OPTICAL SENSORS

DIFFUSE REFLECTION SENSORS 2800

dimensions 4 x 44 x 6.2mm

dif. reflection sensor sensing range 30mm

sensing range 50mm

- ✓ insensitive to colors thanks to background suppression
- √ tamper proof with fixed sensing range
- √ fast response time thanks to high sampling frequency
- √ suppression of mutual interference
- ✓ LED display for reception and soiling
- √ point-shaped light beam
- √ easy alignment with visible red light
- √ integrated amplifier
- switching output with push-pull stage (PNP/ NPN)
- reinforced plastic housing with metallic charge and M3-mounting

fixed sensing range very small and rod-shaped design









description

Type OTQ4 optical sensing devices have smallest mechanical dimensions with a rod-shaped design. Their extremely compact and slim design make them suitable for applications that in the past have been reserved mainly to fiber optics.

The sensors are easy to put into operation, as they work using visible red light and they have a fixed sensing range. Thus, there is no more need for laborious alignment and adjustment work. The use of modern electronics and a casted housing ensure very high operational dependability and reliability in your automation application.

For avoiding reciprocal optical interference, the devices have automatic interference suppression. As a result, it is possible to mount sensor upon sensor (up to 4 pieces) without causing erroneous operations.

The functional principle behind these sensing devices is based on triangulation, in which the distance of the object is determined by the angle of light reflected from it. Through this, objects are reliably recognized, regardless of their color and structure and erroneous operation due to objects located further away (machine parts, operating staff) is securely avoided.

application examples

- detection with background suppression on transfer systems, regardless of color
- material recognition during transport from an oscillating conveyor
- positioning and detecting in a wide range of automation applications
- ▶ tablet recognition with the use of multiple sensors
- checking the presence of a wide range of objects as well as small objects
- monitoring and detection of object heights
- contactless position recognition of small parts



