Installation Instructions

Allen-Bradley

45LSP Optical Fork PHOTOSWITCH Photoelectric Sensors Installation Instructions

Catalog Numbers: 45LSP-2LNA1-P3, 45LSP-2LNA1-P4, 45LSP-2LNA2-P3, 45LSP-2LNA2-P4, 45LSP-2LNA3-P3, 45LSP-2LNA3-P4, 45LSP-2LNA4-P3, 45LSP-2LNA4-P4, 45LSP-2LPA1-P3, 45LSP-2LPA1-P4, 45LSP-2LPA2-P3, 45LSP-2LPA2-P4, 45LSP-2LPA3-P3, 45LSP-2LPA3-P4, 45LSP-2LPA4-P3, 45LSP-2LPA4-P4

IMPORTANT **SAVE THESE INSTRUCTIONS FOR FUTURE USE.** Refer to http://ab.rockwellautomation.com/ for additional information.

Description

The 45LSP is a family of optical fork sensors housed in a plastic enclosure. Fork sensors offer self-contained transmitted beam sensing, ideal for applications that require reliable parts detection. A simple push button teach-in sensitivity adjustment, several connection options and multiple mounting features (via side thru-holes, rear threaded inserts or optional dovetail bracketry) make the 45LSP an economical, easy-to-use solution for typical applications such as small part detection, edge detection, part counting, gear tooth detection and dimension verification.

Features

- Detection of objects as small as 0.2 mm (0.0078 in.)
- Highly visible power and output LED indicators with output indication along both sides of the fork
- Remote teach and teach button lock on 4-pin models
- Light or dark operate selectable
- Multiple mounting options: thru-holes, threaded holes and dovetail
- Easy installation with no alignment required
- IP67 enclosure

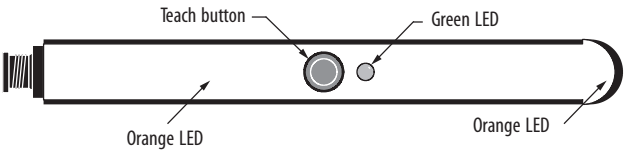
User Interface

LED Color	State	Status
Orange	OFF	Output de-energized
	ON	Output energized
	Flashing	Teach mode or short circuit protective active
Green	OFF	Power is OFF
	ON	Power is ON
	Flashing	Teach mode

Specifications

Certifications	cULus and CE Marked for all applicable directives For use in NFPA 79 applications only Adapters providing field wiring means are available from the manufacturer. Refer to manufacturers information.			
Optical				
Sensing Gap	30 mm (1.18 in.)	50 mm (1.97 in.)	80 mm (3.15 in.)	120 mm (4.72 in.)
Smallest Detectable Target	0.2 mm (0.07 in.) [1]	0.2 mm (0.007 in.)		0.4 mm (0.02 in.)
Light Source	Visible red (640 nm)			
Sensitivity Adjustment	Teach button and remote teach			
Electrical				
Voltage	10…30V DC			
Current Consumption	30 mA maximum			
Protection	Reverse Polarity and short circuit			
Outputs				
Response Time	250 µs			
Output Type	PNP or NPN			
Output Mode	Light or dark operate selectable			
Output Current	100 mA maximum			
Mechanical				
Housing Material	Polycarbonate			
Connection Types	3-pin pico QD, 4-pin pico QD			
Optional Accessories	44B-BKT dovetail mounting bracket and cordsets			
Environmental				
Environmental Rating	IP67			
Operating Temperature [C (F)]	-10…+60 ° (14…140 °			

[1] For detection of objects less than 0.9 m (0.035 in.), the object should be placed ≥ 10 mm (0.39 in.) away from the LED light source.



Operational Instructions

Sensitivity Adjustment

With no target present, press the teach button for approximately three seconds until orange LEDs are flashing synchronously: first threshold is taught. With the target present, press the teach button for approximately one second. If the green LED flashes and stays on then thresholds have been taught, and the sensor is ready to operate. If both LEDs are flashing synchronously then the sensor cannot detect the object and no thresholds have been taught.

Sensitivity Adjustment During a Running Process (optimum detection of very small parts)

With the chosen running process being the only thing in the scanning area, press the teach button for approximately three seconds until orange LEDs are flashing synchronously. Press the teach button until a minimum of one process cycle is completed. If the green LED flashes and stays on then thresholds have been taught, and the sensor is ready to operate. If both LEDs are flashing synchronously then the sensor cannot detect the target and no thresholds have been taught.

L.O./D.O. Setup

Press the teach button for approximately 13 seconds. Orange LEDs should flash alternately. When you release the button, the green LED should remain flashing. When the green LED is flashing, the output is inverted by pressing the button. The orange LED shows active function. Do not press the button for 10 seconds. The green LED stops flashing and the present output function is saved. The sensor is ready to operate.

