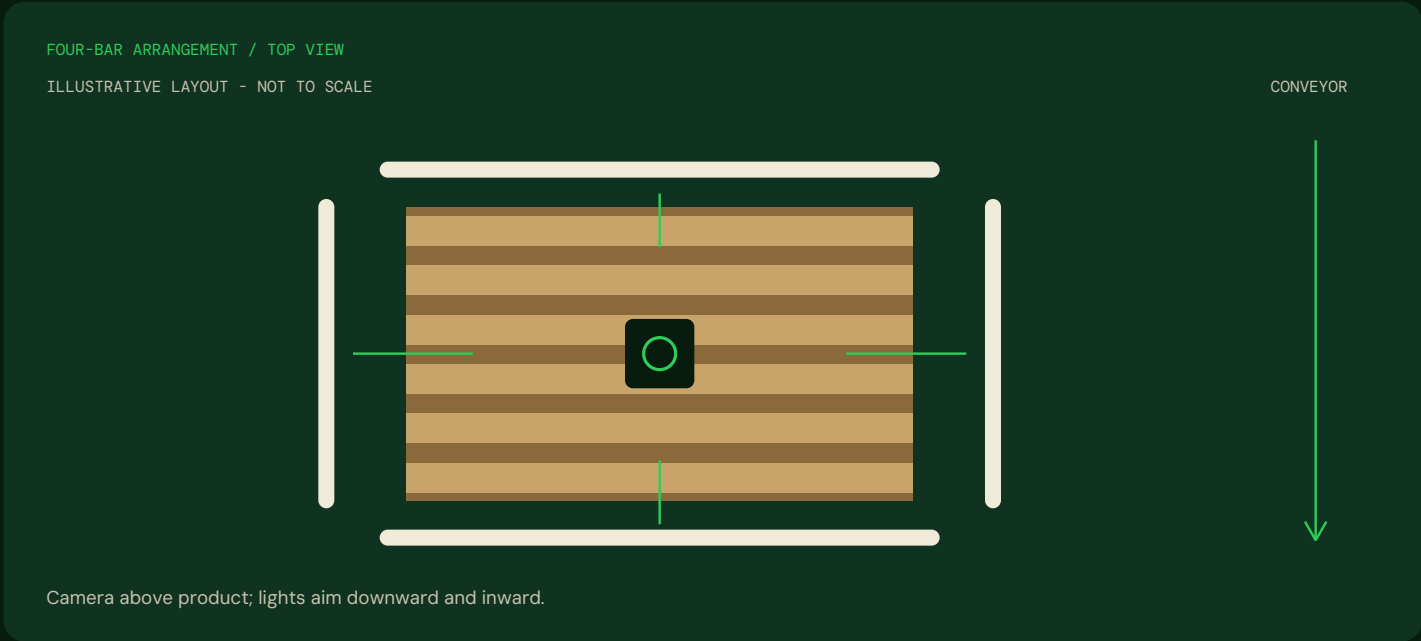


01 / THE INSPECTION AREA

Better images start with controlled light.

A practical four-bar installation baseline for Zira pallet quality inspection. Exact fixture identification, a linked shopping list and a measured commissioning process.



FIXTURE

LEANLED II CLEAR

LAYOUT

4 INDEPENDENT BARS

STARTING TARGET

~3,000 LUX

What is verified: a two-light test of this fixture supported high shutter speed without observed flicker. The four-bar rectangle extends that recommendation to improve perimeter coverage; it must be validated on the actual line.

02 / BUY THE CORRECT HARDWARE

Exact light. Clear quantities.

The recommended fixture is the clear-cover, non-cascadable LEANLED II, part 111010-06. It is not a diffuse variant. Order by exact part number.

LEANLED II CLEAR

1020 mm | PART 111010-06 | EAN 4260556624051

24 V DC +/-10% | approx. 26 W | approx. 4,500 lm

5700 K | CRI >85 | IP54 | 120-degree beam

- 4** **LEANLED II CLEAR / 111010-06**
Four singles; each includes one flat bracket pair and one swivel bracket pair.
[Product link](#)
- 4** **5 m M12-A cable / 200100-04**
Female M12 to open leads, four wires. One independent feed per light; do not daisy-chain. Verify cable route length.
[Product link](#)
- 2** **24 V DC supply / PIM90.245-L1**
90 W, 3.8 A, NEC Class 2 DIN-rail supply, 100-240 V AC input. Two lights per supply; keep the outputs separate.
[Product link](#)
- 1 set** **Frame, supports and installation hardware**
Four measured rails plus anchors, matched fasteners, adapters and cable routing. An existing suitable frame may be reused; the fabricator sets lengths, spans and loading.
[Product link](#)
- 8** **Cable-tie mounting blocks / 12316**
Starter allowance, adjusted to the actual cable route.
[Product link](#)
- 1** **Illuminance meter / LT300**
One per commissioning team; reuse a suitable calibrated meter if available.
[Product link](#)

Also allow: a site-designed electrical enclosure, DIN rail, terminals, disconnect/protection, cable glands and strain relief, rated by qualified site electrical personnel.

Confirm stock, pricing and delivery with the supplier before ordering, and check the label on the delivered fixture.

Keep the image geometry stable.

Fit the largest product and the complete inspection view before finalizing the light frame. Protect the line's required clearance and maintenance access.

1 Fix the camera view first.

Select working distance and optics so the full inspection area is visible and the smallest required defect has usable image detail. Avoid relying on digital zoom. Mount the camera rigidly; mark the accepted position.

