

SENSE WITH SIMPLICITY AND CONFIDENCE
PHOTOELECTRIC FIBER AMPLIFIER
SU18 AND SU19 SERIES



**SU18-16
POTENTIOMETER**

POTENTIOMETER SENSITIVITY ADJUSTMENT

- Mechanical teach

LED INDICATOR

- Bright and large LEDs

DETECTION MODE SELECTION

- Normal, high speed, high resolution

TIMER MODE SELECTION

- Timer off, on delay, off delay

LO/DO SELECTION

- Light on, dark on

**SU18
PUSHBUTTON**

FIBER LOCK KEY

- Lock fibers to the amplifier

PUSHBUTTON PROGRAMMING

- Auto teach

DIN RAIL LOCK

- Easy installation and quick release on the DIN rail

**SU19
MAIN AND EXPANSION**

LED INDICATOR

- Status green and yellow LEDs

DIAGNOSTIC DISPLAY

- 4-digit display

SET KEY

- Make selection, teach-in

UP AND DOWN KEY

- Browse menu, fine-tuning of sensitivity and time delay

MODE KEY

- Enter or exit maintenance mode (for menu selection)

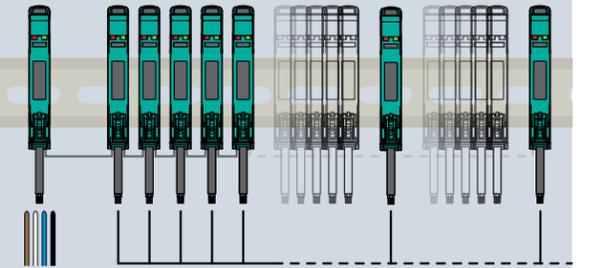
Percentage display

The percentage display is easily interpreted. A single decimal point gives it the added resolution. Interpretation is easy, and set-up time is minimized.

- 100.0% = Switching threshold
- 300.0% = Triple the light needed to switch the output
- 999.9% = Saturation

ADVANTAGE OF GANG-MOUNTING METHOD

UP TO 70% LESS WIRES	Traditional wiring	18 Main Units	x 4 Wires per Unit	= 72 Total Wires
	Main and expansion wiring	4 Wires (1 main unit)	+ 17 Expansion Units (1 wire each)	= 21 Total Wires



For expansion unit amplifier, JUST connect one wire!

MAIN UNIT-EXPANSION UNIT INTERFACE

- Gang-mounting of up to 18 amplifiers
- Cross-talk protection
- Lower installation costs



COMPARISON

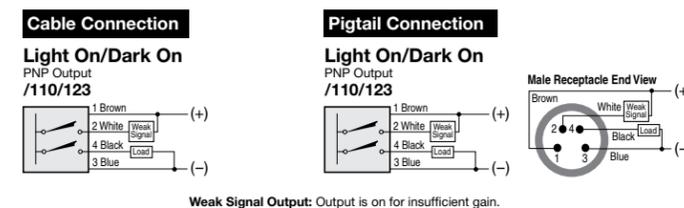
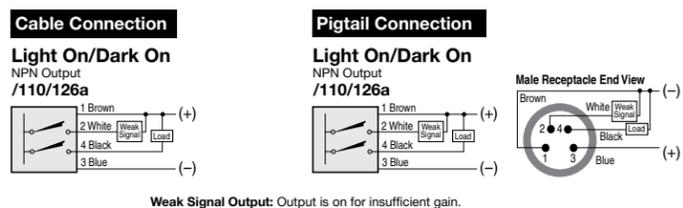
	SU18-16 Potentiometer	SU18 Pushbutton	SU19 Main and Expansion
Indication	Green and yellow LEDs	Green and yellow LEDs	Green and yellow LEDs
4-Digit Display	No	No	Yes
Potentiometer Adjustment	■		
Pushbutton Programming		■	■
Clear Object Detection			■
Remote-Teach Input		■	■
Quick Disconnect Models	■	■	
Switching Frequency	6 kHz	6 kHz	16 kHz
Gang-Mounting			■

