DAPPRA AUTOMATION

INSTALLATION & ALIGNMENT REFERENCE

DPR-1220-NPN-NC

Industrial Area Sensor & Safety Light Curtain Â· Installation Guide

This installation guide provides mounting, alignment and wiring reference information for the DAPPRA DPR-1220-NPN-NC Industrial Area Sensor and Safety Light Curtain. It is intended for engineers, technicians and maintenance personnel involved in machine integration and industrial automation installation.

DOCUMENT SCOPE

- â€¢ Pre-installation inspection
- â€¢ Mounting methods and bracket installation
- â€¢ Emitter and receiver alignment
- â€¢ Wiring and electrical connection
- â€¢ Function verification and testing
- â€¢ Maintenance and troubleshooting

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Manufacturer: DAPPRA Automation

Before You Install

Check the product package for the following items:

- **Transmitter** â€” 1 unit
- **Receiver** â€” 1 unit
- **Connection Cables** â€” 2 cables
- **Mounting Accessories** â€” Brackets and mounting hardware

Operating Environment Check

PARAMETER	SPECIFICATION
Protection Rating	IP65
Operating Temperature	-10Â°C to +55Â°C
Ambient Light Resistance	10000 Lux
Power Supply	DC24V Â±20%

Required Tools

- Standard screwdriver set
- M4 or M5 hex key (depending on mounting brackets)
- Digital multimeter for wiring verification
- Adjustable wrench or spanner
- Spirit level for vertical alignment
- Cable ties or cable conduit (as required)

> **âš Safety Notice**
>
> Disconnect power before performing any electrical wiring. Installation should be carried out by qualified personnel in accordance with applicable local electrical codes and machine safety standards.

Mounting Methods

The DPR-1220-NPN-NC supports flexible installation according to different machine structures and protection requirements. The DPR Series supports three installation configurations: standard mounting, side mounting and adjustable mounting.



Figure 1 â€" DPR-1220-NPN-NC installation options

1. Standard Vertical Installation

The transmitter and receiver are installed vertically opposite each other to create the required infrared detection field. This is the standard method for most machine protection and personnel protection applications.

2. Side Installation

Side installation can be considered when the machine structure limits the available mounting space. This method is suitable for compact equipment or customized machine layouts.

3. Adjustable Bracket Installation

Adjustable mounting brackets allow flexible positioning and alignment of the transmitter and receiver. This is useful for customized automation equipment where precise alignment is required.

Alignment Procedure

Proper alignment between the transmitter and receiver is essential for reliable detection performance. Follow the steps below to align the sensor correctly.

1. **Mount the transmitter and receiver** â€” Install both units opposite each other at the required distance.
2. **Verify vertical alignment** â€” Use a spirit level to ensure both units are vertically aligned.
3. **Check optical axis alignment** â€” Position the transmitter and receiver so that the corresponding optical beams face each other directly.
4. **Power on the sensor** â€” Apply DC24V power and observe the alignment indicators.
5. **Adjust position** â€” Adjust the position or angle of the sensor units until proper alignment is achieved.
6. **Tighten mounting screws** â€” After confirming alignment, tighten all mounting screws securely.
7. **Verify detection** â€” Interrupt the beams with a test object and confirm the output signal changes correctly.

> **Alignment Tip**
>
> The DPR Series typically includes LED indicators on both transmitter and receiver to assist with alignment. Refer to the product datasheet or contact DAPPRA Automation for specific LED color codes and their meanings.

Alignment Checkpoints

- **Vertical alignment** â€” Both units at the same height and parallel
- **Optical alignment** â€” Corresponding beams facing each other
- **Distance** â€” Within the specified detection distance of 0.2â€“3 m
- **Obstruction** â€” No object blocking any beam path
- **Stability** â€” Mounting secured and free from vibration

Wiring

The DPR-1220-NPN-NC uses an **NPN NC output configuration**. Before connecting the sensor to a PLC or controller, verify that the controller input circuit is compatible with the specified NPN output configuration.

