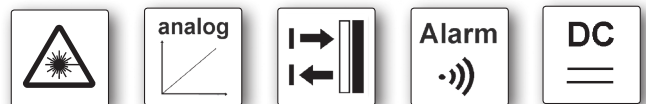
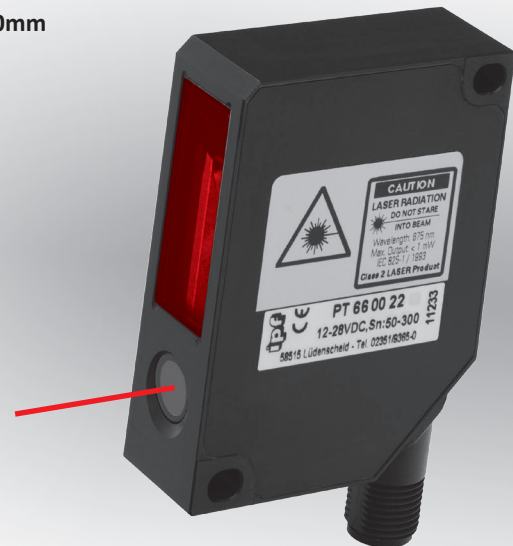


dimensions	<b>20.4 x 65 x 50mm</b>	
dif. reflection sensors (point)	measuring range	<b>up to 1000mm</b>
dif. reflection sensors (line)	measuring range	<b>up to 1000mm</b>

- ✓ measurement independent of color and soiling through tracking of the laser power
- ✓ background suppression through triangulation
- ✓ synchronization input
- ✓ less than 900µsec response time
- ✓ excellent linearity thanks to microprocessor
- ✓ additional alarm output for the measuring range
- ✓ high resolution for very precise measuring accuracy
- ✓ 5 different measuring ranges from 30 to 1000mm teachable with external teach-in
- ✓ rotatable M12-connector, 8-pin
- ✓ red light laser with glass lens
- ✓ laser protection class 2
- ✓ robust metal housing made of zinc diecast

**analog signal 4 to 20mA / 0 to 10V**  
**5 teachable measuring ranges**



**description**

ipf laser distance sensors operate with measuring ranges from 30 to 1000mm. The compact sensors with integrated microprocessor provide a precise output signal, which is proportional to the measured distance. An intelligent, internal signal analysis enables the sensor to precisely detect object distances, regardless of the color and structure of most surfaces.

Distances to rough surfaces can be measured reliably, when a device is used that has a fine laser line instead of a laser spot. The evaluation electronics calculate a mean value for the illuminated area.

The sensor can always be aligned easily and exactly using the small, visible laser spot. 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. A PNP switching signal triggers the alarm output if the measuring range is left. This is additionally signalled by a red LED lighting up. The resolution is dependent on the position of the object (start/end of the measuring range) and the effective taught-in measuring range.

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.

There is an additional synchronization input for time-synchronized measuring tasks, such as the measuring of object thicknesses. Measurements of different sensors can be started at the same time, using an external signal.

**application examples**

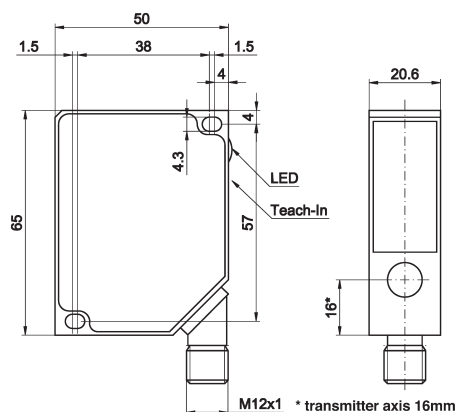
- ▶ precise measuring and positioning tasks in many different application areas
- ▶ presence check of different objects
- ▶ monitoring and highly precise measurement of object and stacking heights
- ▶ contactless position and thickness measurement of small and large parts
- ▶ color-independent recognition of even the smallest objects

