Design-in Guide

Interact Ready luminaires for connected Cities

interact ready.

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1 About this guide

This document provides guidelines for the assembly of the Interact Ready connector node into or onto a street lighting luminaire.

The subsequent configuring and programming of the Interact Ready luminaire is described in the *User Guide of the Interact Ready luminaire configurator.*

The servicing and repair of the Interact Ready luminaire is described in the *Service manual for Interact Ready luminaires*.

It includes the following Interact Ready connector nodes:
- Interact Ready connector node assembled into luminaire.
  LLC7252, LLC7253 (combined with LLC7240)
- Interact Ready connector node twist-locked onto a luminaire with SR dimmable LED driver and universal socket.
  LLC7270, LLC7271 for 4-pin socket conform Zhaga book 18
  LLC7280 for 7-pin NEMA socket conform ANSI C136.41

Safety Notice

It is important to read ALL safety information and instructions provided in this manual and any accompanying documentation before installing and operating the products described herein. Act according all cautions and warnings during installation and use of this product.

Safety symbols used throughout this manual are as follows:

Caution
Advising of potential damage.

Warning
Advising of potential injury or death to persons.

General information pertaining to protection against electrical shock, fire, and injury to persons can be found below.

Safety warnings and instructions to be taken into account during design-in and manufacturing:

- Do not use products with damaged or defective contacts or housings
- Do not service the luminaire when the mains voltage is connected
- Do not use damaged products
- Cap off all unused wires to prevent accidental contact
- The luminaire manufacturer is responsible for its own luminaire design and has to comply with all relevant safety standards

2 Interact Ready connector nodes

The Interact Ready connector node is a luminaire-based device that connects a luminaire to the Interact City connected street lighting and management software via the mobile network.

Each Interact Ready connector node contains a modem for mobile communication, a GPS receiver for automatic location, and a photocell for ambient light detection.

Interact Ready connector node with 20 mm screw thread interface

Applies to connector nodes LLC7252 (dark grey) and LLC7253 (light grey). These connector nodes require the auxiliary power unit (LLC7240).

This connector node is intended for new luminaires with DALI dimmable LED driver. The connector node is fixed to the luminaire using the 20mm screw thread.

The Interact Ready connector node LLC725x and auxiliary power unit LLC7240 are packaged separately.

Interact Ready connector node with 4-pin Zhaga interface

Applies to connector nodes LLC7270 (dark grey) and LLC7271 (light grey).

This connector node is intended for new or upgrade of luminaires with 4-pin socket conform Zhaga book 18 and SR dimmable LED driver. The connector node is twist-locked onto the socket.

Interact Ready connector node with 7-pin NEMA interface

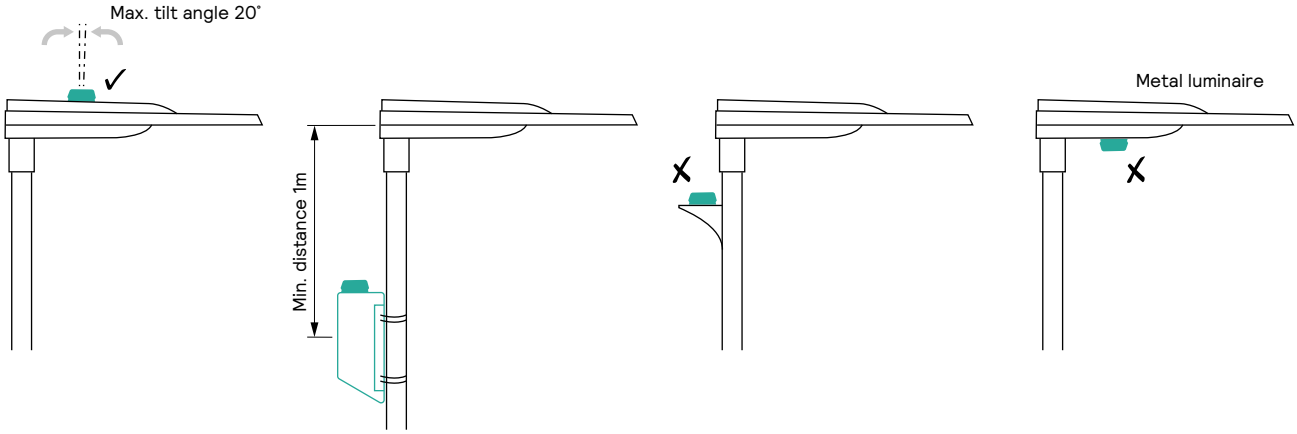
Applies to connector node LLC7280 (light grey).

