DAPPRA AUTOMATION

Installation Guide

Industrial Area Sensor & Safety Light Curtain

DPR-0640-NPN-NC

Mounting, alignment, wiring and installation reference for the 6-beam DPR-0640-NPN-NC Industrial Area Sensor and Safety Light Curtain with 40 mm optical axis pitch and 200 mm protection height.

SIL 2 / IEC 61508 · IP65 · CE / FCC / ROHS · NPN NC

DOCUMENT TYPE Installation Guide	DOCUMENT NO. DPR-0640-IG-01
PRODUCT MODEL DPR-0640-NPN-NC	SKU SD73
REVISION Rev. 1.0	MANUFACTURER DAPPRA Automation

Table of Contents

1. Introduction 3
2. Safety Precautions 3
3. Package Contents 4
4. Installation Preparation 4
5. Mounting Methods 5
6. Transmitter & Receiver Alignment 6
7. Electrical Wiring 7
8. Function Check & Test 8
9. Troubleshooting 8
10. Maintenance 9
11. Technical Support 9

> This installation guide provides mounting, alignment, wiring and commissioning instructions for the DAPPRA DPR-0640-NPN-NC Industrial Area Sensor and Safety Light Curtain. Read all safety precautions before installation.

---

1. Introduction

The **DAPPRA DPR-0640-NPN-NC** is a 6-beam Industrial Area Sensor and Safety Light Curtain designed for object detection, machine protection and personnel protection. This guide describes the recommended installation, alignment and wiring procedure for the sensor pair.

PARAMETER	VALUE
Model	DPR-0640-NPN-NC
SKU	SD73
Beam Quantity	6 Beams
Optical Axis Pitch	40 mm
Protection Height	200 mm
Total Height	286 mm
Output	NPN NC
Supply Voltage	DC24V ±20%

2. Safety Precautions

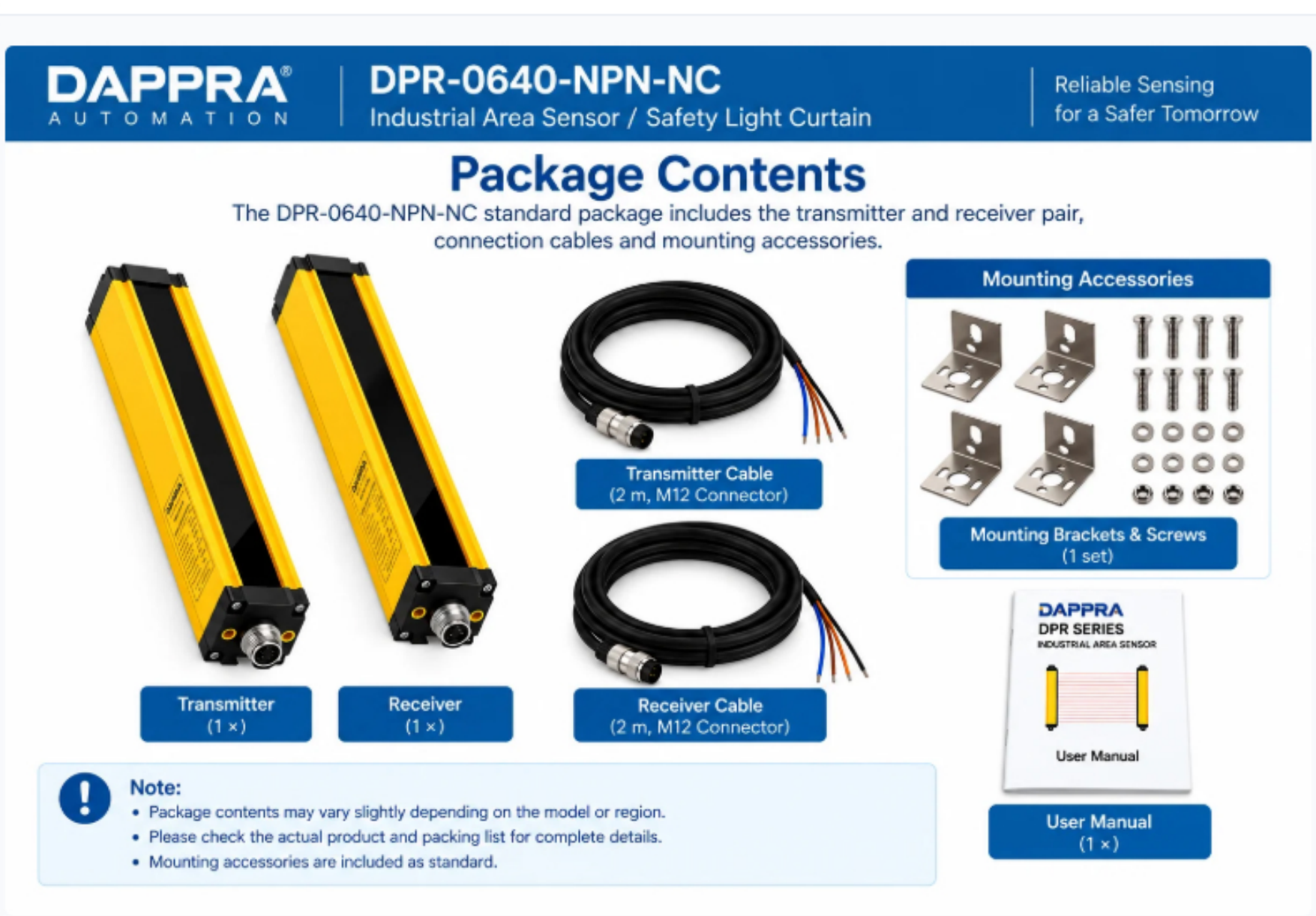
> ⚠ **WARNING:** This sensor is a safety-related device. Incorrect installation, wiring or configuration can result in serious injury or machine damage. Installation must be performed by qualified personnel only.

