mm 50 38 1.5 20.6 20.6 20.6 20.6 U U U U U U U U U U U U U	diffuse reflection sensor, laser spot 30 130mm PT653021 diffuse reflection sensor, laser line 30 130mm	
Technical Data diffu operating range Image: Ima	PT653020 Ise reflection sensor, laser line 30 50mm	PT653021 diffuse reflection sensor, laser line $30 \dots 130$ mm $30 \dots 130$ mm $30 \dots 130$ mm $30 \dots 130$ mm $30 \dots 130$ mm $spot: 2 \dots 1mm$ $line (wxh): (2 \dots 1mm) \times (3 \dots 5mm)$ pn, no $0 \dots 10V DC / 4 \dots 20mA$ $+Vs = 12 \dots 28V DC$ ≤ 100 mA	
version diffu opperating range Image: Im	30 50mm 30 50mm 30 50mm 30 50mm 30 50mm 30 50mm 30 50mm 30 50mm spot: 1 0.4mm) x 2mm pnp, no 0 10V DC / 4 20mA +Vs= 12 28V DC	diffuse reflection sensor, laser line 30 130mm	
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neasuring range ight beam form lin larm output putput signal pperating voltage current consumption oad resistance putput current (max. load) ransmitting element (pulsed) laser class esolution inearity deviation esponse/decay time lisplay (operation) lisplay (soiling) lisplay (alarm)	spot: 1 0.4mm e (wxh): (1 0.4mm) x 2mm pnp, no 0 10V DC / 4 20mA +Vs= 12 28V DC	spot: 2 1mm line (wxh): (2 1mm) x (3 5mm) pnp, no 0 10V DC / 4 20mA +Vs= 12 28V DC ≤ 100mA	
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urrent consumption bad resistance voltage: : output current (max. load) ransmitting element (pulsed) la aser class esolution nearity deviation esponse/decay time lisplay (operation) lisplay (soiling) lisplay (alarm)	< 100mA		
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ransmitting element (pulsed) la aser class esolution nearity deviation esponse/decay time isplay (operation) isplay (soiling) isplay (alarm)	> 100kΩ current: <(+Vs-6V)/20mA	voltage: > 100kΩ current: <(+Vs-6V)/20mA	
aser class esolution earity deviation esonse/decay time esolution isplay (operation) isplay (soiling) isplay (alarm) esonse esons es	100mA (alarm)	100mA (alarm)	
esolution nearity deviation esponse/decay time isplay (operation) isplay (soiling) isplay (alarm)	iser diode, red light, 650nm 2	laser diode, red light, 650nm 2	
nearity deviation esponse/decay time isplay (operation) isplay (soiling) isplay (alarm)	<0.01mm	0.05 0.07mm	
esponse/decay time isplay (operation) isplay (soiling) isplay (alarm)	±0.03mm	±0.15 ±0.22mm	
isplay (operation) isplay (soiling) isplay (alarm)	< 10ms	< 10ms	
isplay (soiling) isplay (alarm)	green LED	green LED	
	red LED, flashing	red LED, flashing	
djustment	red LED, constant	red LED, constant	
	-	-	
nort-circuit protection	+	+	
everse polarity protection	+Vs / GND	+Vs / GND	
imensions	20.4x65x50mm	20.4x65x50mm	
ousing material	zinc diecast	zinc diecast	
ont screen material perating temperature	glass 0 +50°C	glass	
egree of protection (EN 60529)	IP67	0 +50°C IP67	
onnection accessories	2-connector, 5-pin, rotatable	M12-connector, 5-pin, rotatable e.g. VK205625	
nounting accessories (bracket)	e.g. VK205625	AP000031	





Tic

laser sensors measurement systems 2100 PT650022 PT650023 article-no. diffuse reflection sensor, laser spot version diffuse reflection sensor, laser spot operating range 50 ... 250mm 100 ... 500mm PT653022 PT653023 article-no. version diffuse reflection sensor, laser line diffuse reflection sensor, laser line operating range 50 ... 250mm 100 ... 500mm 50 50 38 38 1.5 20.6 20.6 1.5 1.5 , 4.3 LED LED 65 57 65 2 16 16 M12x1 *transmitter axis 16mm M12x1 *transmitter axis 16mm **TECHNICAL DATA** measuring range 50 ... 250mm 100 ... 500mm light beam form spot: 2mm spot: 2mm line (wxh): 2.5mm x (4 ... 10mm) line (wxh): 2.5mm x (5.5 ... 18mm) alarm output pnp, no pnp, no 0 ... 10V DC / 4 ... 20mA 0 ... 10V DC / 4 ... 20mA output signal +Vs= 12 ... 28V DC +Vs= 12 ... 28V DC operating voltage current consumption ≤100mA ≤100mA load resistance voltage: > 100kΩ current: <(+Vs-6V)/20mA voltage: > $100k\Omega$ current: <(+Vs-6V)/20mA output current (max. load) 100mA (alarm) 100mA (alarm) transmitting element (pulsed) laser diode, red light, 650nm laser diode, red light, 650nm 2 laser class 2 resolution 0.1 ... 0.3mm 0.2 ... 0.5mm linearity deviation ±0.3 ... ±0.8mm ±0.8 ... ±2mm response/decay time < 10ms < 10ms display (operation) green LED green LED red LED, flashing red LED, flashing display (soiling) display (alarm) red LED, constant red LED, constant adjustment short-circuit protection + +reverse polarity protection +Vs / GND +Vs / GND dimensions 20.4x65x50mm 20.4x65x50mm housing material zinc diecast zinc diecast glass front screen material glass 0 ... +50°C operating temperature 0 ... +50°C degree of protection (EN 60529) IP67 IP67 connection M12-connector, 5-pin, rotatable M12-connector, 5-pin, rotatable e.g. VK205625 e.g. VK205625 connection accessories mounting accessories (bracket) AP000031 AP000031 ipf electronic gmbh

