



OTQ80470

Operating instructions

Document version: V1.0

28.7.2026

Table of contents

1	General notes	3
1.1	Affected products	3
1.2	Display of notes	3
1.3	Qualified personnel	4
1.4	Intended use	4
1.5	Personal safety	4
1.6	Brands	4
1.7	Disclaimer	4
2	Drawings	5
2.1	Light Beam Path	5
3	Diagrams	6
3.1	Sensing range diagram	6
3.2	Hysteresis curve	6
4	Assembly	7
5	Description of the LED displays	8
5.1	LED display	8
5.2	Legend	8
5.3	Operational mode	8
5.4	Description of teach-in levels 1 & 2	9
6	Teach-in instructions	10
6.1	Select Teach Level	10
6.2	General Information	10
7	Appendix	11
7.1	technical data	11

1 General notes

1.1 Affected products

This document describes the operation of the following IPF products:

OTQ80470



Optical sensor, diffuse reflection sensor, 25x16x8mm, Sn: 20–120, 10–30 V DC, 1x PNP exclusive-OR, 4-pin M8 connector, 0.2 m PVC cable, IP67, ASA+PMMA plastic, 1 kHz, unpolarized red light, point, teach-in

1.2 Display of notes

This documentation contains important notes for the contactor's safety and to prevent damage to property. Read the safety instructions carefully and keep the documentation to hand at all times. The safety instructions are presented in descending order according to the respective hazard level as follows:

Danger



Note on an immediate danger to humans. Will lead to irreversible injuries or death if not observed.

Warning



Note on a recognizable danger to humans. Can lead to irreversible injuries or death if not observed.

Caution



Note on a recognizable danger to people or possible damage to property. Can lead to reversible injuries or damage to property if not observed.

Attention



Note on possible damage to property. Can lead to material damage if not observed.

note

Under Notes you will find tips, recommendations and useful information on specific steps and issues.

Tip

Under Tips, you will find tips and tricks as well as recommendations from ipf that have proven helpful when using the products.

1.3 Qualified personnel

The product associated with this documentation may only be handled by personnel who are qualified for the respective task. Installation, start-up and operation of the device may only be carried out in accordance with the associated documentation and the safety instructions contained therein.

Qualified personnel are able to recognize risks and avoid possible hazards when handling these products due to their training and experience.

1.4 Intended use

IPF products may only be used for the applications specified in the corresponding technical documentation. If third-party products or components are used, they must be recommended or approved by IPF. Proper storage, set-up, assembly, installation, start-up, operation and maintenance are prerequisites for the proper and safe operation of the products. In addition, the permissible environmental conditions must be complied with and all notes in the associated documentation must be observed.

1.5 Personal safety

Warning

The use of these products in applications with a direct impact on personal safety is not permitted.

1.6 Brands

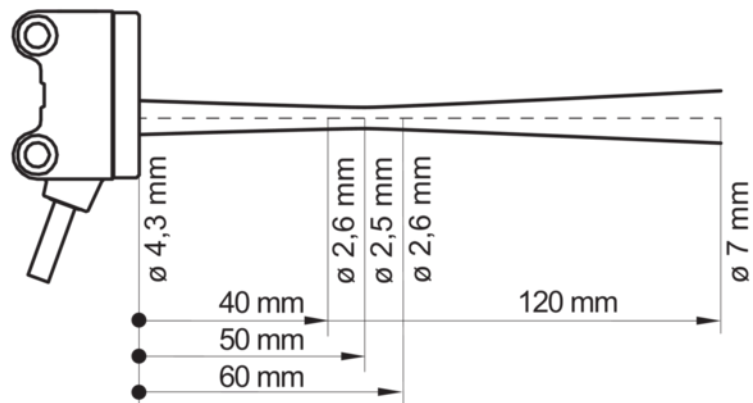
All descriptions marked with the ® symbol are registered trademarks. The other descriptions in this document may be trademarks whose use by third parties for their own purposes may infringe the rights of the owner.