Wiring Requirements

PARAMETER	SPECIFICATION
Power Supply	DC24V Â±20%
Output Type	NPN
Signal Logic	NC (Normally Closed)
Output Current	â‰¤200 mA
Connector	M12 Cable

Signal Output Condition

CONDITION	SIGNAL OUTPUT
Normal beam condition	0V signal output
Beam interruption	No output

Wiring Diagram

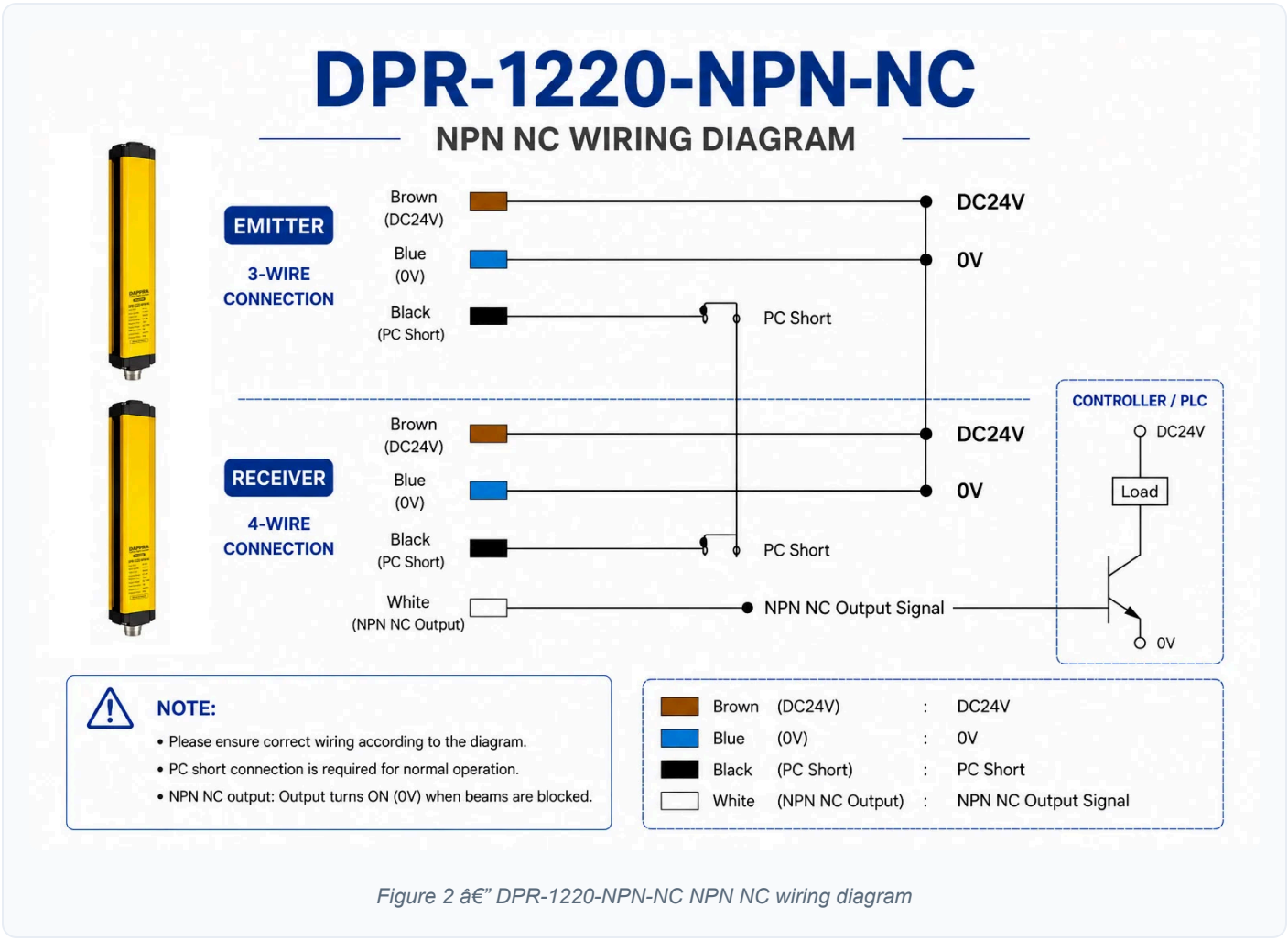


Figure 2 â€" DPR-1220-NPN-NC NPN NC wiring diagram

Wiring Procedure

1. **Disconnect power** â€" Ensure that the DC24V power supply is turned off before starting wiring.
2. **Connect power supply** â€" Connect DC24V+ and 0V according to the wiring diagram.
3. **Connect output signal** â€" Connect the NPN output to the appropriate PLC or controller input terminal.
4. **Check connections** â€" Use a multimeter to verify continuity and correct polarity before applying power.

> **âš Wiring Notice**
>
> Incorrect wiring may damage the sensor or connected control equipment. Verify all connections carefully before applying power.

Function Verification

1. **Power-on check** â€” Apply DC24V power and confirm that the sensor powers on normally.
2. **Alignment confirmation** â€” Verify that the alignment indicators show proper alignment.
3. **Beam interruption test** â€” Insert a test object into the detection area and confirm that the output changes.
4. **Output verification** â€” Measure the output signal with a multimeter or verify the signal at the PLC input.
5. **Detection coverage test** â€” Test detection at different positions within the 220 mm protection height.
6. **Environmental check** â€” Confirm that ambient light, vibration and electromagnetic interference do not affect detection stability.

Maintenance

Regular maintenance helps ensure reliable long-term operation.

Routine Maintenance

- **Clean optical windows** â€” Use a soft, lint-free cloth slightly moistened with isopropyl alcohol.
- **Check mounting** â€” Verify that mounting brackets remain secure.