- Disconnect power before mounting or wiring the sensor.
- Verify the machine risk assessment before final installation.
- Use a safety relay or safety controller where required by the application.
- Do not modify, disassemble or bypass the sensor.
- Ensure the transmitter and receiver are mechanically protected from impact.
- Maintain the specified safety distance from the machine hazard zone.

---

3. Package Contents

- **1 × Transmitter** — Infrared beam transmitter
- **1 × Receiver** — Infrared beam receiver
- **2 m connection cables** — Pre-terminated cables
- **M12 connection** — Standard industrial connector
- **Mounting accessories** — Brackets and screws


DAPPRA AUTOMATION
DPR-0640-NPN-NC
Industrial Area Sensor / Safety Light Curtain
Reliable Sensing for a Safer Tomorrow
Package Contents
The DPR-0640-NPN-NC standard package includes the transmitter and receiver pair, connection cables and mounting accessories.
Transmitter (1 ×)
Receiver (1 ×)
Transmitter Cable (2 m, M12 Connector)
Receiver Cable (2 m, M12 Connector)
Mounting Accessories
Mounting Brackets & Screws (1 set)
DAPPRA DPR SERIES INDUSTRIAL AREA SENSOR
User Manual
User Manual (1 ×)

Note:
- Package contents may vary slightly depending on the model or region.
- Please check the actual product and packing list for complete details.
- Mounting accessories are included as standard.