1.7 Disclaimer

IPF accepts no liability for malfunctions or damage resulting from improper handling, mechanical damage, incorrect application or improper use of the product. The contents of this publication have been carefully certified to correspond to the product described. Nevertheless, deviations cannot be completely ruled out, so that no guarantee can be given for complete conformity. The information in this publication is regularly checked and, if necessary, corrected or supplemented in subsequent editions.

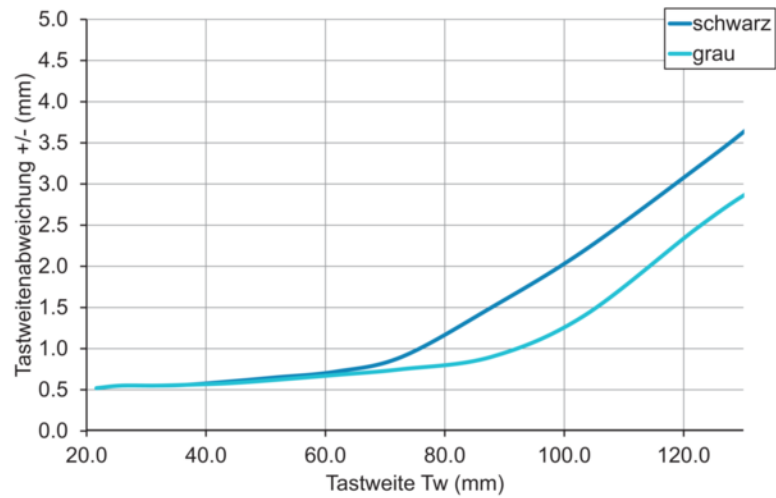
2 Drawings

2.1 Light Beam Path

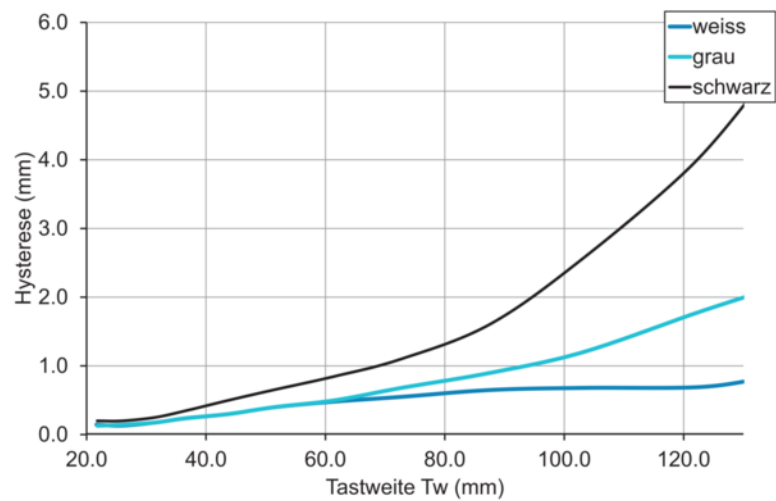


3 Diagrams

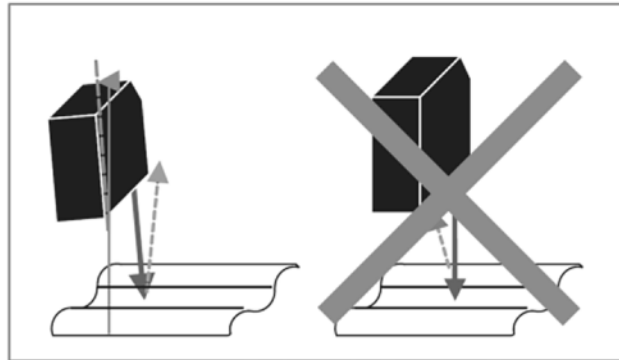
3.1 Sensing range diagram



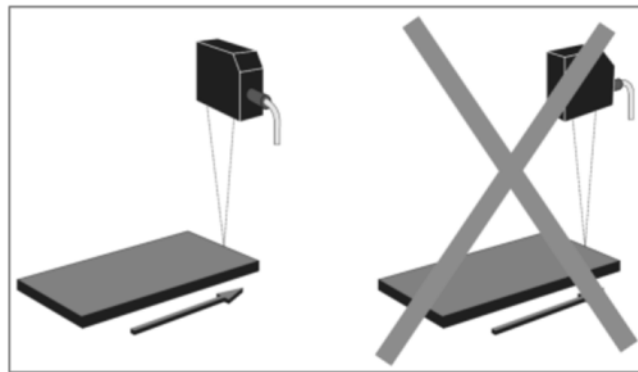
3.2 Hysteresis curve



4 Assembly



Direct reflections from shiny or reflective objects should not hit the receiver. This can be avoided by tilting the sensor slightly.