SPECIFICATIONS

Model Number(s)	Potentiometer Adjustable		Pushbutton Programming	
	SU18-16/40a/110/115/126a	SU18-16/40a/110/115a/126a	SU18-40a/110/115/123	SU18-40a/110/115a/123
Sensing Range	Determined by cable		Determined by cable	
Sensitivity Adjustment	Yes		Yes	
Output  /110	4-in-1*		4-in-1*	
Load Current	100 mA max.		100 mA max.	
Voltage Drop	≤ 2.0 VDC		≤ 2.0 VDC	
Short Circuit and Overload Protection	Yes		Yes	
Reverse Polarity Protection	Yes		Yes	
Supply Voltage	10-30 VDC		10-30 VDC	
Voltage Ripple	10%		10%	
LED(s)	Yes (2)		Yes (2)	
Current Consumption	≤ 30 mA		≤ 30 mA	
Operating Mode	Light on/dark on		Light on/dark on	
Response Time	<i>high resolution</i>	2 ms	2 ms	2 ms
	<i>standard</i>	160 μs	160 μs	160 μs
	<i>high speed</i>	80 μs	80 μs	80 μs
Readiness Delay	≤ 300 ms		≤ 300 ms	
Timer Function	On delay, off delay		On delay, off delay	
Switching Frequency	6 kHz		6 kHz	
Protection (IEC)	IP50		IP50	
Light Source	Visible red LED 660 nm		Visible red LED 660 nm	
Ambient Light Resistance	≤ 10,000 lux (sunlight)		≤ 10,000 lux (sunlight)	
	≤ 5,000 lux (incandescent)		≤ 5,000 lux (incandescent)	
Temp. Range	<i>working</i>	14 °F to 131 °F	14 °F to 131 °F	14 °F to 131 °F
	<i>storage</i>	-4 °F to +158 °F	-4 °F to +158 °F	-4 °F to +158 °F
Housing Material	Polycarbonate		Polycarbonate	
Weight	1.6 oz		1.6 oz	
Standards	EN 60947-5-2		EN 60947-5-2	
Approvals				
Electrical Connection	 2 m cable, PVC covered, 4-conductor, #26 AWG	 200 mm pigtail, PVC covered, quick disconnect	 2 m cable, PVC covered, 4-conductor, #26 AWG	 200 mm pigtail, PVC covered, quick disconnect

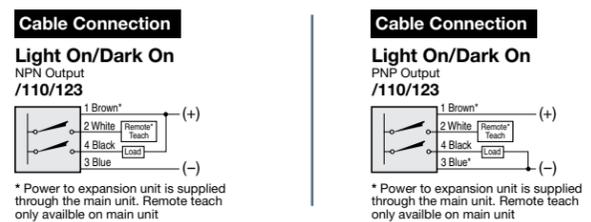
* NPN normally open, NPN normally closed, PNP normally open, PNP normally closed

ELECTRICAL CONNECTION (SU18 SERIES)



Main Unit	Expansion Unit
SU19/110/115/123	SU19.1/110/115
Determined by cable	Determined by cable
Yes	Yes
4-in-1*	4-in-1*
100 mA max.	100 mA max.
≤ 2.0 VDC	≤ 2.0 VDC
Yes	Yes
Yes	Yes
10-30 VDC	10-30 VDC
10%	10%
Yes (2)	Yes (2)
≤ 30 mA	≤ 30 mA
Light on/dark on	Light on/dark on
2 ms	2 ms
160 μs	160 μs
30 μs	30 μs
≤ 300 ms	≤ 300 ms
On delay, off delay, one shot	On delay, off delay, one shot
16 kHz	16 kHz
IP50	IP50
Visible red LED 660 nm	Visible red LED 660 nm
≤ 10,000 lux (sunlight)	≤ 10,000 lux (sunlight)
≤ 5,000 lux (incandescent)	≤ 5,000 lux (incandescent)
14 °F to 131 °F	14 °F to 131 °F
-4 °F to +158 °F	-4 °F to +158 °F
Polycarbonate	Polycarbonate
1.6 oz	1.6 oz
EN 60947-5-2	EN 60947-5-2
	
 2 m cable, PVC covered, 4-conductor, #26 AWG	 2 m cable, PVC covered, 1-conductor, #24 AWG

ELECTRICAL CONNECTION (SU19 SERIES)