OPTICAL SENSORS

2800 DIFFUSE REFLECTION SENSORS



	OTQ40100	OTQ40170	OTQ40270
sensing range	30mm	30mm	30mm
output	pnp, light-on mode npn, dark-on mode	pnp, light-on mode npn, dark-on mode	pnp, dark-on mode npn, light-on mode
connection	2m cable, PVC, 3-wire	200mm M8-cable connector, PVC, 4-pin	200mm M8-cable connector, PVC, 4-pin
	2.5	6.2 6.2 7.5 8 8 8 8 8	5 4 6.2 28 27 25 6 4 2.5 6 4 2.5 6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
TECHNICAL DATA			
sensing range	30mm	30mm	30mm
	pnp, light-on / npn, dark-on	pnp, light-on / npn, dark-on	pnp, dark-on / npn, light-on
output signai			
	11 30V DC	11 30V DC	11 30V DC
operating voltage	11 30V DC ≤ 30mA	11 30V DC ≤ 30mA	11 30V DC ≤ 30mA
operating voltage current consumption (w/o load)			
operating voltage current consumption (w/o load) output current (max. load)	≤ 30mA	≤ 30mA	≤ 30mA
operating voltage current consumption (w/o load) output current (max. load) voltage drop (max. load)	≤ 30mA 50mA	≤ 30mA 50mA	≤ 30mA 50mA
operating voltage current consumption (w/o load) output current (max. load) voltage drop (max. load) transmitting element (pulsed)	≤ 30mA 50mA 2V DC	≤ 30mA 50mA 2V DC	≤ 30mA 50mA 2V DC
operating voltage current consumption (w/o load) output current (max. load) voltage drop (max. load) transmitting element (pulsed) wavelength	≤ 30mA 50mA 2V DC LED, red light	≤ 30mA 50mA 2V DC LED, red light	≤ 30mA 50mA 2V DC LED, red light
operating voltage current consumption (w/o load) output current (max. load) voltage drop (max. load) cransmitting element (pulsed) wavelength ight spot size response/decay time	≤ 30mA 50mA 2V DC LED, red light 660nm	≤ 30mA 50mA 2V DC LED, red light 660nm	≤ 30mA 50mA 2V DC LED, red light 660nm
operating voltage current consumption (w/o load) output current (max. load) voltage drop (max. load) transmitting element (pulsed) wavelength light spot size response/decay time	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm
operating voltage current consumption (w/o load) output current (max. load) voltage drop (max. load) transmitting element (pulsed) wavelength light spot size response/decay time sampling frequency	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms
operating voltage current consumption (w/o load) output current (max. load) voltage drop (max. load) transmitting element (pulsed) wavelength light spot size response/decay time sampling frequency display (signal)	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz
output signal operating voltage current consumption (w/o load) output current (max. load) voltage drop (max. load) transmitting element (pulsed) wavelength light spot size response/decay time sampling frequency display (signal) display (soiling) interference suppression	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED
operating voltage current consumption (w/o load) output current (max. load) voltage drop (max. load) transmitting element (pulsed) wavelength light spot size response/decay time sampling frequency display (signal) display (soiling) interference suppression	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing
operating voltage current consumption (w/o load) output current (max. load) voltage drop (max. load) transmitting element (pulsed) wavelength light spot size response/decay time sampling frequency display (signal) display (soiling) interference suppression short-circuit protection	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing +	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing +	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing +
current consumption (w/o load) cutput current (max. load) cutput current (max. load) cuttage drop (max. load) cutransmitting element (pulsed) cutransmitting e	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + +	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + +	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED yellow LED, flashing + + +
operating voltage current consumption (w/o load) output current (max. load) voltage drop (max. load) transmitting element (pulsed) wavelength light spot size response/decay time sampling frequency display (signal) display (soiling) interference suppression short-circuit protection reverse polarity protection dimensions	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + + + 4x44x6.2mm	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + + + 4x44x6.2mm	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + + 4x44x6.2mm
operating voltage current consumption (w/o load) output current (max. load) voltage drop (max. load) transmitting element (pulsed) wavelength light spot size response/decay time sampling frequency display (signal) display (soiling) interference suppression short-circuit protection reverse polarity protection dimensions housing material	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + +	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + +	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + + 4x44x6.2mm plastic (ASA)
operating voltage current consumption (w/o load) output current (max. load) voltage drop (max. load) transmitting element (pulsed) wavelength light spot size response/decay time sampling frequency display (signal) display (soiling) interference suppression short-circuit protection reverse polarity protection dimensions housing material front screen material	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + + + 4x44x6.2mm plastic (ASA)	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + + + 4x44x6.2mm plastic (ASA)	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + + 4x44x6.2mm
operating voltage current consumption (w/o load) output current (max. load) voltage drop (max. load) transmitting element (pulsed) wavelength light spot size response/decay time sampling frequency display (signal) display (soiling) interference suppression short-circuit protection reverse polarity protection dimensions housing material front screen material operating temperature	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + + + 4x44x6.2mm plastic (ASA) PMMA	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + + + 4x44x6.2mm plastic (ASA) PMMA	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + + 4x44x6.2mm plastic (ASA) PMMA
operating voltage current consumption (w/o load) output current (max. load) voltage drop (max. load) transmitting element (pulsed) wavelength light spot size response/decay time sampling frequency display (signal) display (soiling)	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + + + 4x44x6.2mm plastic (ASA) PMMA -10 +50°C IP65 2m cable,	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + + 4x44x6.2mm plastic (ASA) PMMA -10 +50°C IP65 200mm M8-cable connector,	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + + 4x44x6.2mm plastic (ASA) PMMA -10 +50°C IP65 200mm M8-cable connector,
operating voltage current consumption (w/o load) output current (max. load) voltage drop (max. load) transmitting element (pulsed) wavelength light spot size response/decay time sampling frequency display (signal) display (soiling) interference suppression short-circuit protection reverse polarity protection dimensions housing material front screen material operating temperature degree of protection (EN 60529)	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + + 4x44x6.2mm plastic (ASA) PMMA -10 +50°C IP65	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + + 4x44x6.2mm plastic (ASA) PMMA -10 +50°C IP65	≤ 30mA 50mA 2V DC LED, red light 660nm 2mm < 0.5ms 1kHz yellow LED yellow LED, flashing + + + 4x44x6.2mm plastic (ASA) PMMA -10 +50°C