Make sure that the object to be recognized moves laterally within the beam path. This will help prevent erroneous operations at the edge of the object.

5 Description of the LED displays

5.1 LED display



5.2 Legend

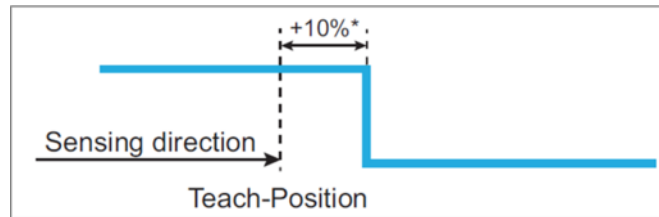
 	LED is lighted
 	LED flashes at 1Hz
 	LED flashes at 2Hz
 	LED flashes at 8Hz

5.3 Operational mode

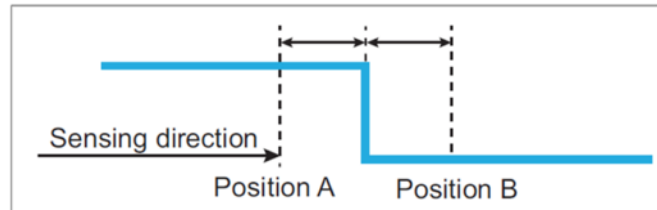
LED indicators	Green	Yellow
Operating mode display		
Short circuit		
Output 1 active		
Output 1 signal near the switching frequency		
Teach-in mode	See the teach-in instructions	See the teach-in instructions

5.4 Description of teach-in levels 1 & 2

Level 1 = 1-point teach-in: sets the switching point at the object's position +10%



Level 2 = 2-point teach-in: sets the switching point at the midpoint between positions A and B

