dimensions **26 x 55 x 85mm**

diffuse-reflection sensor
sensing range **100 to 500mm**

✓ **measurement of edge position, center point position,**
   width and gap control

✓ **measurement of object heights**

✓ **distance measuring**

✓ **measuring modes with round objects:**
   center point, diameter and outer position

✓ **with touch display**

✓ **aluminum housing**

wide laser line
laser class 1 or 2

Push Pull

analog

M12

description

The multifunctional device solutions from ipf electronic are all based on the same operating principle – the light section method. Here, the sensors project a laser line (laser class 1 and 2) onto an object. This laser line is reflected by the surface of the object and, following the triangulation method, reaches a two-dimensional optical receiver with a special multiple-lens system which enables precise mapping in high optical quality.

For subsequent calculation of the respective output values, based on up to 600 measured values per measurement, the light section sensors feature an intelligent algorithm combined with powerful coordinate transformation which allows, for example, measurements to be performed without time-consuming alignment of the sensor.

The **PY740020** and **PY740021** (operating distance 100mm to 150mm and 150mm to 250mm respectively) determine the position of object edges irrespective of the distance. The **PY740025** and **PY740026** (operating distance 100mm to 150mm and 100mm to 500mm respectively) determine the heights of objects at a high resolution of up to 2µm based on the following five parameters: maximum, minimum and mean heigh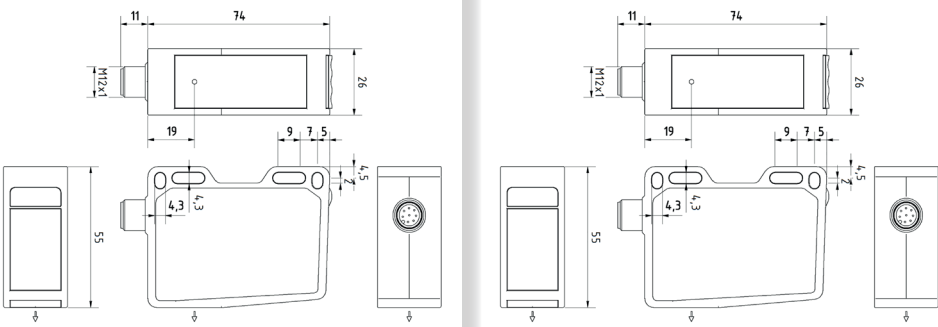t, delta height value (e.g. to identify non-conforming products on the basis of a non-standard shape) and standard deviation across all determined height information.

The **PT740020** and **PT740021** (operating distance 100mm to 150mm and 100mm to 500mm respectively) measure distances even in the case of extremely demanding surfaces, e.g. unevenly glossy, non-reflective metals or extremely rough surfaces, such as grinding disks.
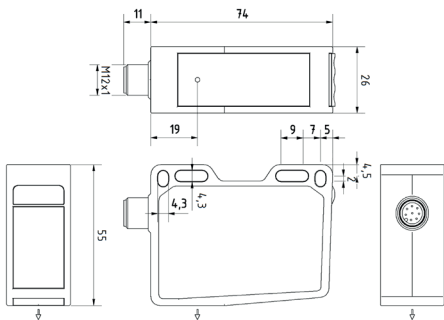
The **PY74002A** measures round objects with an outer diameter of 30mm to 130mm and for this purpose provides five different measuring modes to ensure maximum versatility: center point, diameter, highest measurement point of an object (vertex), right outer position and left outer position.
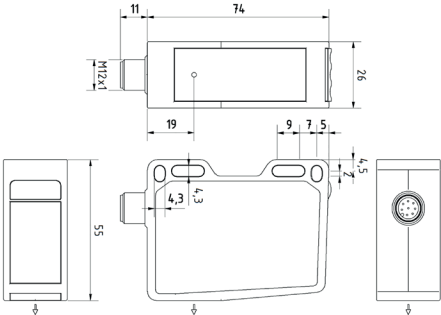
application examples
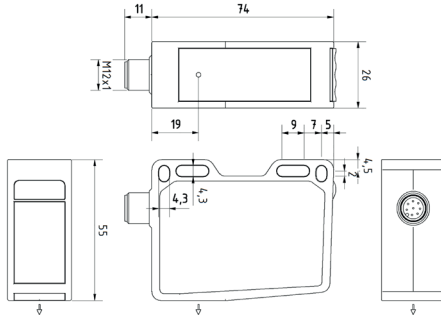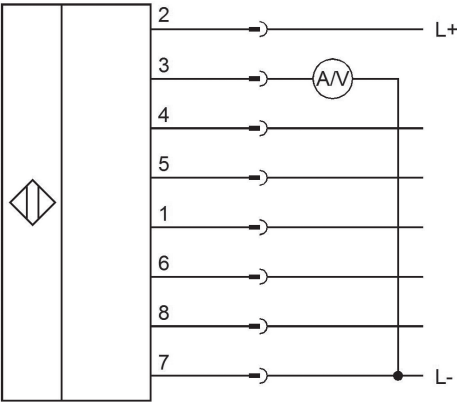▶ double sheet control
▶ edge control
▶ gap control
▶ etc..