Potentiometer version

SU18-16/40a/110/115/126a
SU18-16/40a/110/115a/126a



Top view

Pushbutton version

SU18-40a/110/115/123
SU18-40a/110/115a/123



Top view

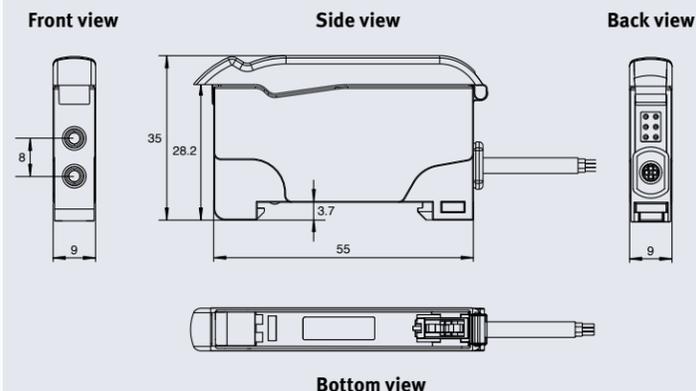
Diagnostic display version

SU19/110/115/123
SU19.1/110/115

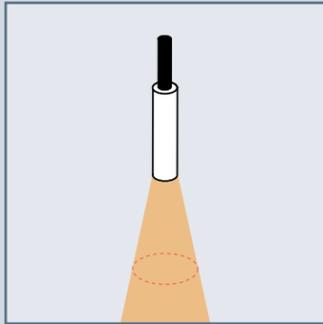


Top view

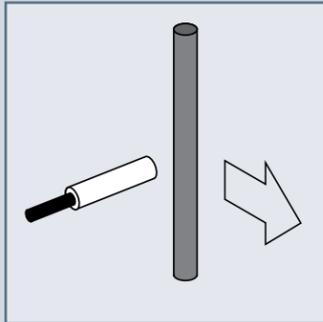
Dimensions (mm)



