

# Datasheet

## **Zirqle Industrial LED Fixture Transparent IP68 Red 640nm 24.2x16mm (24 Volt, 2835, IP68)**

**LF-24-640-24.2x16-PU**

**Version: 2025-08-29.2**

## Product description

The **Zirqle Industrial LED Fixture Transparent IP68 Red 640 nm (24.2 × 16 mm, 2835 LEDs)** features a fully encapsulated design in polyurethane (IP68), delivering powerful red illumination in extreme environments. Seamlessly integrated with the MaNima Pollux Industrial System, it guarantees uniform output, durability, and reliability in outdoor, submerged, and industrial settings.

## Key Specifications

| Property              | Value / Description                                                |
|-----------------------|--------------------------------------------------------------------|
| Wavelength            | 640 nm red (measured peak ~639 nm)                                 |
| Illuminance / Output  | ~64,290 lx @ 5 cm; PPFD ~2,315 µmol/m²/s @ 5 cm                    |
| Cover                 | Fully moulded transparent polyurethane encapsulation               |
| LED Type / Protection | 2835 LEDs; IP68 encapsulated (dust- and waterproof)                |
| Beam Angle            | 120°                                                               |
| Voltage / Power       | 24 V DC, ~30 W per fixture                                         |
| Thermal Monitoring    | Integrated NTC sensor, controllable via MaNima Pollux              |
| Design                | Modular & scalable, 220–3000 mm                                    |
| Dimensions            | 24.2 × 16 mm fixture profile                                       |
| Operating Environment | Outdoor, submerged, industrial, or harsh conditions (–20...+60 °C) |

## IP68 Moulded Design – Fully Encapsulated Housing

This fixture is completely encapsulated in transparent polyurethane, delivering:

- **IP68 waterproofing** – safe in submerged and outdoor environments
- **IK10-level robustness** – highly resistant to shock and vibration
- **Uniform red output** – glare-free, consistent illumination through encapsulation
- **Maintenance-free reliability** – sealed against dust, moisture, and corrosive agents
- **Extended lifespan** – protects internal electronics from environmental stress
- **Built for extreme conditions** – ideal for marine, food, pharma, and heavy industry

## Applications

1. **Horticulture & Greenhouses** – red spectrum enhances flowering and fruiting in humid or wash-down agricultural setups
2. **Aquaculture & Marine Environments** – submerged red lighting for aquatic systems and biological monitoring
3. **Food & Pharmaceutical Processing** – IP68 housing suitable for wash-down zones and hygienic production lines
4. **Photobiomodulation & Therapy** – red light supporting tissue regeneration and skin treatment in damp or exposed setups
5. **Machine Vision & Surface Inspection** – red contrast illumination in dusty, wet, or chemically exposed industrial areas
6. **Signalling & Safety Lighting** – robust red warning or indicator lights for outdoor or hazardous facilities
7. **R&D & Optical Bonding** – stable red illumination for advanced laboratory and optical research

## Benefits for Engineers

1. **Fully sealed PU design (IP68)** – waterproof, dustproof, and maintenance-free
2. **Impact-resistant** – IK10-level protection ensures reliability under physical stress
3. **Consistent red illumination** – even output thanks to encapsulation
4. **Long-term durability** – protected against moisture, chemicals, and rough handling
5. **Modular scalability** – customizable lengths up to 3 meters
6. **Automation-ready** – compatible with Pollux, PLC, and SCADA systems

---

## Integration with MaNima Pollux Industrial System

- Real-time NTC temperature monitoring
- Pulsing/strobing for enhanced peak output
- Thermal overload protection for continuous use
- PLC/SCADA compatibility
- Open API (UDP-based) for tailored automation