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article no.	PY740020	PY740021
version	edge sensor	edge sensor
range (sensing range)	100 ... 150mm	150 ... 250mm

TECHNICAL DATA

GENERAL FEATURES

function (measuring modes)	edge position, center point position, width, gap	edge position, center point position, width, gap
measuring range (distance)	100 ... 150mm	150 ... 250mm
measuring range (width)	48 ... 72mm	75 ... 125mm
beam size focus point vertical	< 0.1mm	< 0.5mm
beam size focus point parallel	L = 73mm	L = 120mm

ELECTRICAL FEATURES

opertaing voltage	15 ... 28 VDC	15 ... 28 VDC
current consumption (w/o load)	150mA	150mA
short-circuit protection	yes	yes
reverse polarity protection	yes, VS to GND	yes, VS to GND
switching output	push-pull	push-pull
switching function	output 1 / alarm	output 1 / alarm
output current	< 100mA	< 100mA
analog output	4...20mA / 0...10V	4...20mA / 0...10V

OPTICAL FEATURES

laser classification	laser class 1	laser class 1
status display	LED green, yellow, red	LED green, yellow, red
setting	touch display	touch display
warm-up time	15 min	15 min
measuring frequency	159...625Hz	125...500Hz
response time	3.0...12.4ms	4...16ms
smallest detectable object width	0.7mm	1.5mm
smallest detectable gap	1.5mm	2mm
smallest detectable level	2mm	2mm
resolution	start...end of measuring range 20µm	start...end of measuring range 30...50µm
repeat accuracy	start...end of measuring range 10µm	start...end of measuring range 10µm
linearity deviation	± 50...±75µm ± 100...±100µm	± 80...±120µm ± 160...±240µm
digital output hysteresis	0.2mm	0.5mm
temperature drift	± 0.03% measured value/K	± 0.05% measured value/K

MECHANICAL FEATURES

material (housing)	aluminum	aluminum
material (front screen)	glass	glass
dimensions	26 x 74 x 55mm	26 x 74 x 55mm
temperature (operating)	-20...+50°C	-20...+50°C
temperature (storage)	-25...+75°C	-25...+75°C
degree of protection (EN60529)	IP67	IP67
connection	M12-connector, 8-pin	M12-connector, 8-pin
connection accessories	e.g. **VK205A25**	e.g. **VK205A25**
mounting accessories	e.g. **AP000043**	e.g. **AP000043**

article no.	PY740025	PY740026
version	height sensor	height sensor
range	100 ... 150mm	100 ... 500mm

TECHNISCHE DATEN

GENERAL FEATURES

function (measuring modes)	average, minumum, maximum, delta height	average, minumum, maximum, delta height
measuring range (distance)	100 ... 150mm	100 ... 500mm
measuring range (width)	48 ... 72mm	13 ... 66mm
beam size focus point vertical	< 0.1mm	< 0.4mm
beam size focus point parallel	L = 73mm	L = 65mm

