

DPR-2020-NPN-NC

Safety Light Curtain Area Sensor — Dimension & Installation Guide



Version: 1.0 | Date: September 2023 | SKU: SH61

DAPPRA Automation — Industrial Sensor Manufacturer

DPR-2020-NPN-NC

Safety Light Curtain Area Sensor — Dimension & Installation Guide

1. Dimension and Optical Structure

The DPR-2020-NPN-NC combines a compact mechanical design with a multi-beam infrared detection structure.

The sensor configuration includes:

- 20 optical beams
- 20 mm optical axis pitch
- 10 mm resolution
- 380 mm protection height
- 459 mm total height
- 29 × 30 mm housing cross-section

Dimension Drawing

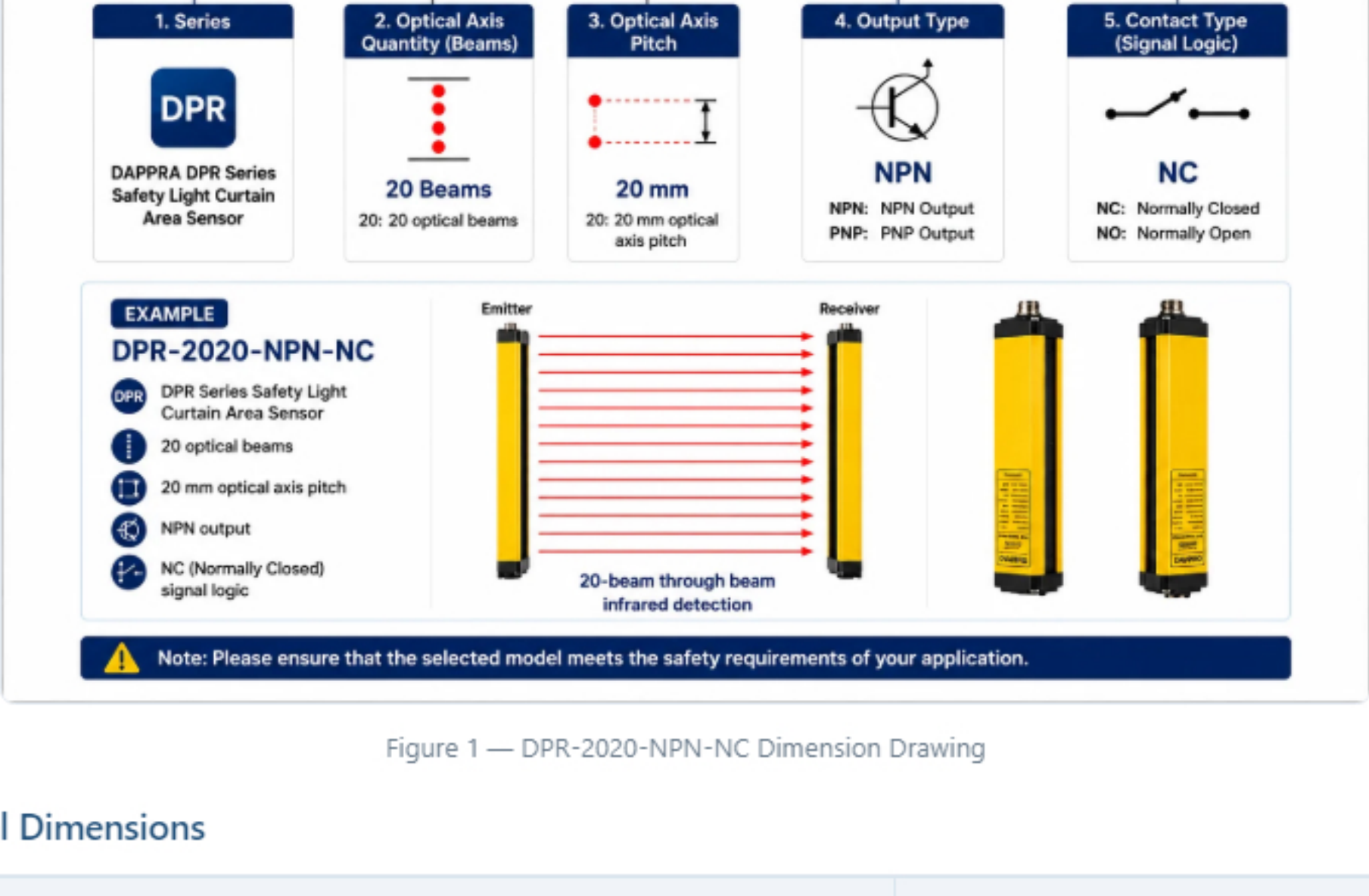


Figure 1 — DPR-2020-NPN-NC Dimension Drawing

Mechanical Dimensions

| Dimension Parameter   | Value (mm) |
|-----------------------|------------|
| Protection Height     | 380        |
| Total Height          | 459        |
| Cross Section         | 29 × 30    |
| Optical Axis Quantity | 20         |
| Optical Axis Pitch    | 20         |

Protection Height Calculation

The protection height is calculated according to the optical axis quantity and pitch:

Protection Height = (Optical Axis Quantity - 1) × Optical Axis Pitch

For DPR-2020-NPN-NC:

(20 - 1) × 20mm = 380mm

**NOTE:** Protection height is defined as the distance from the center of the first beam to the center of the last beam.

Optical Beam Structure

- **Beam Count:** 20 infrared beams
- **Optical Axis Pitch:** 20 mm
- **Protection Height:** 380 mm
- **Total Height:** 459 mm
- **Resolution:** 10 mm

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2. Installation Methods

The DPR-2020-NPN-NC supports flexible installation methods to adapt to different industrial machine structures.

Installation options include:

- Top and bottom mounting
- Side mounting
- Cantilever installation

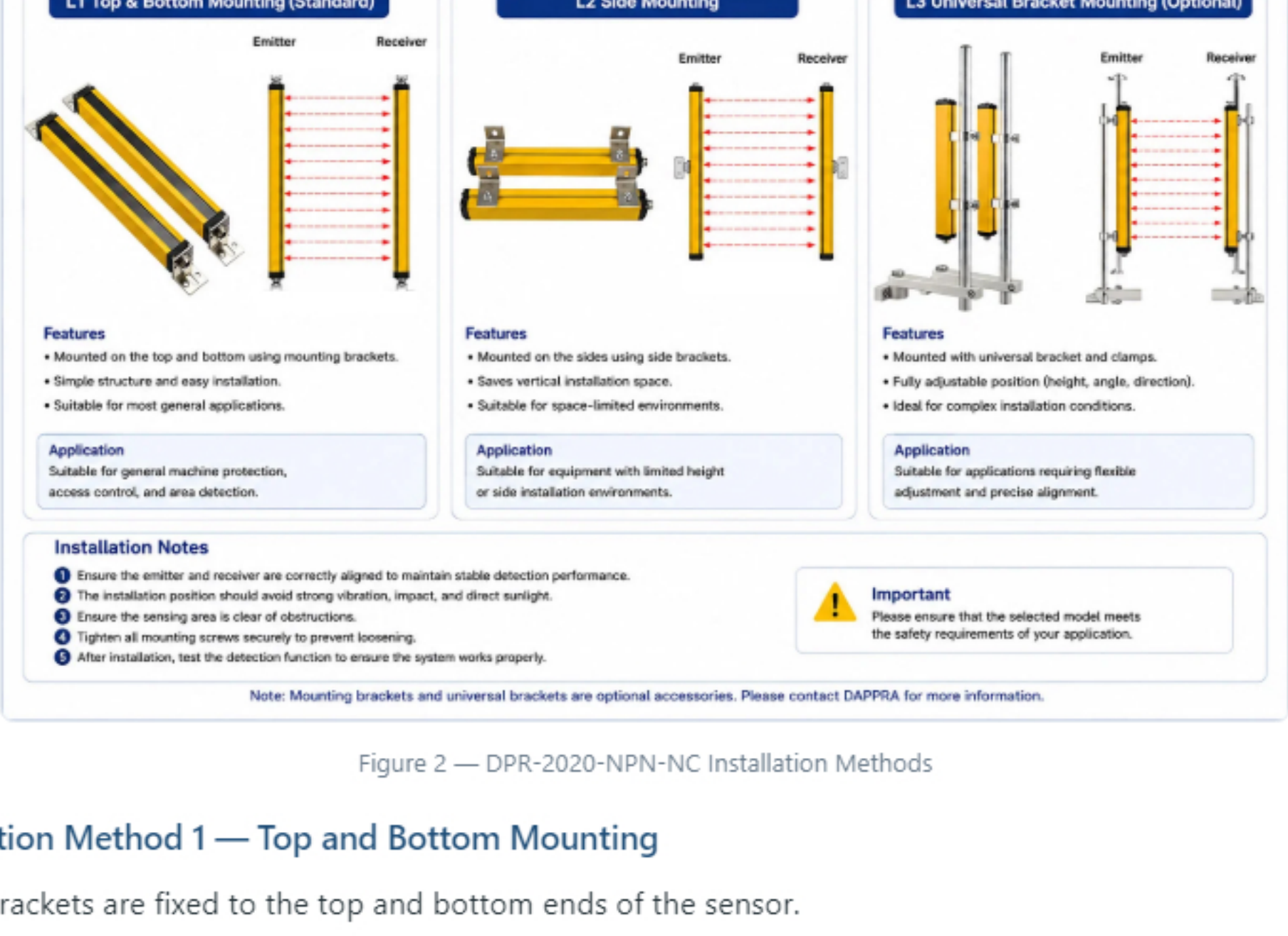


Figure 2 — DPR-2020-NPN-NC Installation Methods

2.1 Installation Method 1 — Top and Bottom Mounting

Mounting brackets are fixed to the top and bottom ends of the sensor.

**Suitable for:**

- Standard machine guarding
- Vertical protective areas
- Equipment access protection

2.2 Installation Method 2 — Side Mounting

Mounting brackets are fixed to both sides of the sensor.

**Suitable for:**

- Limited installation space
- Machine side protection
- Flexible mounting positions

2.3 Installation Method 3 — Cantilever Mounting

Cantilever brackets provide adjustable and flexible installation and are sold separately.

**Suitable for:**

- Customized machine layouts
- Extended protection areas
- Flexible sensor positioning

2.4 Emitter and Receiver Mounting

**Emitter Mounting:** Fix the emitter securely using the mounting brackets.

**Receiver Mounting:** Fix the receiver securely using the mounting brackets.

The emitter and receiver should be securely mounted and positioned facing each other.

2.5 Emitter and Receiver Alignment

The emitter and receiver must be correctly aligned so that all infrared beams are received by the receiver.

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

After mounting, verify that the complete detection area is aligned before connecting the sensor to the machine control system.

- All beams clear → Output ON
- Beam interrupted → Output OFF

3. Wiring Guide

The DPR-2020-NPN-NC uses an M12 3-pin connector for the emitter and an M12 4-pin connector for the receiver.