Figure 3.1 — DPR-0640-NPN-NC standard package contents

4. Installation Preparation

Before mounting the sensor, prepare the following:

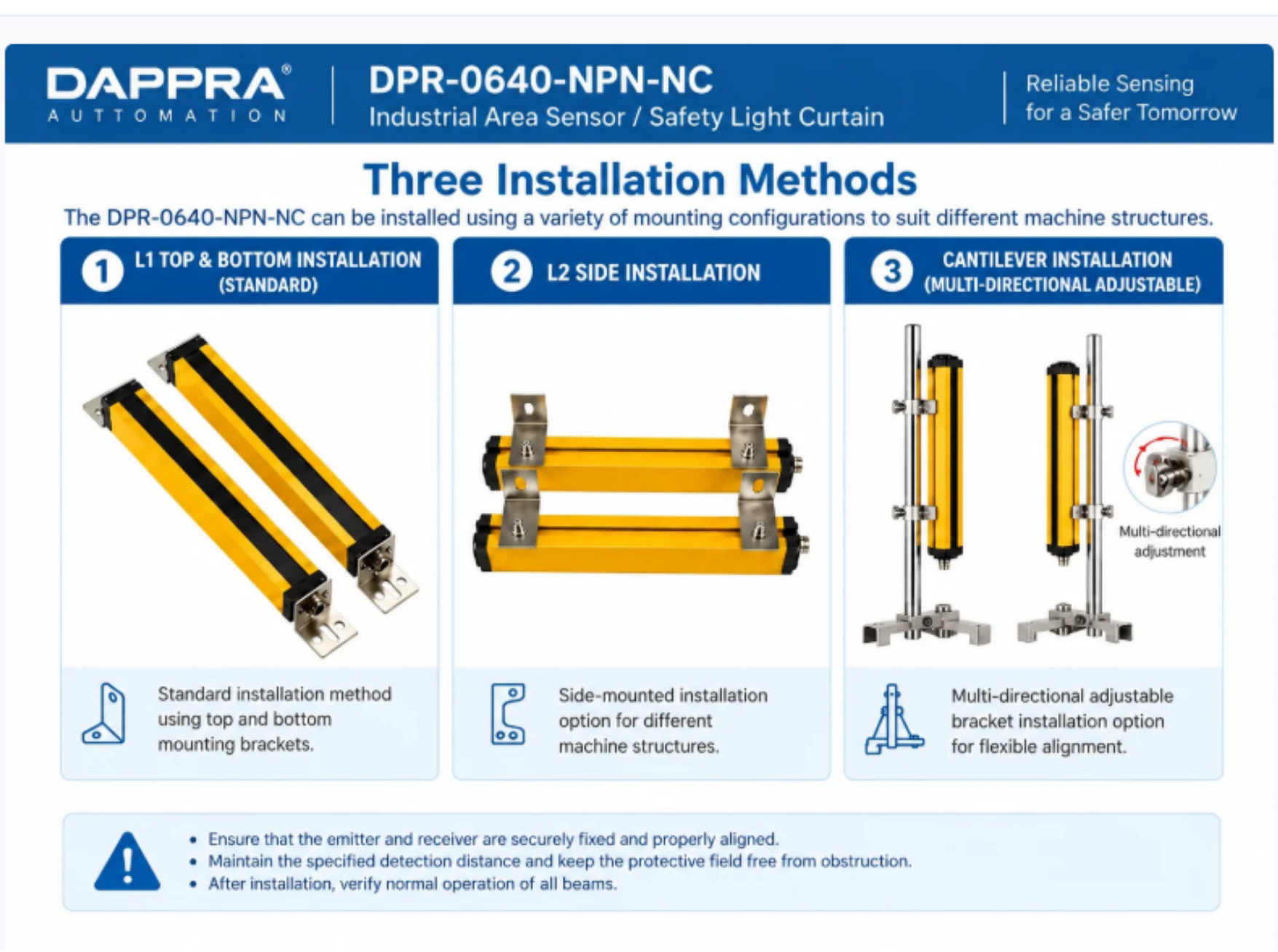
- Verify the machine opening and the required protection height.
- Confirm the mounting position and alignment reference.
- Prepare the mounting brackets and screws.
- Verify the supply voltage (DC24V ±20%).
- Check that the transmitter and receiver are correctly paired.
- Ensure the mounting surface is stable and free from vibration.