ELECTRICAL FEATURES

operating voltage	15 ... 28 VDC	15 ... 28 VDC
current consumption (w/o load)	120mA	120mA
short-circuit protection	yes	yes
reverse polarity protection	yes, VS to GND	yes, VS to GND
switching output	push-pull	push-pull
switching function	output 1 / alarm	output 1 / alarm
output current	< 100mA	< 100mA
analog output	4 ... 20mA / 0 ... 10V	4 ... 20mA / 0 ... 10V

OPTICAL FEATURES

laser classification	laser class 1	laser class 2
status display	LED green, yellow, red	LED green, yellow, red
setting	touch display	touch display
warm-up time	15min	15min
measuring frequency		
object light (approx. 90% reflection)	244 ... 570Hz	440 ... 1540Hz
object dark (approx. 6% reflection)	192 ... 342Hz	340... 770Hz
response time		
object light (approx. 90% reflection)	3.5 ... 8.2ms	1.3 ... 4.5ms
object dark (approx. 6% reflection)	5.8 ... 10.4ms	2.6 ... 5.8ms
smallest detectable object	0.7 ... 1.1mm	1 ... 5mm
resolution	depending on mode and filter 2...48µm	depending on mode and filter 4...150µm
repeat accuracy	depending on mode and filter 2...16µm	depending on mode and filter 4...90µm
linearity deviation	± 20µm	± 100µm
digital output hysteresis	0.5% of Sd (switching point)	1% of Sd (switching point)
temperature drift	± 0.04% Sde/K	± 0.04% Sde/K

MECHANICAL FEATURES

material (housing)	aluminum	aluminum
material (front screen)	glass	glass
dimensions	26 x 74 x 55mm	26 x 74 x 55mm
temperature (operating)	-10...+50°C	-10...+50°C
temperature (storage)	-25...+75°C	-25...+75°C
degree of protection (EN60529)	IP67	IP67
connection	M12-connector, 8-pin	M12-connector, 8-pin
connection accessories	e.g. **VK205A25**	e.g. **VK205A25**
mounting accessories	e.g. **AP000043**	e.g. **AP000043**

article no.	**PY74002A**	
version	**sensor for round material**	
range	**150 ... 250mm**	

TECHNISCHE DATEN

GENERAL FEATURES

function (measuring modes)	center point, diameter, outer positions with round objects
measuring range (distance)	150 ... 250mm
measuring range (width)	75 ... 125mm
beam size focus point vertical	< 0.4mm
beam size focus point parallel	L = 125mm

ELECTRICAL FEATURES

operating voltage	15 ... 28 VDC
current consumption (w/o load)	120mA
short-circuit protection	yes
reverse polarity protection	yes, VS to GND
switching output	push-pull
switching function	output 1 / alarm
output current	< 100mA
analog output	4 ... 20mA / 0 ... 10V

OPTICAL FEATURES

laser classification	laser class 1
status display	LED green, yellow, red
setting	touch display
warm-up time	15 min
measuring frequency	
object light (approx. 90% reflection)	200 ... 450Hz
object dark (approx. 6% reflection)	170 ... 250 Hz
response time	
object light (approx. 90% reflection)	7 ... 15ms
object dark (approx. 6% reflection)	12 ... 18ms
smallest detectable object width	30mm
smallest detectable gap	130mm
smallest detectable level	-
resolution	150 ... 230µm
repeat accuracy	30 ... 70µm
linearity deviation	± 150 ... ±220µm
digital output hysteresis	0.2mm
temperature drift	± 0.05% Sde/K

MECHANICAL FEATURES

material (housing)	aluminum
material (front screen)	glass
dimensions	26 x 74 x 55mm
temperature (operating)	-10 ... +50°C
temperature (storage)	-25 ... +75°C
degree of protection (EN60529)	IP67
connection	M12-connector, 8-pin
connection accessories	e.g. **VK205A25**
mounting accessories	e.g. **AP000043**

article no.	**PT740020**	**PT740021**
version	**distance sensor**	**distance sensor**
range	**100 ... 150mm**	**100 ... 500mm**