2 Place two bars along and two across.

Arrange four lights around the inspection perimeter and aim downward/inward. Make height, spacing and aiming independently adjustable from the camera. Tune center, edge and corner coverage on the largest pallet. No universal mounting height is prescribed.

3 Use the included mounting system.

Use the fixture's supplied flat or swivel brackets and suitable frame adapters. Size the frame, supports and anchors to the actual span and load. Route cables away from pinch points, moving equipment and the optical view.

4 Use two separate regulated 24 V DC outputs.

Use two PIM90.245-L1 supplies, each feeding two lights in parallel (about 52 W / 2.17 A per supply). Keep DC outputs separate; do not parallel the supplies. Confirm polarity, connector pinout and cable capacity against the manuals. Four lights total about 104 W; do not place all four on one 100 VA Class 2 output.

5 Protect and keep the lights on.

Site electrical personnel should complete isolation, protection and fixed wiring. Keep lights powered throughout inspection, monitor loss of illumination and provide accessible cleaning. IP54 does not make a complete installation washdown-rated.

Manufacturer limits: disconnect power before connection; do not hot-plug. Keep at least 10 cm between the emitting surface and objects. Do not cover the light with film or cloth. Follow the supplied manual and recheck camera coverage after adjustments.

Tune the whole inspection area.

Lighting acceptance is based on the product plane and the exact captured Zira frames, at the production speed and exposure settings.

~3,000 LUX

Zira starting target at the product surface.
Measure on site; not a guarantee.

>=80% MIN / AVERAGE

Proposed commissioning criterion.
Not a quoted manufacturer guarantee.

1 Measure a nine-point grid.

Place the meter sensor in the product surface plane, facing the lights. Record a 3 x 3 grid covering the actual inspection area, including edges and corners. Repeat at the relevant product heights. Calculate minimum reading / average reading; target at least 0.80 for the general inspection recipe.

2 Inspect actual full-resolution snapshots.

Check dark and light wood, the center and corners, nail highlights, shadow detail and protective-window reflections. Eliminate clipped highlights and dark regions that hide the target. A lux reading alone does not establish detectable defect size, and a lux meter does not detect camera-visible flicker.

3 Set exposure for conveyor motion.

Use the shortest practical exposure needed for the allowed blur, then provide sufficient usable light. Start with low gain; fix focus and white balance for the accepted recipe. Confirm brightness remains stable with the actual shutter, frame rate and every dimming level used.

4 Freeze and record the recipe.

Record camera height, view, lens/zoom, focus, exposure, gain, white balance, light spacing/angles, supply model and meter readings. Use the same imaging conditions in model training and production. Revalidate after hardware, lighting or camera changes.

Prove visibility before accuracy.

Use a small diagnostic run to separate imaging failures from model failures. This run guides commissioning; it is not a statistical production acceptance study.

1 Prepare 20 defect pallets + 5 clean controls.

Give every test pallet a large unique chalk number in the camera view, away from the target. Include dark/light wood, relevant pallet formats, edge/corner positions and the actual defects in scope. Keep the physical test repeatable.

2 Run at the real operating conditions.

Confirm the camera is online and note the model version. Log pallet number, pass time, defect location, material/wood color and alarm result. Use maximum intended production speed and the final lighting recipe.

3 Review the exact Zira image for each pass.

For every miss, first ask whether the defect is clearly visible and resolved in the frame the model judged. Invisible, occluded, blurred or unresolved targets need an imaging change. Clearly visible misses are candidates for model improvement. Record false alarms on the clean controls.

RAISED NAILS NEED A SEPARATE TRIAL

Broad, uniform lighting is a useful general-inspection baseline. Slightly raised nails can require directional light and an oblique camera view. Compare those conditions on real defects before agreeing detection coverage. More light alone does not prove this capability.

START-OF-SHIFT CHECK

Lights on and stable; lenses and windows clean; view unobstructed; mounts unchanged; representative test images readable. Log lighting faults and recheck after maintenance.

WRAPPED CARTONS / GLOSSY MATERIAL

For wrapped cartons, test a shielded hood with diffuse light to reduce glare. Evaluate crossed light/lens polarizers on real products if needed; account for light loss and revalidate the final setup.

Know what each finding establishes.

Keep the fixture identification, the four-bar extension and the commissioning criteria separate. Each supports a different decision.

01 / Fixture recommendation

A two-unit test of this fixture supported high shutter speed without observed flicker. This identifies the recommended product; it does not validate every four-bar installation.

02 / Four-bar coverage extension

Field results described improved images but darker perimeter nails with two lights; moving lights outward and adding two transverse bars produced the rectangular arrangement shown in this guide.

03 / Surface illumination starting point

A site lighting specification called for about 3,000 lux, 5000–6500 K and CRI 90 preferred, with uniformity left undefined. This fixture is 5700 K, CRI >85: it does not establish CRI ≥90.

04 / Manufacturer and retailer data

Current datasheet: part 111010-06, 26 W, 4,500 lm, 5700 K, CRI >85 and 24 V DC. Retailer values differ; verify the delivered label and revision.

[Fixture datasheet](#)

[Fixture installation manual](#)

[Power supply specification](#)

05 / Imaging consistency

Controlled lighting and matching optics and lighting between model training and production keep results comparable. Diffuse light reduces glare; directional light reveals surface relief. Choose per use case and validate on real product.

Handover record: site / line, part numbers, frame drawing, camera recipe, nine-point readings, sample images, test results, model version and agreed inspection scope.