- **Check alignment** â€” Periodically verify transmitter and receiver alignment.
- **Inspect cables** â€” Check for damage or loose connections.
- **Verify detection** â€” Test detection function periodically.

Cleaning the Optical Window

Use a soft, lint-free cloth slightly moistened with isopropyl alcohol or a mild glass cleaner. Avoid abrasive materials or harsh solvents that could scratch or damage the optical window. Regular cleaning is recommended in dusty or oily environments.

Maintenance Note

Do not disassemble the sensor housing. Internal components are not user-serviceable. For any internal issues, contact DAPPRA Automation technical support.

Troubleshooting

The following table provides troubleshooting guidance for common installation and operation issues. If a problem cannot be resolved using these steps, contact DAPPRA Automation technical support.

SYMPTOM	POSSIBLE CAUSE	RECOMMENDED ACTION
Sensor does not power on	Incorrect power supply or wiring	Verify DC24V supply and wiring polarity
Output does not change	Misalignment or blocked beam path	Check alignment and clear obstruction
Unstable detection	Vibration, ambient light or interference	Secure mounting; shield from direct light
Intermittent output	Loose wiring or connection	Check M12 connector and cable connections
Poor detection sensitivity	Dirty optical window	Clean optical windows with isopropyl alcohol
PLC does not respond	Input configuration mismatch	Verify PLC input is compatible with NPN output

Technical Support

For technical assistance, product selection or OEM/ODM inquiries, contact DAPPRA Automation:

> **DAPPRA Automation Technical Support**
>
> **WhatsApp:** +62 878-5542-7784
>
> **Website:** https://dappra.com
>
> **Product:** DPR-1220-NPN-NC (SKU: SD71)

Related Documents

DOCUMENT	DESCRIPTION
Datasheet	Specifications, wiring, dimensions and certifications
Installation Guide	This document â€” mounting methods and alignment reference
CAD Drawing	Mechanical dimensions and installation layout