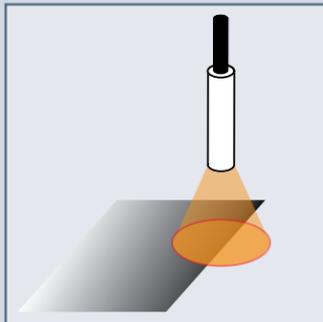
AUTO TEACH-IN FUNCTION



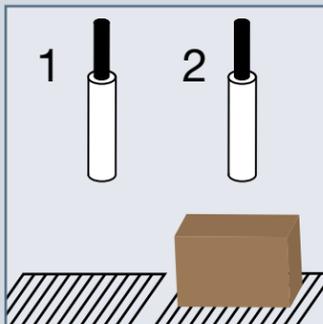
Teach to maximum



Dynamic teach-in

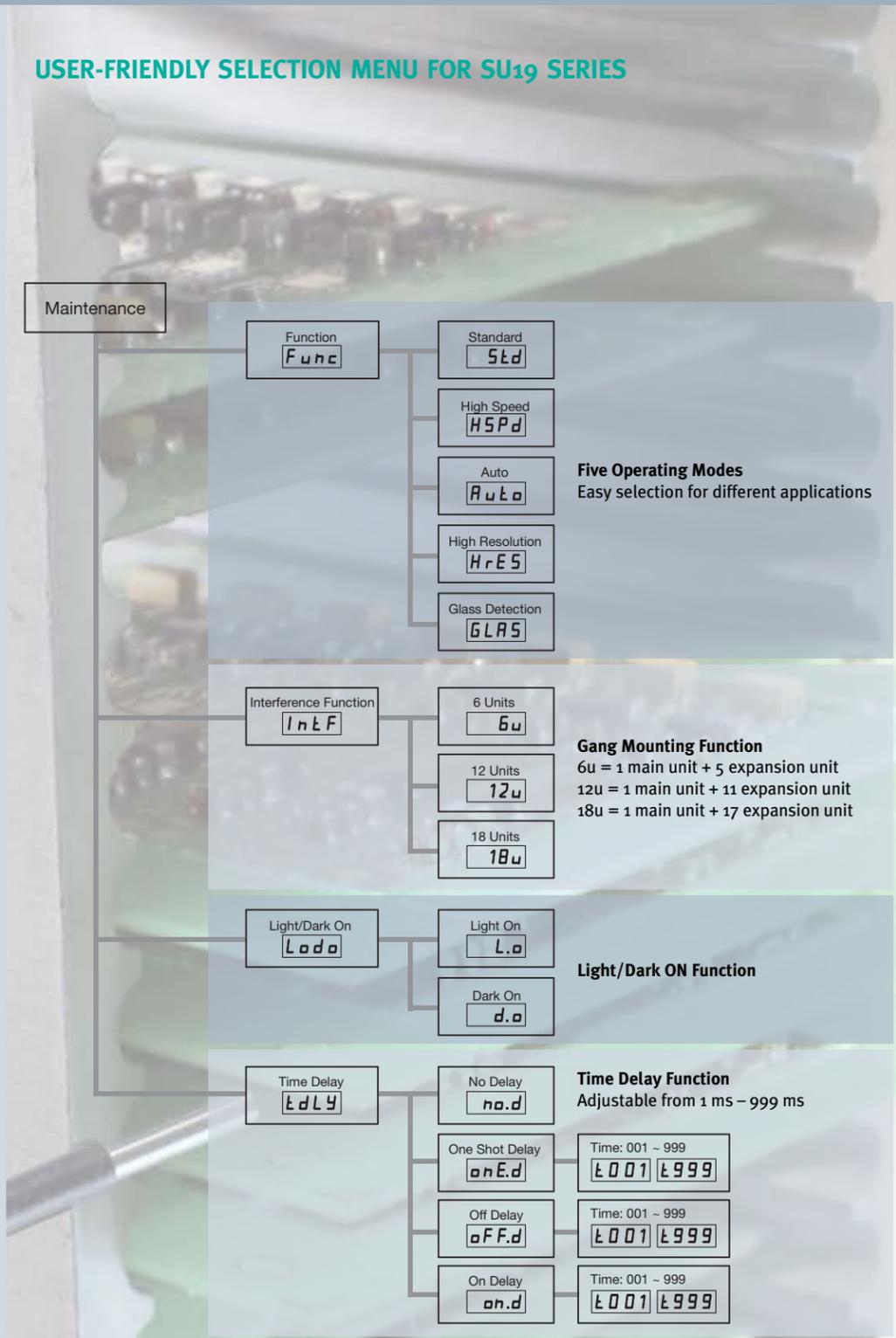


Teach to position



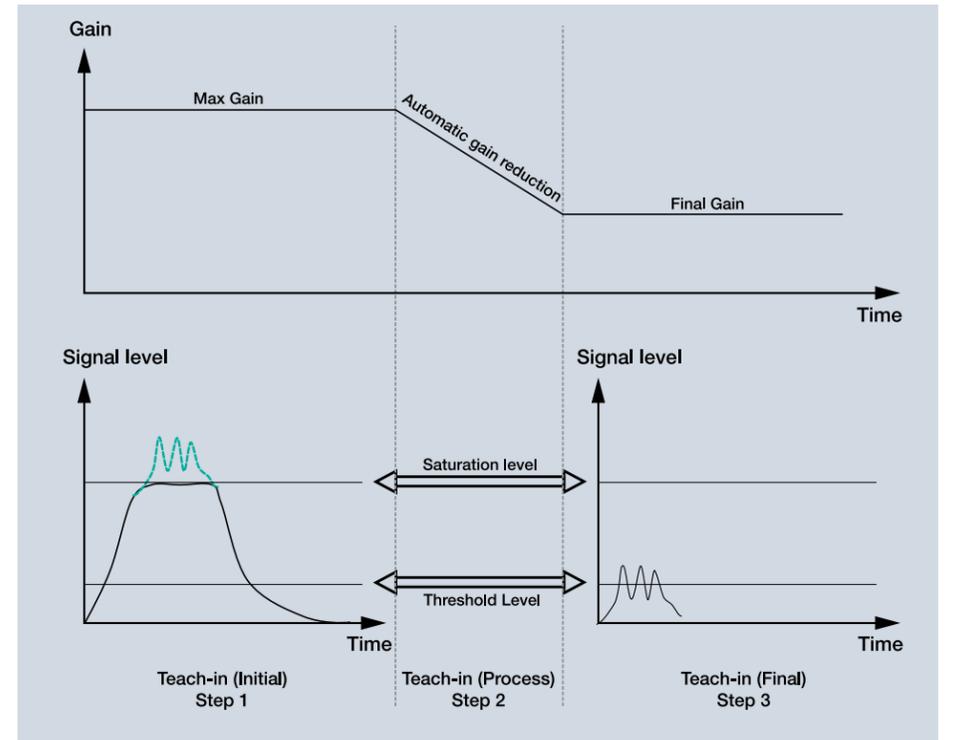
Two-point teach-in (SU19 Series only)