## Technical specifications

| General                                                      |                                    |                 |
|--------------------------------------------------------------|------------------------------------|-----------------|
| Brand                                                        | Zirqle                             |                 |
| Application                                                  | Barcode Scanning<br>Machine Vision |                 |
| LED type                                                     | 2835                               |                 |
| Material                                                     | Aluminum                           |                 |
| Dimensions                                                   | 220 × 24,2 × 16 mm                 |                 |
| Mounting                                                     | Surface mounted                    |                 |
| Cover type                                                   | Polyurethane                       |                 |
| LEDs per piece                                               | 108.00                             |                 |
| Lifetime                                                     | 70000 hours                        |                 |
| Lighting                                                     |                                    |                 |
| Wave length                                                  | 640nm                              |                 |
| Beam angle                                                   | 120 °                              |                 |
| Measurement results                                          |                                    |                 |
| Illuminance (Lux)<br>(Object size: 1 piece)                  |                                    | 24V             |
|                                                              | 5cm                                | 64290 lx        |
|                                                              | 10cm                               | 19860 lx        |
|                                                              | 15cm                               | 9855 lx         |
|                                                              | 20cm                               | 5796 lx         |
|                                                              | 25cm                               | 3840 lx         |
|                                                              | 30cm                               | 2843 lx         |
|                                                              |                                    |                 |
| Total PPFD umol/m2 (PAR 400-700nm)<br>(Object size: 1 piece) |                                    | 24V             |
|                                                              | 5cm                                | 2315.41 umol/m2 |
|                                                              | 10cm                               | 713.91 umol/m2  |
|                                                              | 15cm                               | 356.44 umol/m2  |
|                                                              | 20cm                               | 213.68 umol/m2  |
|                                                              | 25cm                               | 141.16 umol/m2  |
|                                                              | 30cm                               | 104.55 umol/m2  |
|                                                              |                                    |                 |
| Peak wavelength<br>(Object size: 1 piece)                    | 639 nm                             |                 |
| Peak irradiance<br>(Object size: 1 piece)                    |                                    | 24V             |
|                                                              | 5cm                                | 21.25 W/sqm     |
|                                                              | 10cm                               | 6.44 W/sqm      |
|                                                              | 15cm                               | 3.22 W/sqm      |
|                                                              | 20cm                               | 1.91 W/sqm      |
|                                                              | 25cm                               | 1.25 W/sqm      |
|                                                              | 30cm                               | 0.93 W/sqm      |
|                                                              |                                    |                 |

#### Total irradiance (Object size: 1 piece)

|      | 24V         |
|------|-------------|
| 5cm  | 439 W/sqm   |
| 10cm | 143.8 W/sqm |
| 15cm | 71.25 W/sqm |
| 20cm | 42.8 W/sqm  |
| 25cm | 28.17 W/sqm |
| 30cm | 20.82 W/sqm |

- By combining Pulse Mode with Real-Time Monitoring, the efficiency of LED systems can be increased, resulting in higher output.
- We have the expertise and equipment to perform measurements tailored to the specific requirements of the application.

#### Electronics

|                             |                 |
|-----------------------------|-----------------|
| Working voltage             | 24V             |
| Current per piece           | 1.25 A / piece  |
| Power consumption per piece | 30.00 W / piece |
| PCB material                | Aluminium       |

#### Pinout

| Symbol  | Function   |
|---------|------------|
| V+      | V+         |
| GND     | Ground     |
| NTC     | NTC sensor |
| NTC_GND | NTC ground |

|                |                                          |
|----------------|------------------------------------------|
| NTC parameters | Resistance: 5000 Ohm<br>Beta value: 3950 |
|----------------|------------------------------------------|