> For mechanical dimensions and mounting hole locations, refer to the DPR-0640-NPN-NC CAD Drawing.

---

5. Mounting Methods

- **Standard Mounting** — Vertical transmitter/receiver configuration
- **Side Mounting** — Side-mounted installation for compact equipment
- **Adjustable Mounting** — Flexible positioning with adjustable brackets


DAPPRA AUTOMATION
DPR-0640-NPN-NC
Industrial Area Sensor / Safety Light Curtain
Reliable Sensing for a Safer Tomorrow
Three Installation Methods
The DPR-0640-NPN-NC can be installed using a variety of mounting configurations to suit different machine structures.
1 L1 TOP & BOTTOM INSTALLATION (STANDARD)
2 L2 SIDE INSTALLATION
3 CANTILEVER INSTALLATION (MULTI-DIRECTIONAL ADJUSTABLE)
Multi-directional adjustment
Standard installation method using top and bottom mounting brackets.
Side-mounted installation option for different machine structures.
Multi-directional adjustable bracket installation option for flexible alignment.

- Ensure that the emitter and receiver are securely fixed and properly aligned.
- Maintain the specified detection distance and keep the protective field free from obstruction.
- After installation, verify normal operation of all beams.

Figure 5.1 — Installation options for the DPR-0640-NPN-NC Area Sensor

Mounting Steps

1. **Mark the mounting positions** — Mark the mounting holes on both sides of the machine opening according to the CAD drawing.
2. **Install the mounting brackets** — Fix the brackets securely to the machine frame.
3. **Mount the transmitter and receiver** — Attach the transmitter and receiver to the brackets, facing each other.
4. **Adjust the vertical position** — Ensure the protection height covers the required machine opening.
5. **Tighten all screws** — Verify the mounting is secure and free from vibration.

---

6. Transmitter & Receiver Alignment

Correct alignment between the transmitter and receiver is essential for reliable multi-beam detection. The transmitter and receiver must be aligned across the complete 200 mm sensing height.

1. **Loosen the mounting screws slightly** — Allow small adjustments.
2. **Power on the sensor** — Apply DC24V ±20% supply voltage.
3. **Check the alignment indicator** — Verify the receiver detects all 6 beams.
4. **Adjust the transmitter position** — Move until the alignment indicator is stable.
5. **Adjust the receiver position** — Move until all beams are detected.
6. **Tighten the mounting screws** — Secure without disturbing alignment.
7. **Verify alignment** — Confirm all 6 beams are correctly detected.