article-no.	<b>PT660020</b>	<b>PT660021</b>
version	diffuse reflection sensor, laser spot	diffuse reflection sensor, laser spot
measuring range	30 ... 70mm	30 ... 130mm
article-no.	<b>PT663020</b>	<b>PT663021</b>
version	diffuse reflection sensor, laser line	diffuse reflection sensor, laser line
measuring range	30 ... 70mm	30 ... 130mm
<b>TECHNICAL DATA</b>		
measuring range	30 ... 70mm	30 ... 130mm
resolution	0.004 ... 0.02mm	0.005 ... 0.06mm
linearity deviation	±0.012 ... ±0.06mm	±0.015 ... ±0.2mm
output signal	0 ... 10V DC / 4 ... 20mA	0 ... 10V DC / 4 ... 20mA
operating voltage	12 ... 28V DC	12 ... 28V DC
current consumption	≤ 100mA	≤ 100mA
output current (max. load)	100mA (alarm)	100mA (alarm)
load resistance	voltage: > 100kΩ current: <(+Vs-6V)/20mA	voltage: > 100kΩ current: <(+Vs-6V)/20mA
transmitting element	red laser diode, pulsed	red laser diode, pulsed
wavelength	650nm	650nm
laser class	2	2
light beam form	spot: Ø 1 ... 0.2mm line (wxh): (1 ... 0.2mm) x 2mm	spot: Ø 2 ... 1mm line (wxh): 2 ... 1mm x (3 ... 5mm)
response/decay time	< 900µs	< 900µs
display (operation)	green LED	green LED
display (soiling)	red LED, flashing	red LED, flashing
display (alarm)	red LED, constant	red LED, constant
alarm output	npn, no	npn, no
adjustment	teach-button and remote-teach input	teach-button and remote-teach input
distance teach-in limits	> 2mm	> 3mm
short-circuit protection	+	+
reverse polarity protection	+Vs / GND	+Vs / GND
dimensions	20.6x65x50mm	20.6x65x50mm
housing material	zinc diecast	zinc diecast
front screen material	glass	glass
operating temperature	0 ... +50°C	0 ... +50°C
degree of protection (EN 60529)	IP67	IP67
connection	M12-connector, 8-pin, rotatable	M12-connector, 8-pin, rotatable
connection accessories	e.g. <b>VK205A25</b>	e.g. <b>VK205A25</b>
mounting accessories	<b>AP000031</b>	<b>AP000031</b>

article-no.	<b>PT660022</b>	<b>PT660023</b>
version	diffuse reflection sensor, laser spot	diffuse reflection sensor, laser spot
measuring range	50 ... 300mm	100 ... 600mm
article-no.	<b>PT663022</b>	<b>PT663023</b>
version	diffuse reflection sensor, laser line	diffuse reflection sensor, laser line
measuring range	50 ... 300mm	100 ... 600mm
<b>TECHNICAL DATA</b>		
measuring range	50 ... 300mm	100 ... 600mm
resolution	0.01 ... 0.33mm	±0.015 ... ±0.67mm
linearity deviation	±0.03 ... ±1mm	±0.05 ... ±2mm
output signal	0 ... 10V DC / 4 ... 20mA	0 ... 10V DC / 4 ... 20mA
operating voltage	12 ... 28V DC	12 ... 28V DC
current consumption	≤ 100mA	≤ 100mA
output current (max. load)	100mA (alarm)	100mA (alarm)
load resistance	voltage: > 100kΩ current: <(+Vs-6V)/20mA	voltage: > 100kΩ current: <(+Vs-6V)/20mA
transmitting element	red laser diode, pulsed	red laser diode, pulsed
wavelength	650nm	650nm
laser class	2	2
light beam form	spot: Ø 2mm line (wxh): 2.5 x (4 ... 12mm)	spot: Ø 2mm line (wxh): 2.5 x (5.5 ... 21mm)
response/decay time	< 900µs	< 900µs
display (operation)	green LED	green LED
display (soiling)	red LED, flashing	red LED, flashing
display (alarm)	red LED, constant	red LED, constant
alarm output	pnp, no	pnp, no
adjustment	teach-button and remote-teach input	teach-button and remote-teach input
distance teach-in limits	> 5mm	> 10mm
short-circuit protection	+	+
reverse polarity protection	+Vs / GND	+Vs / GND
dimensions	20.6x65x50mm	20.6x65x50mm
housing material	zinc diecast	zinc diecast
front screen material	glass	glass
operating temperature	0 ... +50°C	0 ... +50°C
degree of protection (EN 60529)	IP67	IP67
connection	M12-connector, 8-pin, rotatable	M12-connector, 8-pin, rotatable
connection accessories	e.g. <b>VK205A25</b>	e.g. <b>VK205A25</b>
mounting accessories	<b>AP000031</b>	<b>AP000031</b>

article-no.	PT660024
version	diffuse reflection sensor, laser spot
measuring range	200 ... 1000mm

article-no.	PT663024
version	diffuse reflection sensor, laser line
measuring range	200 ... 1000mm