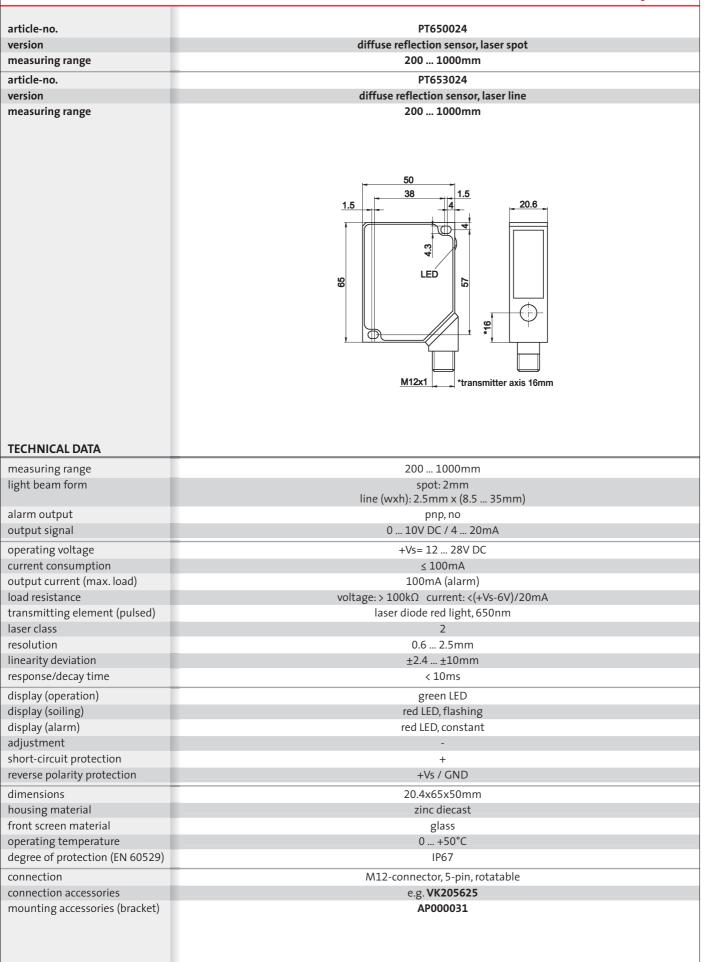
CE

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Subject to alteration! Version: June 2014



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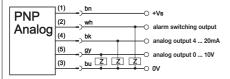
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connection



wire colors: bn = brown (1), wh = white (1), bu = blue (3), bk = black (4), gy = gray (5)

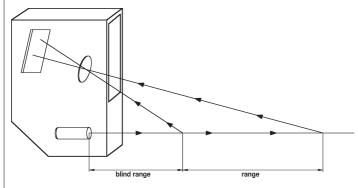
Warning

Caution! Laser Radiation! Do not stare into the beam!

laser class 2

according to DIN EN 60825 wavelength 630 ... 680nm max. output power 1mW

triangulation principle

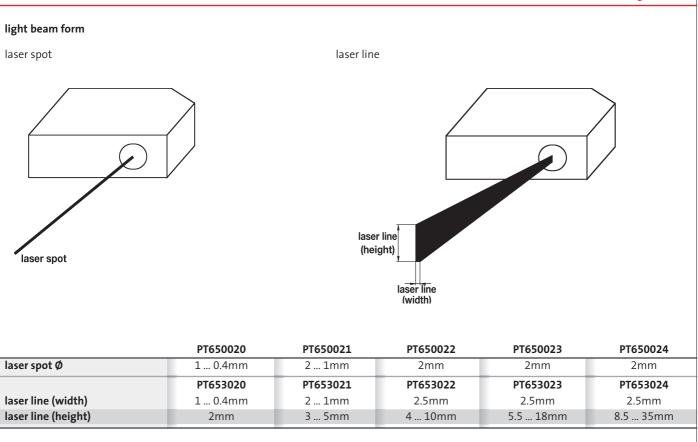


The distance measurement is based on the triangulation principle. The laser beam is emitted by the transmitter diode and hits the object as a small spot. The sensor's receiver element detects the position of this spot within the "detection range". The sensor basically measures the angle of this position and then calculates the adequate distance. There is a "blind range" directly in front of the sensor where the objects are not reliable recognized.

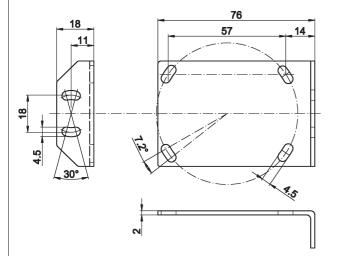
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mounting bracket AP000031



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

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

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

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