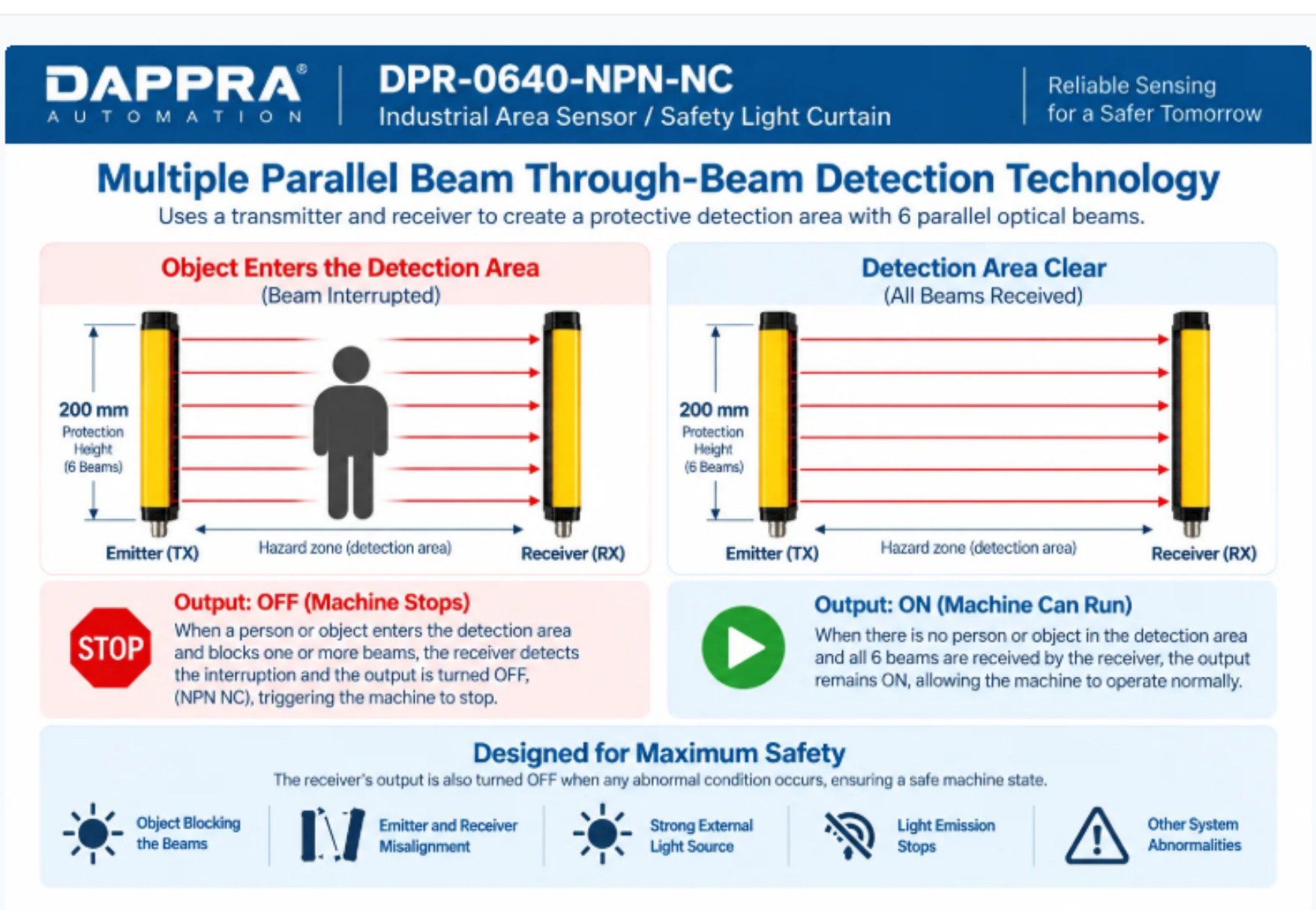

DAPPRA AUTOMATION
DPR-0640-NPN-NC
Industrial Area Sensor / Safety Light Curtain
Reliable Sensing for a Safer Tomorrow
Multiple Parallel Beam Through-Beam Detection Technology
Uses a transmitter and receiver to create a protective detection area with 6 parallel optical beams.
Object Enters the Detection Area
(Beam Interrupted)
200 mm Protection Height (6 Beams)
Emitter (TX)
Hazard zone (detection area)
Receiver (RX)
Detection Area Clear
(All Beams Received)
200 mm Protection Height (6 Beams)
Emitter (TX)
Hazard zone (detection area)
Receiver (RX)
STOP
Output: OFF (Machine Stops)
When a person or object enters the detection area and blocks one or more beams, the receiver detects the interruption and the output is turned OFF, (NPN NC), triggering the machine to stop.
Output: ON (Machine Can Run)
When there is no person or object in the detection area and all 6 beams are received by the receiver, the output remains ON, allowing the machine to operate normally.
Designed for Maximum Safety
The receiver's output is also turned OFF when any abnormal condition occurs, ensuring a safe machine state.
Object Blocking the Beams
Emitter and Receiver Misalignment
Strong External Light Source
Light Emission Stops
Other System Abnormalities