#### Environmental

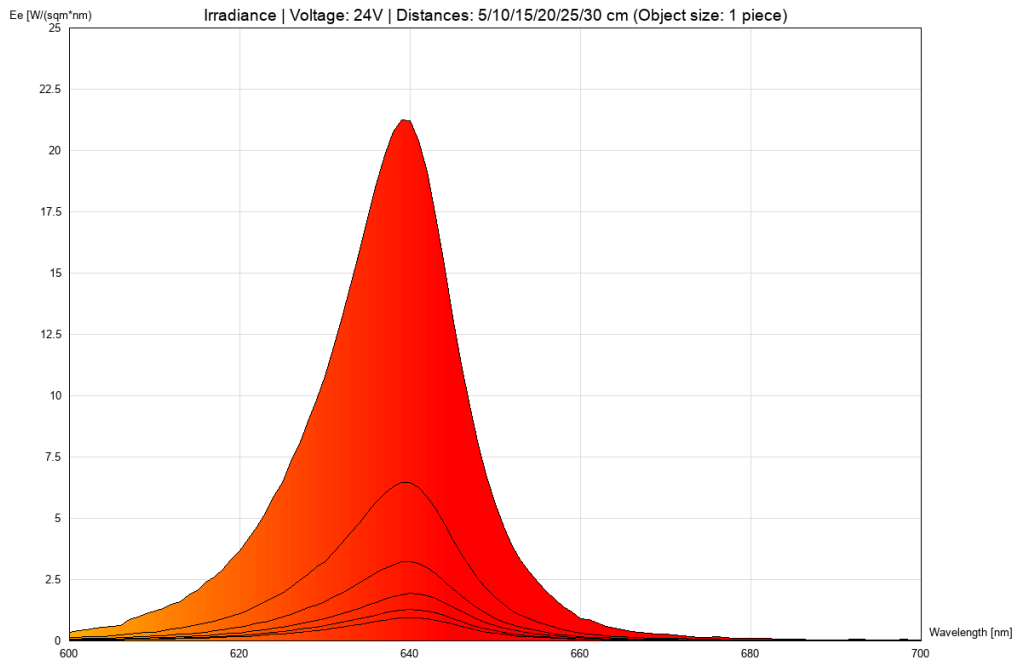
|                       |              |
|-----------------------|--------------|
| Operating temperature | -20 ~ +60 °C |
| Storage temperature   | -40 ~ +80 °C |
| IP class              | IP 68        |

#### Directives - standards - certificates

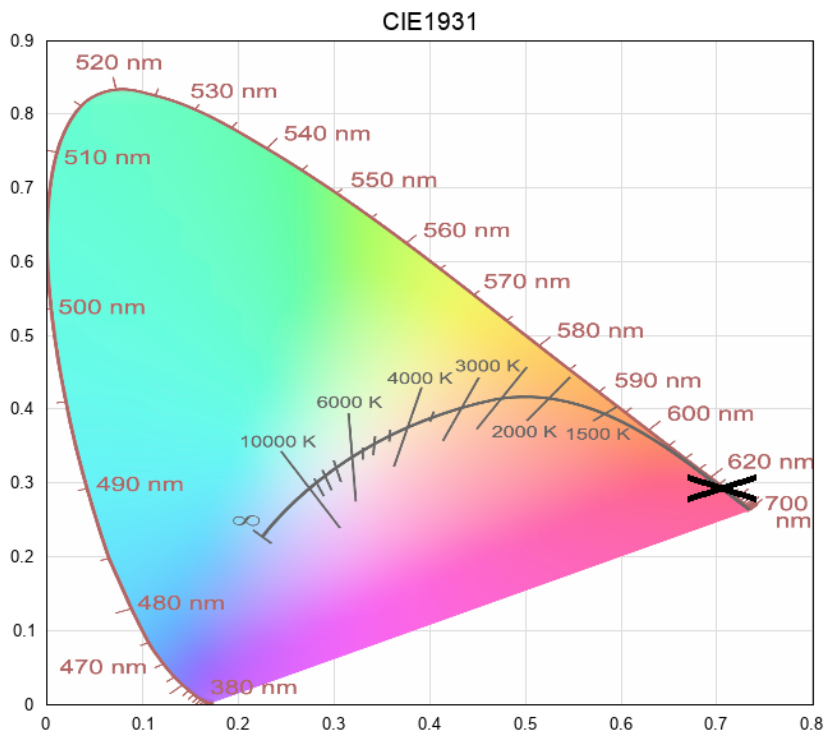
|                  |                                  |
|------------------|----------------------------------|
| Directives       | RoHS<br>CE                       |
| Safety standards | EN60598-1<br>EN62031<br>IEC62471 |

## Measurement results

### irradiance - 600-700-red (24V)



**cie1931**



While LuxaLight has made every reasonable effort to ensure the accuracy of the information in this brochure, LuxaLight does not guarantee that it is error - free, nor does LuxaLight make any other representation, warranty or guarantee that the information is accurate, correct, reliable or current. LuxaLight reserves the right to make any adjustments to the information contained herein at any time without notice. LuxaLight expressly disclaims all implied warranties regarding the information contained herein, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose. The dimensions in this catalogue are for reference purposes only and are subject to change without notice. Specifications are subject to change without notice. Consult LuxaLight for the latest dimensions and design specifications.