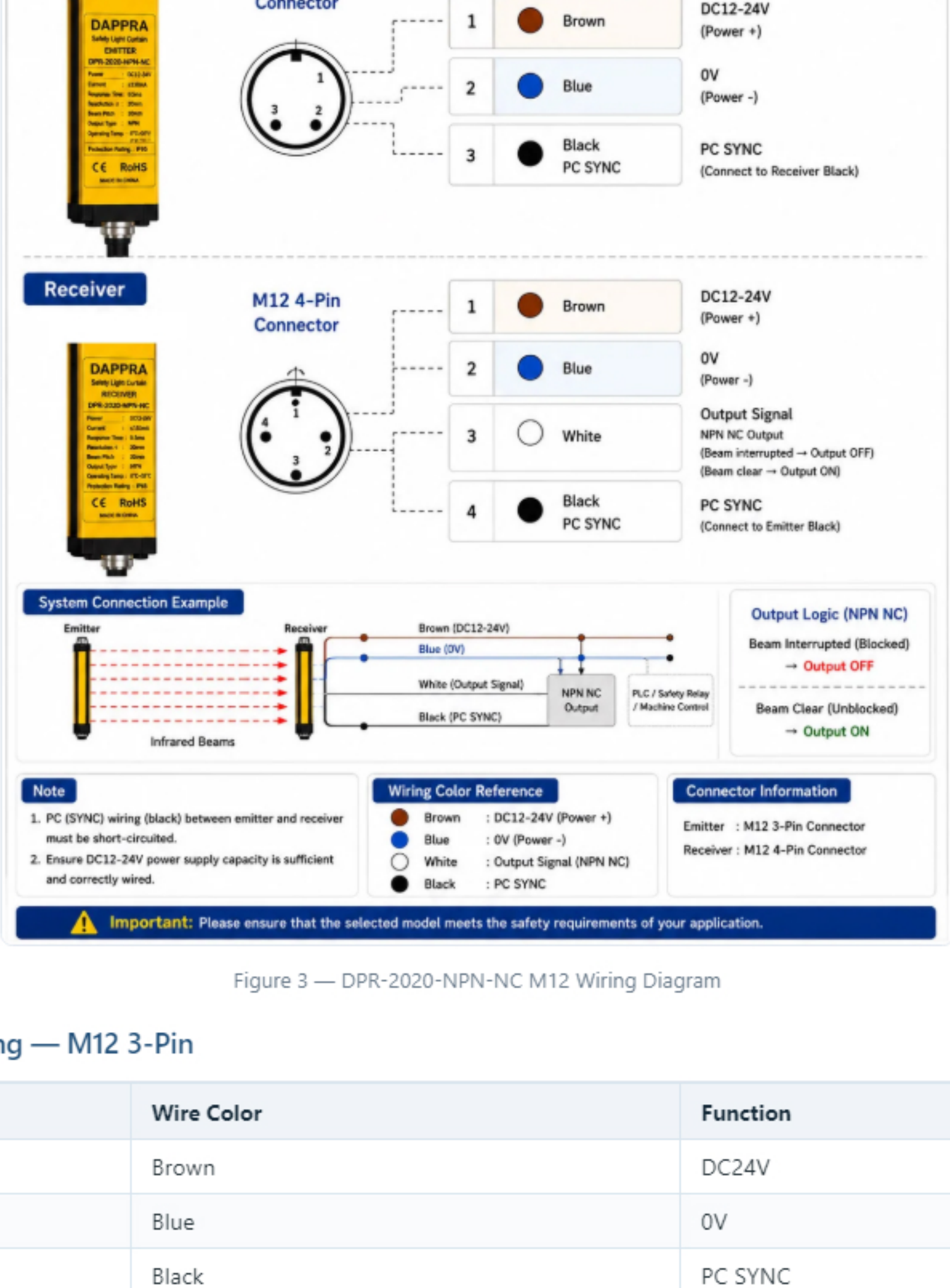


Figure 3 — DPR-2020-NPN-NC M12 Wiring Diagram

3.1 Emitter Wiring — M12 3-Pin

| Pin   | Wire Color | Function |
|-------|------------|----------|
| Pin 1 | Brown      | DC24V    |
| Pin 3 | Blue       | 0V       |
| Pin 4 | Black      | PC SYNC  |

3.2 Receiver Wiring — M12 4-Pin

| Pin   | Wire Color | Function      |
|-------|------------|---------------|
| Pin 1 | Brown      | DC24V         |
| Pin 2 | Blue       | 0V            |
| Pin 3 | White      | NPN NC Output |
| Pin 4 | Black      | PC SYNC       |

3.3 PC SYNC Connection

Emitter Black — Receiver Black

The PC SYNC wiring between the emitter and receiver must be connected according to the wiring diagram.

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