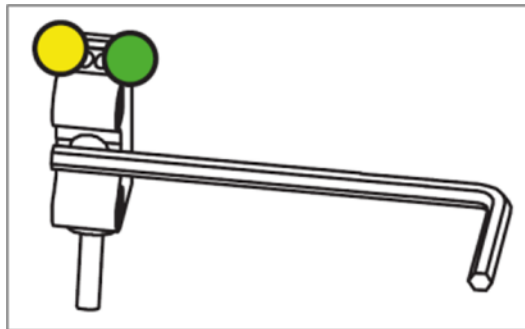


6 Teach-in instructions

6.1 Select Teach Level

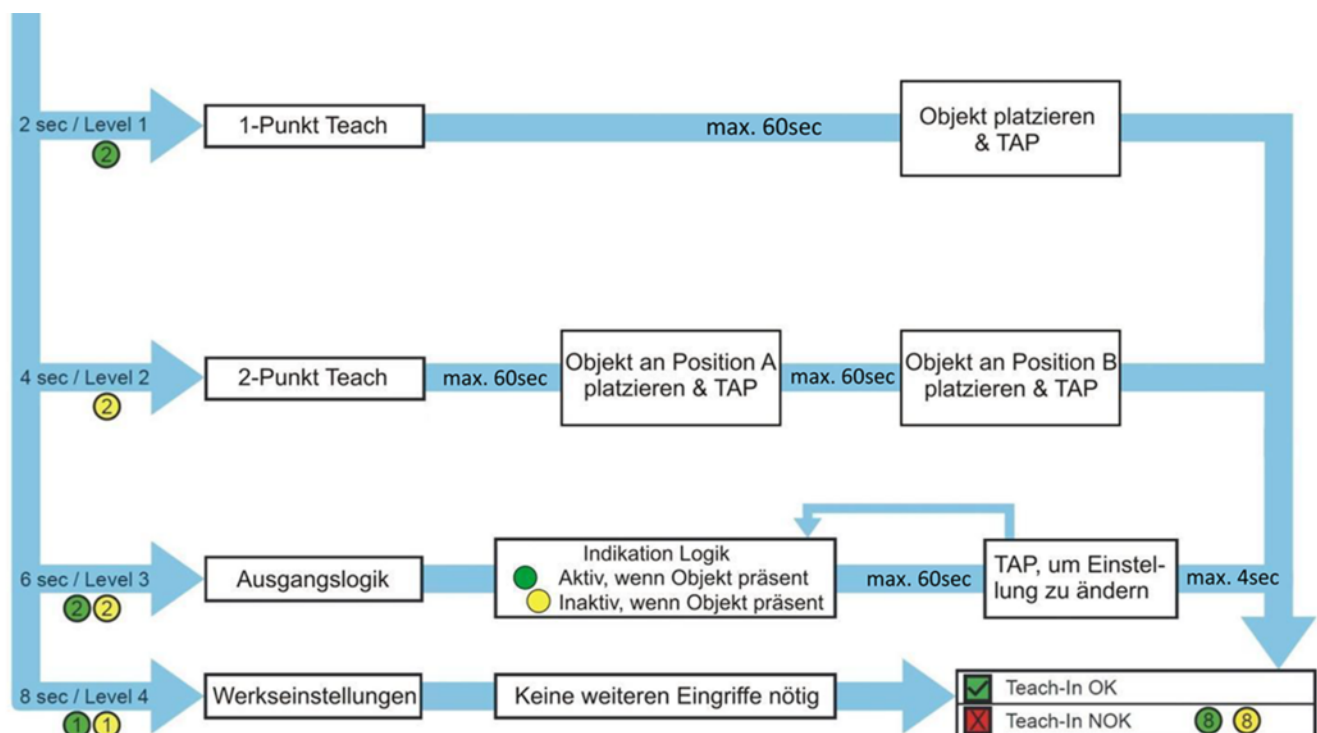
- Place a ferromagnetic tool as shown below.
- The green and yellow LEDs will light up when the tool is recognized correctly.
- Remove the tool after n seconds to select the desired level.

A TAP is a brief contact (>100 ms) with the tool, as shown below.



6.2 General Information

- Teach-in with a tool is locked 5 minutes after power-on.
- If you need to perform teaching after this time, disconnect the device from the operating voltage and turn it back on.
- In teach mode, the output switches to 0 V.
- Place tool > 2 sec: Teach-in is exited without changes



7 Appendix

7.1 technical data

OTQ80470

Optical sensors • Diffuse reflection sensors with background suppression

Optical sensor, diffuse reflection sensor, 25x16x8mm, Sn: 20–120, 10–30 V DC, 1x PNP exclusive-OR, 4-pin M8 connector, 0.2 m PVC cable, IP67, ASA+PMMA plastic, 1 kHz, unpolarized red light, point, teach-in

- / Suppression of mutual interference
- / plastic housing
- / Setting by teach-in
- / M8 plug connection



background suppression visible red light

The **OTQ80470** uses a pinpoint LED that emits a point-shaped, pulsed red light with a wavelength of 644 nm. The sensor's sensing range is 3 to 132 mm, and the adjustment range is 20 to 120 mm. The sensor has short-circuit and reverse polarity protection, making it particularly robust and safe in operation. With a switching frequency of up to 1 kHz and a response time of 0.5 ms, the sensor features background suppression (electronic), the sensor is extremely fast and precise.