article-no.	OTQ40173	OTQ40273
sensing range	50mm	50mm
output	pnp, light-on mode	pnp, dark-on mode
	npn, dark-on mode	npn, light-on mode
connection	200mm M8-cable connector, PVC, 4-pin	200mm M8-cable connector, PVC, 4-pin
	6.2 6.2 3.5 4.5 2.5 6.7 4.7 2.5 6.7 4.7 8.8 M8x1	5 4 2 8 2.5 6 2.5 8 M8x1 8
TECHNICAL DATA		
sensing range	50mm	50mm
output signal	pnp, light-on / npn, dark-on	pnp, dark-on / npn, light-on
operating voltage	11 30V DC	11 30V DC
current consumption (w/o load)	≤ 30mA	≤ 30mA
output current (max. load)	50mA	50mA
roltage drop (max. load)	2V DC	2V DC
ransmitting element pulsed	LED, red light	LED, red light
vavelength	660nm	660nm
ght spot size	2mm	2mm
esponse/decay time	< 0.5ms	< 0.5ms
ampling frequency	1kHz	1kHz
lisplay (signal)	yellow LED	yellow LED
isplay (soiling)	yellow LED, flashing	yellow LED, flashing
nterference suppression	+	+
hort-circuit protection	+	+
everse polarity protection	+	
limensions	4x44x6.2mm	4x44x6.2mm
nousing material	plastic (ASA)	plastic (ASA)
ront screen material	PMMA	PMMA
pperating temperature	-10 +50°C	-10 +50°C
degree of protection (EN 60529)	IP65	IP65
connection	200mm M8-cable connector,	200mm M8-cable connector,
	PVC, 4-pin	PVC, 4-pin
connection accessories	e.g. VK200375 , 2m, straight	e.g. VK200375 , 2m, straight
mounting accessories	e.g. AO000154 profile adapter	e.g. AO000154 profile adapter
mounting accessories (universal holder)	AY000116	AY000116

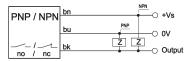
OPTICAL SENSORS

2800 DIFFUSE REFLECTION SENSORS



connection

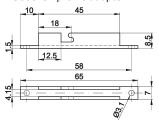
cable device



wire colors: bn = brown (1), bu = blue (3), bk = black (4)

accessories

AO000154 profile adapter



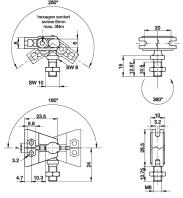
mounting examples

sensor with profile adapter

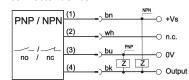




universal holder AY000116 consisting of base module ...

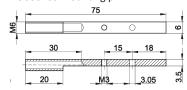


connector device



Note: Do not use the push-pull stage pnp/npn simultaneously!

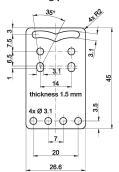
AO000163 mounting pin



sensor with mounting pin



and fitting panel



ACCESSORIES

ACCESSO MES			
article-no.	description	material	
AO000154	profile adapter for aluminum system profiles	aluminum	
AO000163	mounting pin	nickel-plated brass	
AY000088	base module *	jaw: stainless steel, ball pin: galvanized steel	
AY000116	mounting kit for design OTQ4	stainless steel	

^{*} The AY000088 base module is contained in every mounting kit. Material of bolts and nuts: galvanized steel

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