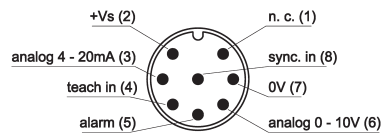
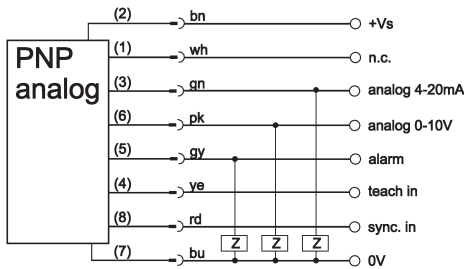
**TECHNICAL DATA**

measuring range	200 ... 1000mm
resolution	0.12 ... 2.5mm
linearity deviation	±0.48 ... ±10mm
output signal	0 ... 10V DC / 4 ... 20mA
operating voltage	12 ... 28V DC
current consumption	≤ 100mA
output current (max. load)	100mA (alarm)
load resistance	voltage: > 100kΩ current: <(+Vs-6V)/20mA
transmitting element	red laser diode, pulsed
wavelength	650nm
laser class	2
light beam form	spot: Ø 2mm line (wxh): 2.5mm x (8.5 ... 35mm)
response/decay time	< 900ms
display (operation)	green LED
display (soiling)	red LED, flashing
display (alarm)	red LED, constant
alarm output	npn, no
adjustment	teach-button and remote-teach input
distance teach-in limits	> 20mm
short-circuit protection	+
reverse polarity protection	+Vs / GND
dimensions	20.6x65x50mm
housing material	zinc diecast
front screen material	glass
operating temperature	0 ... +50°C
degree of protection (EN 60529)	IP67
connection	M12-connector, 8-pin, rotatable
connection accessories	e.g. VK205A25
mounting accessories	AP000031

**connection**

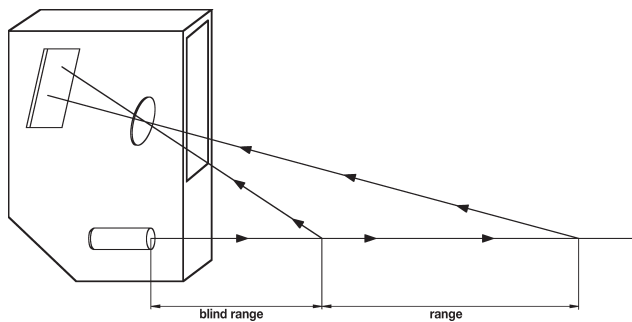
connector device

pin configuration



**wire colors:** wh = white (1), bn = brown (2), gn = green (3), ye = yellow (4), gy = gray (5), pk = pink (6), bu = blue (7), rd = red (8)


**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 reliably recognized.

**Warning**

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

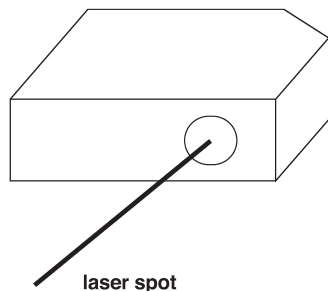


**laser class 2**

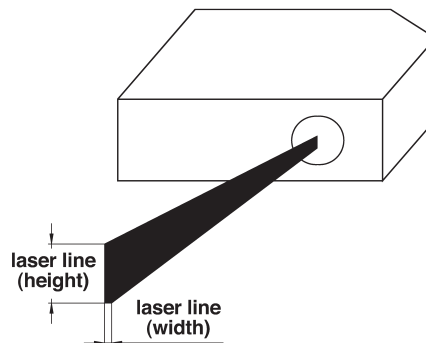
according to DIN EN 60825  
wavelength 630 ... 680nm  
max. output power 1mW

## light beam form

laser spot

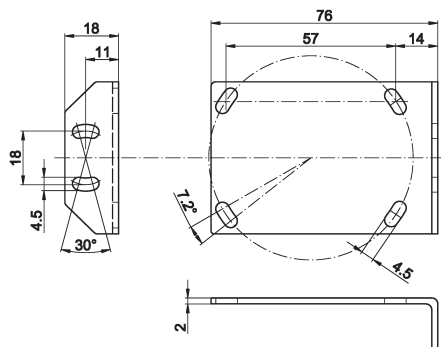


laser line



	<b>PT660020</b>	<b>PT660021</b>	<b>PT660022</b>	<b>PT660023</b>	<b>PT660024</b>
laser spot $\varnothing$	1 ... 0.2mm	2 ... 1mm	2mm	2mm	2mm
laser line (width)	<b>PT663020</b> 1 ... 0.2mm	<b>PT663021</b> 2 ... 1mm	<b>PT663022</b> 2.5mm	<b>PT663023</b> 2.5mm	<b>PT663024</b> 2.5mm
laser line (height)	2mm	3 ... 5mm	4 ... 12mm	5.5 ... 21mm	8.5 ... 35mm

## mounting bracket AP000031



## ACCESSORIES

article-no.	description	note
AP000031	mounting bracket	metal

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](http://www.ipf-electronic.com)