

DPR-1640-NPN-NC

Industrial Area Sensor — Installation Guide

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DAPPRA Automation — Industrial Sensor Manufacturer

DPR-1640-NPN-NC

Industrial Area Sensor — Installation Guide

1. Safety Information

⚠ WARNING: Installation must be performed by qualified personnel only. Disconnect all power sources before installing or servicing the sensor. Failure to follow these instructions may result in serious injury or equipment damage.

- Read this entire guide before beginning installation.
- Ensure the sensor is installed in accordance with all applicable local and national electrical codes.
- Do not operate the sensor outside the specified operating temperature range (-10°C to 55°C).
- Protect the sensor from excessive mechanical shock, vibration, and corrosive environments.
- Do not attempt to disassemble or modify the sensor housing.
- For safety applications, verify that the SIL 2 certification requirements are met in the final installation.

2. Product Overview

The DPR-1640-NPN-NC is a through-beam infrared area sensor consisting of a separate **Emitter** and **Receiver**. The emitter projects 16 parallel infrared beams across the detection area. When an object interrupts one or more beams, the receiver detects the interruption and changes the NPN NC output signal.

Component	Function	Connector
Emitter	Generates 16 parallel infrared beams	M12, 4-pin
Receiver	Detects infrared beams and provides NPN NC output	M12, 4-pin

NOTE: The emitter and receiver are supplied as a matched pair and must be used together. Do not mix with other DPR Series units.

3. Unpacking and Inspection

Carefully unpack the DPR-1640-NPN-NC and verify that all items are present and undamaged.

Item	Qty	Description
Emitter	1	Infrared beam transmitter unit
Receiver	1	Infrared beam receiver unit
Connecting Cables	2	M12 connector cables, 2 m
Mounting Brackets (Top)	2	Top mounting brackets
Mounting Brackets (Bottom)	2	Bottom mounting brackets
Mounting Screws	8	M4 × 10 mm screws
Installation Guide	1	This document

⚠ CHECK: If any items are missing or damaged, contact DAPPRA Automation support immediately. Do not install damaged equipment.

4. Installation Procedure

Step 1 — Determine Mounting Location

- Identify the mounting location based on the machine structure and protection requirements.
- Ensure sufficient clearance for the emitter and receiver (minimum 0.2 m, maximum 3 m apart).
- Ensure the mounting surface is flat, rigid, and free from excessive vibration.
- Allow access for cable connection and maintenance.

Step 2 — Select Installation Method

The DPR-1640-NPN-NC supports three installation methods. Select the appropriate method for your application.

Method	Code	Description	Typical Application
Top & Bottom	L1	Standard vertical mounting using top and bottom brackets	CNC, Press machines, Safety zones
Side Mount	L2	Side-mounted option for restricted spaces	Compact equipment, Narrow spaces
Cantilever	L3	Multi-directional adjustable bracket	Custom layouts, Robot cells