Advantages

- PinPoint LED (small, homogeneous light spot), pulsed red light
- Teach-in function
- Suppression of mutual interference

Retro-reflective sensors with background suppression

Reflective sensors with background suppression perform recognition to determine whether an object is within the set switching distance. Objects located outside this range are suppressed as background and do not trigger a switching signal. Unlike active retro-reflective sensors, the switching point for retro-reflective sensors with background suppression is largely independent of the object's reflectivity. The product portfolio includes reflective sensors with background suppression that operate either according to the triangulation principle (mechanical/electronic) or the time-of-flight principle.

Triangulation (electronic)

In triangulation sensors with electronic switching point adjustment, the light reflected by the object is projected onto a receiving element in the sensor, such as a PSD (Position Sensitive Device). The position of the light spot on the receiving element is electronically evaluated and used to determine the distance to the object. Depending on the sensor model, the switching point can be set either via a teach-in button or via IO-Link.

Electrical features

Response/decay time	0.5 ms
Number of switching outputs	1
Display	Operating mode display: LED green Switching state display: yellow LED
Type of switching function	Exclusive-OR
Type of electrical connection	Cable connector M8
Type of switching output	PNP
Rated switching current	50 mA
Setting procedure	Teach-In
Operating principle	background suppression
No-load current	40 mA
Number of pins	4
Switching distance	20 - 120 mm
Switching frequency	1000 Hz
Voltage drop	2 V
Scanning function	Light-/dark-on mode
Decay time	0.5 ms
Measurement principle	Triangulation (electronic)
Operating voltage (DC)	10 - 30 V
Dead zone	0 - 3 mm
Electrical connection	M8 4-pin cable connector, 0.2 m
Operating voltage	10–30 VDC
ardTEEL_Schutzfunktionen	Short circuit protection Reverse polarity protection

Mechanical features

Conductor cross-section	0.08 mm ²
Design	Cuboid
Width	8 mm
Height	25.1 mm
Cable length	0.2 m
Length	15.8 mm
Degree of protection (IP)	IP67
Active area material of sensor	Plastic (PMMA)
Housing material	Plastic ASA
Material of cable sheath	Plastic (PVC)
Working distance range	3 - 132 mm
Ambient temperature	-25 - 50 °C
dimensions	15.8 x 8 x 25.1 mm
Optical axis alignment	1.5 °

Optical features

Light source	PinPoint-LED, Rotlicht gepulst
Light beam form	Point
Wavelength of the sensor	644 nm
Light spot diameter at the start of the measuring range	4.3 mm
Light spot diameter at the end of the measuring range	7 mm

Other features

Range of functions	interference suppression
Reference medium / object	Material with 90% reflectivity