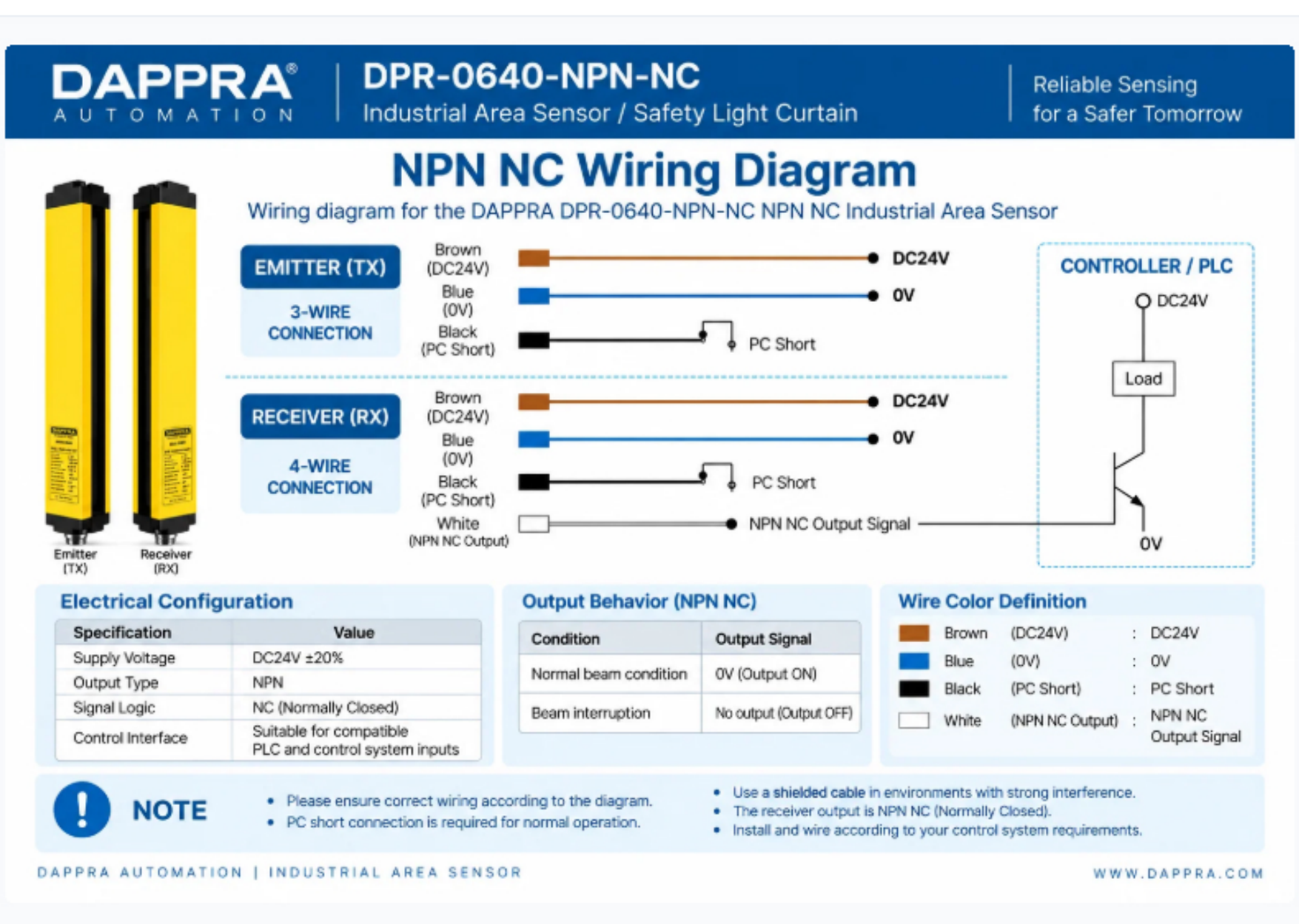
Figure 6.1 — Alignment reference for the DPR-0640-NPN-NC

---

7. Electrical Wiring

The DPR-0640-NPN-NC uses an **NPN transistor output** with **Normally Closed (NC)** signal logic.

