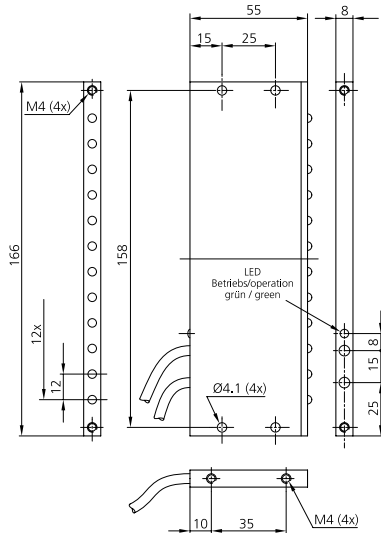
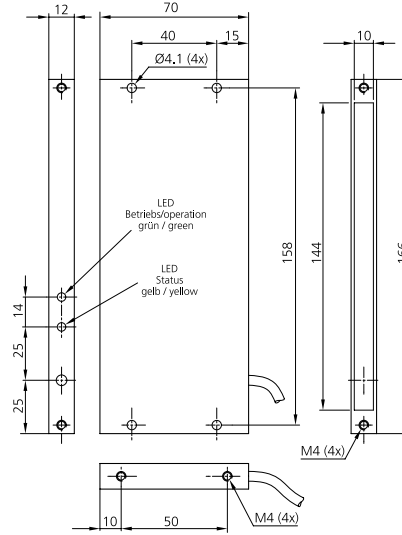


Light barrier system for detection of silicon wafer double layers and fragments

Transmitter OLGSP 12/12 M 50 D-K2.5-TS



Receiver OLGEP 12/12 M 50 G2-K2.5-TS



Technical data at 20°C / 24 V DC

Operating voltage	24 V ± 10% DC
Internal power consumption	OLGSP: max. 130 mA OLGEP: max. 150 mA
Switching output	OLGEP: push-pull transistor output
Switching current	OLGEP: 200 mA
Overload protection / Short-circuit protection	OLGEP: present, clocked
Voltage drop	OLGEP: < 2.0 V
Switching function	OLGEP: normally open / dark-switching (NO) [relates to PNP]
Inverse polarity protection	Present (on all connection cables)
Working distance between transmitter/receiver	≤ 50 mm (recommended) NB: greater distances may be possible depending on wafer and can be checked if required using appropriate tests.
Detection width	Switch between 156 mm / 125 mm using "selection" pin (0V = detection width 156 mm, 24V = detection width 125 mm)
Maximum penetrable wafer thickness	300 µm (mono- or polycrystalline silicon wafer material)
Object resolution	≥ 15 mm fragments as double layer on standard wafer
System response time	< 20 ms incl. electronic wafer edge faulty pulse suppression
Switching frequency	15 Hz
Transmitting power adjustment	OLGSP: digitally adjustable 0...100 % (Description of digital interface on page 2)
Emitted light	Infrared, clocked
Ambient temperature	+ 5°C ... + 40°C
Protection category / Protection class	IP 67 / III
CE conformity	Compliant
Device connection OLGSP	Main connection: 2.5 m cable (PU) with M8 device connector, 3-pin (pin 1 = +24V, pin 3 = 0V, pin 4 = selection input [0/24V]) Digital transmitting power adjustment: 2.5 m cable (PU) with M8 device connector, 4-pin (pin 1 = U/D, pin 2 = CS, pin 4 = INC, all signals 24V level, pin 3 = 0V)
Device connection OLGEP	2.5 m cable (PU) with M8 device connector, 4-pin (pin 1 = +24V, pin 3 = 0V, pin 4 = output, pin 2 = selection input [0/24V])
Displays	Operating LED, green also in OLGEP: Switching output LED, yellow Transmitter and receiver with centre marking
Housing material	Aluminium, black, anodised
Dimensions (H x W x D)	OLGSP: 55 x 166 x 8 mm OLGEP: 70 x 166 x 12 mm

Light barrier system for detection of silicon wafer double layers and fragments

Brief description:

This through-beam optical system consists of 2 individual light barriers (with the option of switching to a reduced detection width with 10 individual light barriers) in the infrared range with very high material penetration. The system is specially designed to detect fragments and double layers of silicon wafers in the standard widths of 156 mm and 125 mm.

Notes on installation:

The receiver should be positioned ≤ 10 mm from the wafer. It is just as important to align the transmitter exactly with the receiver as it is to adjust the complete system to the wafer. Reflections should be avoided in the immediate vicinity of the system. There are centre markings to help align the system.

Setup:

Once the correct detection width has been selected, the wafer should be positioned in the centre of the light path. The transmitting power should then be adjusted downwards using the digital interface until the output switches. It should then be increased again until the output switches off. It is now possible to set a functional reserve by further increasing the transmitting power. The system is now ready for use. The wafer in the light path is exposed to the infrared beam and the system can start detecting double layers and fragments. The resulting object resolution depends on the wafer material, wafer thickness, working distance and set functional reserve.

Selecting the detection width:







On both the transmitter and the receiver, the detection width can be adjusted from 156 mm to 125 mm on the selection pin.

	Detection width 156 mm	Detection width 125 mm
Transmitter	Pin 4* = 0 V	Pin 4* = 24 V
Receiver	Pin 2 = 0 V	Pin 2 = 24 V

* Information applies to main connection

Description of interface for digitally adjusting transmitting power:

The digital potentiometer for adjusting transmitting power is fully controlled via the 4-pin cable on the transmitter strip. The potentiometer resolution is 100 steps; for reliable control we recommend a minimum command duration of 10 ms / step:

Operating mode (24V signal level)			
CS	INC	\bar{U}/D	
H		L	Increase transmitting power (UP)
H		H	Reduce transmitting power (DOWN)
	L	x	Store set transmitting power (STORE)
L	x	x	Normal operation (STANDBY)
	H	x	Do not store, return to normal mode
	H	L	Not permitted
	H	H	Not permitted

Other information:



The transmitter emits highly concentrated, invisible infrared light at the set level of transmitting power. In some circumstances this infrared light may be hazardous to the human eye. It must be handled in accordance with the safety guidelines of IEC standard 62471 (photobiological safety of lamps and lamp systems).