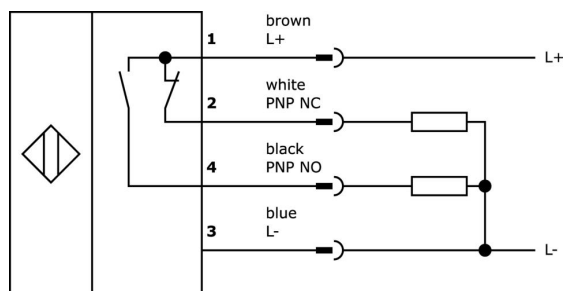
Classification

ETIM 8

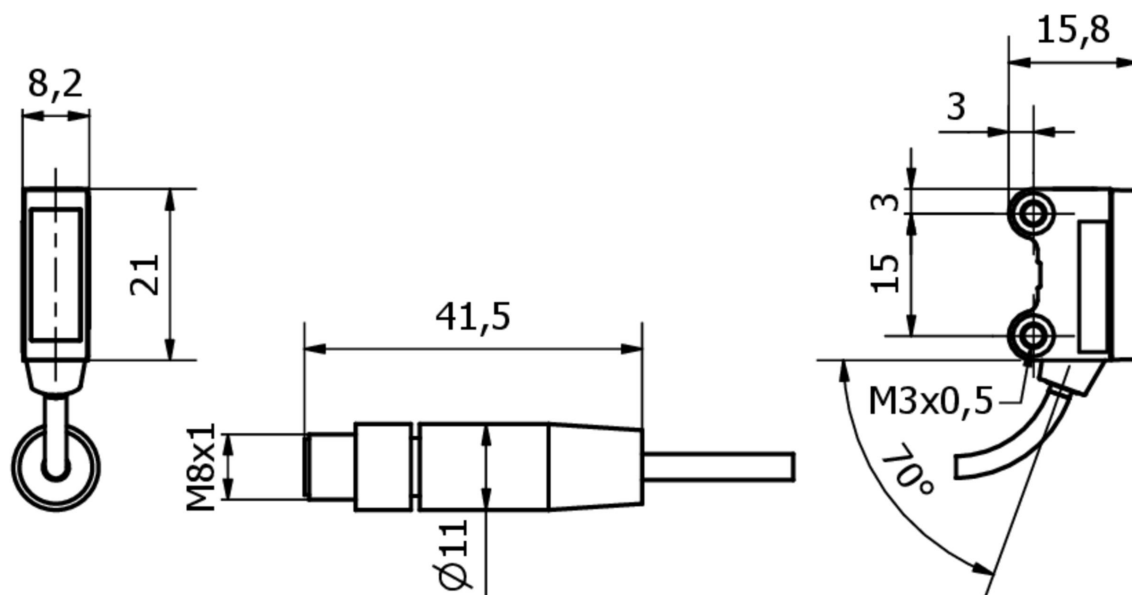
More

IPF Product Group	100 optical sensors
packaging dimensions	123 x 77 x 25 mm
gross weight	34 g
Customs tariff number	85365019
WEEE number	40951076
OzDS-compliant	Yes
POP-compliant	Yes
Reach-compliant	Yes
RoHS-compliant	Yes

Connection



Dimensional drawing



Extract accessories program

VK003071



Cable socket, Angular, Suitable for self-assembly, Soldering connection, Ø3.5-5mm, 4A, 30V, -40-85°C, M8 Female (socket) 4pin, IP67, Brass

VK003075



Cable socket, Straight, Suitable for self-assembly, Soldering connection, Ø3.5-5mm, 4A, 30V, -40-85°C, M8 Female (socket) 4pin, IP67, Brass

AO000075



accessories optical, Mounting angle bracket, M3x0.5 12long, Mounting material for sensor, brackets, Steel

AO000076



accessories optical, Mounting angle bracket, M3x0.5 13long, Mounting material for sensor, brackets, Steel

AY000141



Plastic sheath, Ø17mm, Inner diameter 10mm, -40-250°C, Glass fiber with silicone rubber, Short-term resistance to weld spatter 1200°C, Tensile strength 400N, Flexible, Flame retardant, yard good

VK200371



Connection cable, 2m, M8 socket 4-pin angular, free cable end, 4x0.34mm², PUR (polyurethane), Ø4.7mm, 30V, -30-90°C, IP67, suitable for trailing chain and torsion resistant, oils and cooling lubricants, welding area, silicone-free

VK200375



Connection cable, 2m, M8 socket 4-pin straight, free cable end, 4x0.34mm², PUR (polyurethane), Ø4.7mm, 30V, -30-90°C, IP67, suitable for trailing chain and torsion resistant, oils and cooling lubricants, welding area, silicone-free

You can find further accessories on our homepage

**Installation**

Mounting / installation may only be carried out by a qualified electrician!

**Disposal**

WEEE number according to § 6 para. 3
ElektroG: 40951076

Safety warnings

- /** Before initial operation, please make sure to follow all safety instructions that may be provided in the product information.
- /** Never use these devices in applications where the safety of a person depends on their functionality.

TECHNICAL ADVICE

Tel +49 2351 9365-65

hotline@ipf.de

ipf electronic gmbh

Rosmarter Allee 14 - 58762 Altena - Germany
www.ipf-electronic.com

Head office

Phone +49 2351 9365-0
info@ipf-electronic.com

Opening hours

Monday - Thursday: 07:30 - 16:00
Friday: 07:30 - 15:00