Maximum Sensitivity

With no target present, press the teach button for approximately three seconds until orange LEDs are flashing synchronously. Again, with no target present, press the teach button for one second. The sensor is set to maximum sensitivity and is ready to operate.

Maximum Stability—Factory Setting (maximum resistance to contamination)

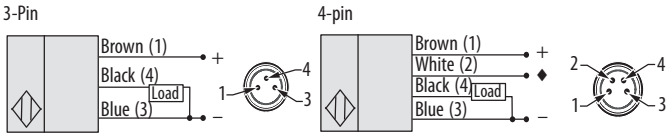
Cover the light source. Press and hold the teach button until the orange LEDs are flashing synchronously. Keep the light source covered, press the teach button for one second. The sensor is set to maximum stability and is ready to operate.

Modification of the Emitter Frequency in Case of Mutual Interference

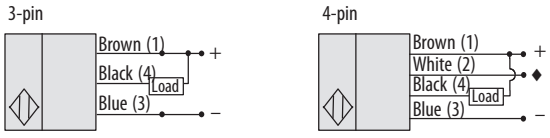
Switch one sensor off. Press the teach button during power ON. The orange LED flashes one time; frequency one, normal operation (switching frequency 2 kHz). Keep the button pressed for another three to five seconds. The orange LED flashes twice; frequency two, normal operation (switching frequency 2 kHz). Keep the button pressed for another three to five seconds. The orange LED flashes three times; frequency one, detection of very small parts possible (switching frequency 2 kHz). Keep the button pressed for another three to five seconds. The orange LED flashes four times; frequency two, detection of very small parts possible (switching frequency 1.5 kHz). Release the button to place the sensor in operating mode. Switch other sensor on again.

Wiring Diagrams

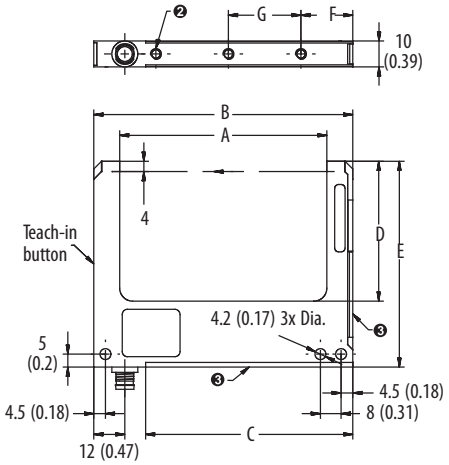
PNP Models



NPN Models



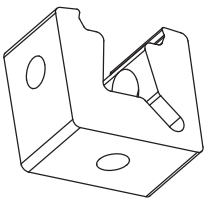
Dimensions [mm (in.)]



Fork Type	A	B	C	D	E	F	G	H	I
30 mm	30 (1.18)	50 (1.97)	30 (1.18)	34 (1.34)	59.5 (2.34)	20 (0.78)	—	62.2 (2.45)	71.7 (2.82)
50 mm	50 (1.97)	70 (2.76)	50 (1.97)	54 (2.13)	79.5 (3.13)	20 (0.78)	28 (1.10)	82.2 (3.24)	91.7 (3.61)
80 mm	80 (3.15)	100 (3.93)	80 (3.15)	54 (2.13)	79.5 (3.13)	20 (0.78)	2 x 28 (2.20)	112.2 (4.42)	91.7 (3.61)
120 mm	120 (4.72)	140 (5.51)	120 (4.72)	54 (2.13)	79.5 (3.13)	20 (0.78)	3 x 28 (3.30)	152.2 (5.99)	91.7 (3.61)

Optional Accessories

Description	Cat. No.
Dovetail mounting bracket	44B-BKT
2 m (6.5 ft) 3-pin DC pico QD	889P-F3AB-2
2 m (6.5 ft) 4-pin DC pico QD	889P-F4AB-2



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At http://www.rockwellautomation.com/support you can find technical and application notes, sample code, and links to software service packs. You can also visit our Support Center at https://rockwellautomation.custhelp.com/ for software updates, support chats and forums, technical information, FAQs, and to sign up for product notification updates.

In addition, we offer multiple support programs for installation, configuration, and troubleshooting. For more information, contact your local distributor or Rockwell Automation representative, or visit
http://www.rockwellautomation.com/services/online-phone.

Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the Worldwide Locator at http://www.rockwellautomation.com/rockwellautomation/support/overview.page, or contact your local Rockwell Automation representative.

New Product Satisfaction Return

Rockwell Automation tests all of its products to help ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

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U.S. Allen-Bradley Drives Technical Support - Tel: (1) 262.512.8176, Fax: (1) 262.512.2222, E-mail: support@drives.ra.rockwell.com
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Rockwell Otomasyon Ticaret A.Ş., Kar Plaza İş Merkezi E Blok Kat:6 34752 İçerenköy, İstanbul, Tel: +90 (216) 5698400

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Publication 45LSP-IN001C-EN-P – November 2015 10000033147 Ver 02