USER-FRIENDLY SELECTION MENU FOR SU19 SERIES

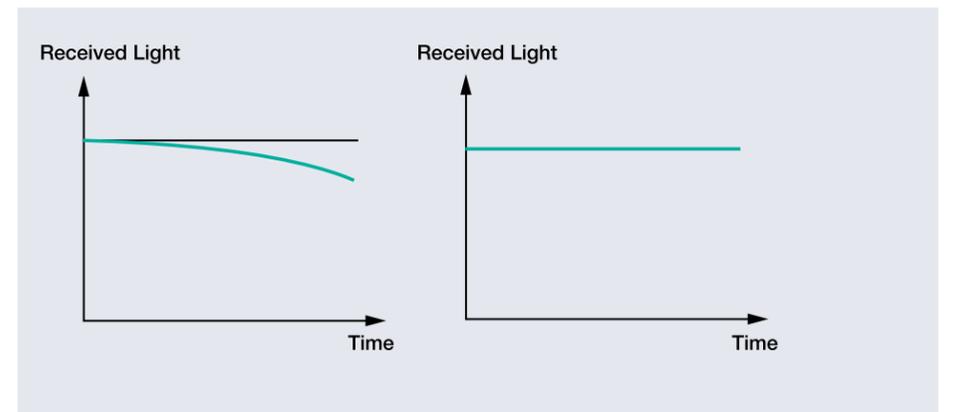
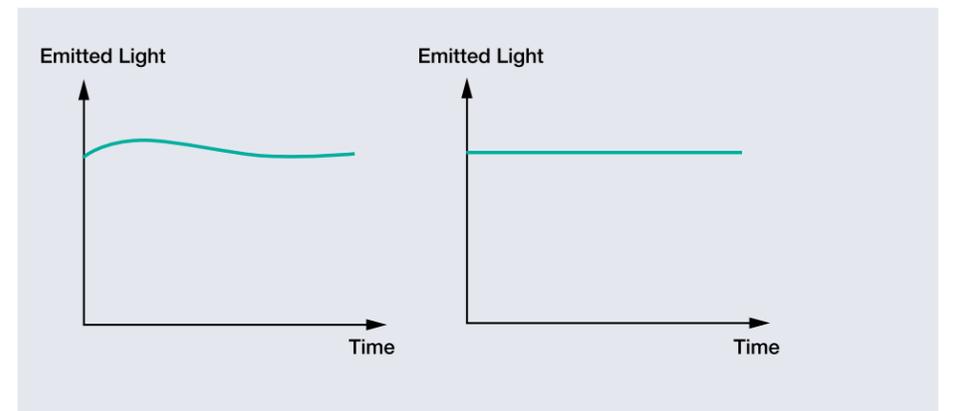


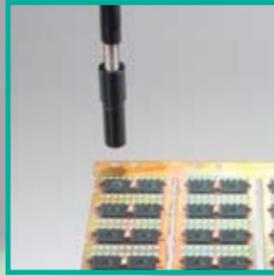
SUMMARY OF GAIN CONTROLS USED IN THE SU19

The SU19 automatically adjusts to compensate for oversaturation conditions. Oversaturation can occur when the target is too close or reflects too much light back to the sensor, effectively blinding the unit.



The SU19 automatically monitors the LED power to maintain a constant light level. This guarantees stable light output at startup and throughout its lifetime.





DIFFUSE MODE

Model number: HPF-Do10 and HPF-LU01
Description: Precise PCB orientation check
Advantage: Diffuse mode allows a focused light beam for precise detection.



COAXIAL FIBER

Model number: HPF-Do10 and HPF-LU01
Description: Detection of missing SMT components
Advantage: A coaxial fiber provides a narrow spot diameter for detection of very small components down to 0603 components.



HIGH SPEED MODE

Model number: HPF-Do02-H
Description: Gear detection
Advantage: This fiber optic enables detection of fast moving gears with ultra-fast response time of 30 μs.

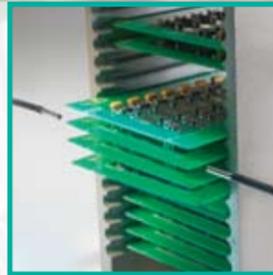


SPECIAL APPLICATION IN SOLAR INDUSTRY: SOLAR PANEL DETECTION

Model number: HPF-Do28 (convergent beam type)
Description: Detection of presence of solar panels
Advantage: A flat profile and the convergent beam principle allow installation in tight spaces and reliable detection of shiny surfaces of the panels.

THRU-BEAM MODE

Model number: HPF-To23
Description: Detection of PCB/wafers
Advantage: A narrow thru-beam allows precise detection and fast response.