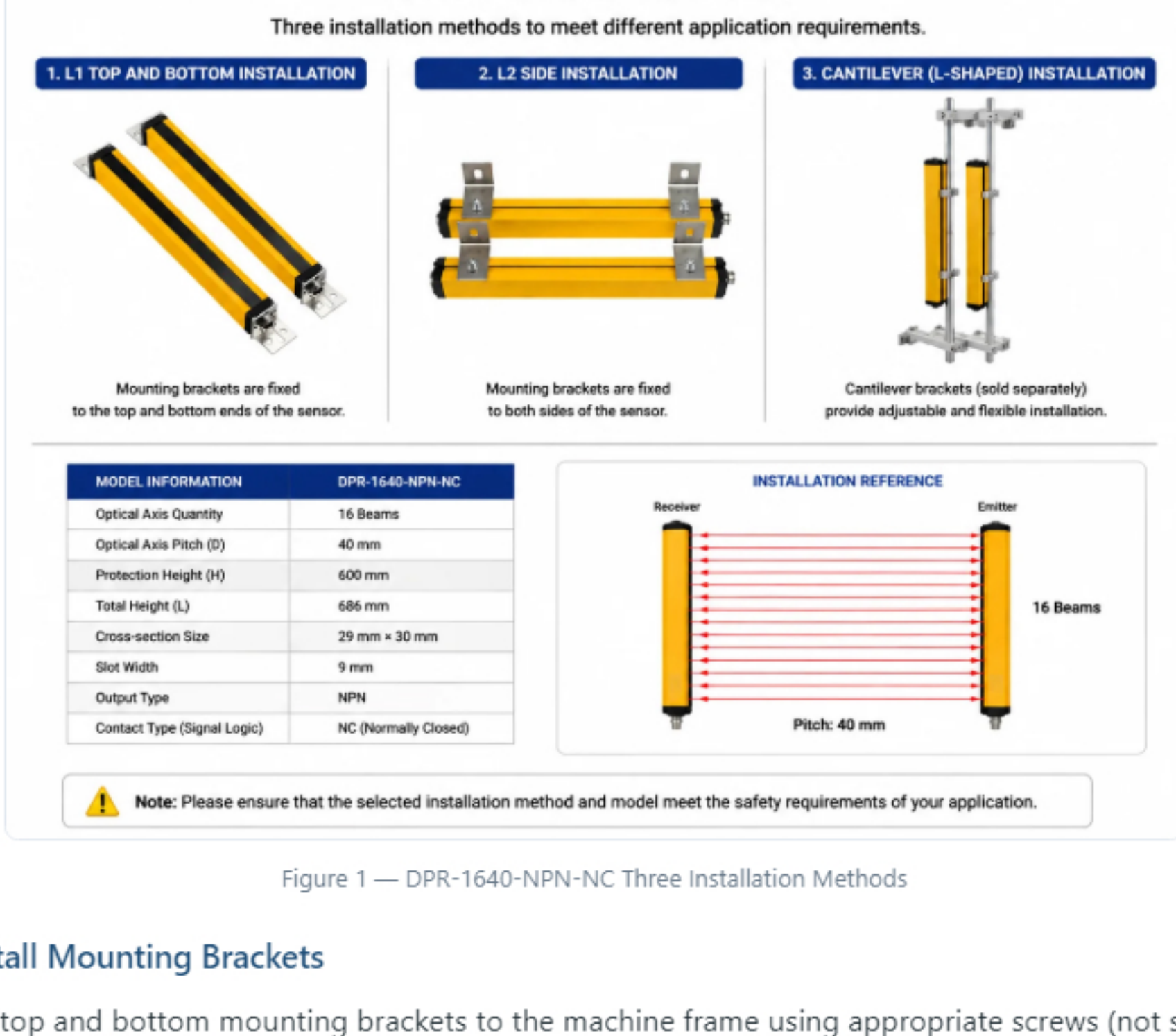


Figure 1 — DPR-1640-NPN-NC Three Installation Methods

Step 3 — Install Mounting Brackets

- Attach the top and bottom mounting brackets to the machine frame using appropriate screws (not supplied).
- For L1 (Top & Bottom): Mount brackets at the top and bottom of the detection area.
- For L2 (Side): Mount brackets on the side of the machine frame.
- For L3 (Cantilever): Use adjustable brackets for multi-directional positioning.
- Ensure brackets are securely tightened and aligned vertically.

💡 TIP: Use a spirit level to ensure the brackets are perfectly vertical. Misalignment will affect detection reliability.

Step 4 — Mount Emitter and Receiver

- Secure the emitter to the bracket on one side of the detection area.
- Secure the receiver to the bracket on the opposite side.
- Ensure the emitter and receiver face each other directly.
- Both units must be at the same height and parallel to each other.

Step 5 — Optical Alignment

- Verify that the emitter and receiver are aligned within ±2° of each other.
- Check that all 16 beams are properly aligned across the detection area.
- Remove any obstructions from the detection zone.
- Use the LED indicators on the receiver to confirm beam alignment.

⚠ IMPORTANT: Misalignment of the emitter and receiver will reduce detection distance and may cause false outputs. Align the units carefully before final tightening.

Step 6 — Tighten All Screws

- Secure all mounting hardware to the specified torque (recommended: 1.5–2.0 Nm for M4 screws).
- Do not overtighten, as this may damage the housing or brackets.
- Re-check alignment after tightening.

5. Wiring Connection

The DPR-1640-NPN-NC uses M12 4-pin connectors for both emitter and receiver. Use the supplied cables for connection.