ELECTRICAL CONFIGURATION	SPECIFICATION
Supply Voltage	DC24V ±20%
Output Type	NPN
Signal Logic	NC (Normally Closed)
Control Interface	Suitable for compatible PLC and control-system inputs


DAPPRA AUTOMATION
DPR-0640-NPN-NC
Industrial Area Sensor / Safety Light Curtain
Reliable Sensing for a Safer Tomorrow
NPN NC Wiring Diagram
Wiring diagram for the DAPPRA DPR-0640-NPN-NC NPN NC Industrial Area Sensor
Emitter (TX)
Receiver (RX)
EMITTER (TX)
3-WIRE CONNECTION
Brown (DC24V)
Blue (0V)
Black (PC Short)
DC24V
0V
PC Short
RECEIVER (RX)
4-WIRE CONNECTION
Brown (DC24V)
Blue (0V)
Black (PC Short)
White (NPN NC Output)
DC24V
0V
PC Short
NPN NC Output Signal
CONTROLLER / PLC
DC24V
Load
0V
DAPPRA AUTOMATION | INDUSTRIAL AREA SENSOR
WWW.DAPPRA.COM

Electrical Configuration

Specification	Value
Supply Voltage	DC24V ±20%
Output Type	NPN
Signal Logic	NC (Normally Closed)
Control Interface	Suitable for compatible PLC and control system inputs

Output Behavior (NPN NC)

Condition	Output Signal
Normal beam condition	0V (Output ON)
Beam interruption	No output (Output OFF)

Wire Color Definition

Brown	(DC24V)	:	DC24V
Blue	(0V)	:	0V
Black	(PC Short)	:	PC Short
White	(NPN NC Output)	:	NPN NC Output Signal

NOTE
- Please ensure correct wiring according to the diagram.
- PC short connection is required for normal operation.
- Use a **shielded cable** in environments with strong interference.
- The receiver output is NPN NC (Normally Closed).
- Install and wire according to your control system requirements.

Figure 7.1 — Wiring diagram for the DPR-0640-NPN-NC NPN NC Industrial Area Sensor

Wiring Notes

- Use shielded cable where electromagnetic interference is present.
- Keep the sensor cable separate from high-voltage power cables.
- Verify polarity before applying power.
- Connect the output to a compatible PLC or control-system input.

---

8. Function Check & Test

1. **Verify power supply** — Confirm DC24V ±20% is applied correctly.
2. **Check alignment** — Confirm all 6 beams are detected.
3. **Test beam interruption** — Interrupt each beam with a test object.
4. **Test the machine stop function** — Verify the machine stops correctly.
5. **Test the reset function** — Verify the machine can only restart after the field is clear.
6. **Record the test results** — Document the installation and test results.

9. Troubleshooting

SYMPTOM	POSSIBLE CAUSE	ACTION
Sensor does not power on	Incorrect supply voltage or wiring	Verify DC24V ±20% and wiring polarity
Alignment indicator unstable	Misalignment or vibration	Re-align transmitter and receiver
Output does not change	Beam interruption not detected	Verify object size, beam path and output wiring
False detection	Environmental interference or contamination	Clean lens; check for reflective surfaces
Intermittent detection	Loose wiring or unstable mounting	Tighten connections and mounting screws

---

10. Maintenance

- Clean the transmitter and receiver lens periodically with a soft, dry cloth.
- Do not use abrasive cleaners or solvents.
- Verify alignment after any mechanical impact or maintenance activity.
- Check mounting screws and cable connections regularly.
- Perform a functional test after any maintenance activity.

11. Technical Support

For technical assistance, product information or purchasing support, contact DAPPRA Automation.

DAPPRA Automation
Industrial Area Sensor & Safety Light Curtain
Website: **dappra.com**
WhatsApp: **+62 878-5542-7784**
Email: **sales@dappra.com**