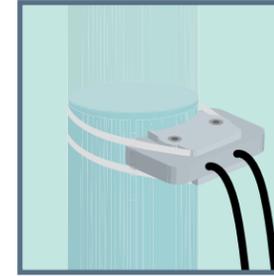
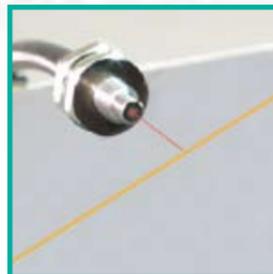
ARRAY FIBER

Model number: HPF-To21
Description: Detection of lead frames
Advantage: An array fiber provides precise detection of edges of lead frames ignoring holes and slots within the lead frames.



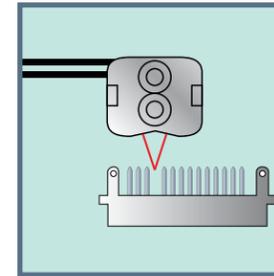
HIGH RESOLUTION MODE

Model number: KLR-Co9-1.125-2.0-K76
Description: Gold bonding wire detection
Advantage: High resolution mode allows reliable detection of gold wire down to 25 μm in wire bonding machines.



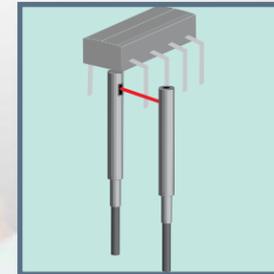
LEVEL DETECTION

Model number: KLR-Co2-1.25-2.0-K128
Description: A liquid level sensor is easily mounted on a tube
Advantage: Light weight and small dimensions allow seamless installation and detection of water levels.



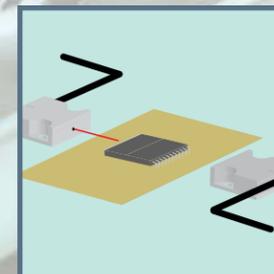
CONVERGENT BEAM

Model number: KHR-Co2-1.0-2.0-K129 (sensing range: 5~10 mm)
Description: Convergent reflective sensor used for detection of leads on connectors
Advantage: Convergent beam principle allows precise detection of the leads while effectively suppressing the background. In this application, normal diffuse fiber would have failed.



SIDE-LOOKER

Model number: HPF-To07
Description: Counting IC pins
Advantage: Side-looking fibers allow space-saving installation and detection even in hard-to-reach places, such as on the underside of an IC.

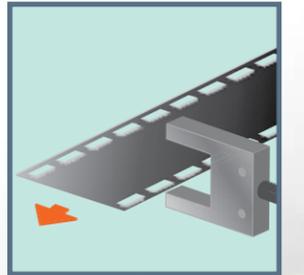


FIBERS FOR IC DETECTION

Model number: HPF-To28
Description: Flat thru-beam type fiber for detection of ICs
Advantage: Flat profile, side-looking fibers and special mounting holes allow easy alignment and installation. The fine thru-beam light spot in combination with the high resolution mode of the amplifier allow detection of small parts.

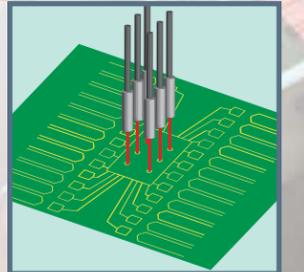
THRU-BEAM SLOT

Model number: KLE-Co2-1.25-2.0-K135 (slot width: 10 mm)
Description: A U-shaped thru-beam sensor for detection of marks
Advantage: The thru-beam slot allows simple installation and accurate detection of marks.



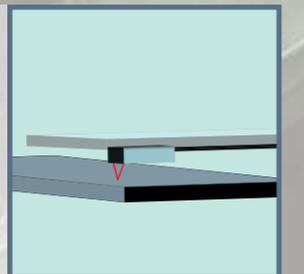
SMALL FIBER HEADS

Model number: HPF-Do09
Description: Detects orientation of ICs
Advantage: Small fiber heads and cross-talk protection allow detection in close proximity without the fibers interfering with one another.



FLAT PANEL DETECTION

Model number: HPF-Do28
Description: A thin side-view fiber for detection of clear glass panels
Advantage: Flat profile allows installation in tight spaces. Convergent beam principle allows confident detection of clear glass.



FACTORY AUTOMATION – SENSING YOUR NEEDS



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