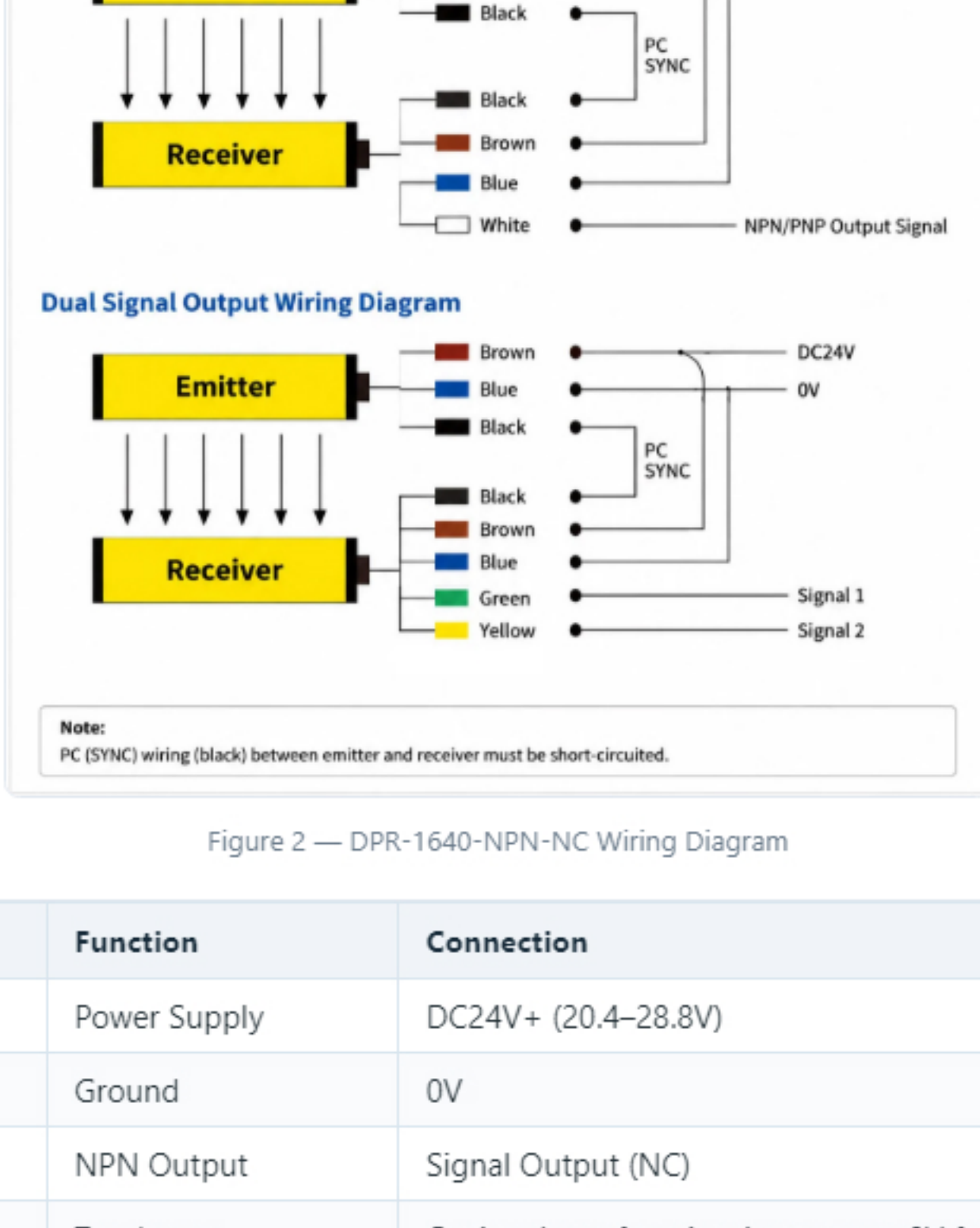


Figure 2 — DPR-1640-NPN-NC Wiring Diagram

Wire Color	Pin	Function	Connection
Brown	1	Power Supply	DC24V+ (20.4–28.8V)
Blue	3	Ground	0V
Black	4	NPN Output	Signal Output (NC)
White	2	Test Input	Optional test function (connect to 0V for test)

⚠ WARNING: Do not connect power to the receiver before connecting the emitter. The emitter must be powered first for proper operation.

6. Functional Testing

- Power on the sensor:** Apply DC24V power to the emitter and receiver.
- Check LED indicators:** The receiver LED should indicate normal beam condition.
- Test beam interruption:** Pass an object through the detection area.
- Verify output signal:** The NPN NC output should change state when beams are interrupted.
- Test all zones:** Check that detection works across the entire protection height (600 mm).

💡 TIP: Use a test object of appropriate size (5–10 mm) to verify the minimum detectable object capability.

7. Post-Installation Checklist

✓	Check Item
☐	Emitter and receiver are securely mounted
☐	Emitter and receiver are vertically aligned and parallel
☐	All 16 beams are detected correctly
☐	Cables are properly connected and secured
☐	Power supply voltage is correct (DC24V ±20%)
☐	Beam interruption detected correctly across all zones
☐	Output signal responds correctly to beam interruption
☐	All screws are tightened to specification

8. Technical Support

For technical support or installation assistance, contact DAPPRA Automation:

- Website:** dappra.com
- Email:** support@dappra.com