TECHNICAL DATA

GENERAL FEATURES

function (measuring modes)	average, minumum, maximum, delta height	average, minumum, maximum, delta height
measuring range (distance)	100 ... 150mm	100 ... 500mm
measuring range (width)	48 ... 72mm	13 ... 66mm
beam size focus point vertical	< 0.1mm	< 0.4mm
beam size focus point parallel	L = 73mm	L = 65mm

ELECTRICAL FEATURES

operating voltage	15 ... 28VDC	15 ... 28VDC
current consumption (w/o load)	120mA	120mA
short-circuit protection	yes	yes
reverse polarity protection	yes, VS to GND	yes, VS to GND
switching output	push-pull	push-pull
switching function	output 1 / alarm	output 1 / alarm
output current	< 100mA	< 100mA
analog output	4 ... 20mA / 0 ... 10V	4 ... 20mA / 0 ... 10V

OPTICAL FEATURES

laser classification	laser class 1	laser class 2
status display	LED green, yellow, red	LED green, yellow, red
setting	touch display	touch display
warm-up time	15min	15min
measuring frequency		
object light (approx. 90% reflection)	244 ... 570Hz	440 ... 1540Hz
object dark (approx. 6% reflection)	192 ... 342Hz	340 ... 770Hz
response time		
object light (approx. 90% reflection)	3.5 ... 8.2ms	1.3 ... 4.5ms
object dark (approx. 6% reflection)	5.8 ... 10.4ms	2.6 ... 5.8ms
smallest detectable object width	0.7 ... 1.1mm	1 ... 5mm
smallest detectable gap	depending on mode and filter	depending on mode and filter
	6 ... 48µm	4 ... 150µm
smallest detectable level	depending on mode and filter	depending on mode and filter
	2...16µm	4...90µm
resolution	± 20µm	± 100µm
repeat accuracy	0.5% of Sd (switching point)	1% of Sd (switching point)
linearity deviation	± 0.04% Sde/K	± 0.04% Sde/K
digital output hysteresis		
temperature drift	aluminum	aluminum
material (front screen)	glass	glass
dimensions	26 x 74 x 55mm	26 x 74 x 55mm
temperature (operating)	-10 ... +50°C	-10 ... +50°C
temperature (storage)	-25 ... +75°C	-25 ... +75°C
degree of protection (EN60529)	IP67	IP67
connection	M12-connector, 8-pin	M12-connector, 8-pin
connection accessories	e.g. **VK205A25**	e.g. **VK205A25**
mounting accessories	e.g. **AP000043**	e.g. **AP000043**

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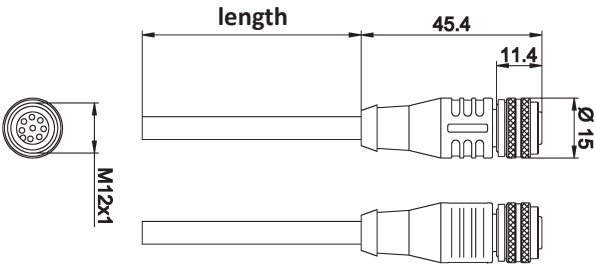info@ipf-electronic.com • **www.ipf-electronic.com**

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connection

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)
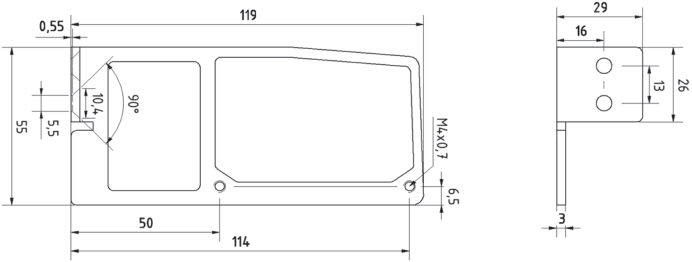
functions:

1= n.c., 2= L+, 3= 4-20mA/0-10V, 4= push-pull, 5= alarm push-pull, 6= n.c., 7= L-, 8= hold

mounting accessories

VK205A25

AP000043

ACCESSORIES

article no.	description	note
VK205A25	cable socket 2m , M12 straight	shielded, PUR, 8-wire
AP000043	mounting bracket	for design 74

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