This connector node is intended for new or upgrade of luminaires with 7-pin NEMA socket conform ANSI C136.41 and SR dimmable LED driver. The connector node is twist-locked onto the socket.

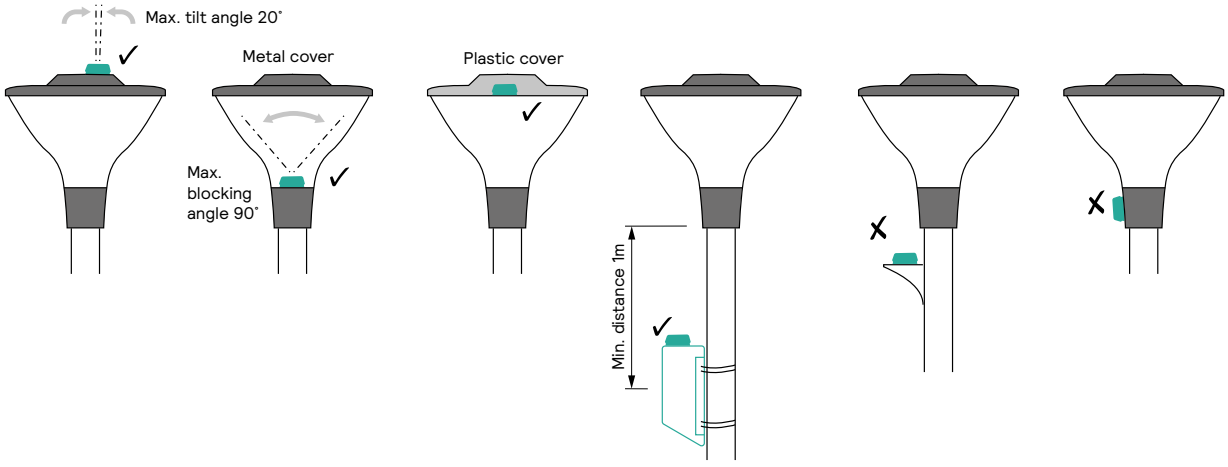
Description	Interact Ready connector node	Luminaire – node interface	LED driver control method
Interact Ready connector node with 20mm screw thread interface	LLC7252, LLC7253	20 mm hole	DALI
Interact Ready connector node with 4-pin Zhaga interface	LLC7270, LLC7271	4-pin socket conform Zhaga book 18	SR
Interact Ready connector node with 7-pin NEMA interface	LLC7280	7-pin NEMA socket conform ANSI C136.41	SR

3 Luminaire requirements

The preferred position of the Interact Ready connector node is on top of the luminaire, so the connector node has a clear view of the sky (open line of sight to the GPS satellites in the sky). The tilt angle of the connector node should be below 20°, taking into account all the different possible mounting angles of the luminaire on the pole.



For post-top luminaires, the Interact Ready connector node can also be positioned inside the luminaire for aesthetical purpose. In case of a metal top cover, the blocking view angle of the sky by the metal top cover should be below 90°. In case of a plastic cover, the connector node can be positioned directly behind the plastic cover.



If the Interact Ready connector node cannot be positioned on top of or inside the luminaire according to above guidelines, the luminaire shall be connected using the Interact Ready connector kit. The kit is mounted to the pole and requires a drilled hole to bring the cable to the bottom of the pole, where it is connected to the luminaire.

The Interact Ready connector node shall be combined with a compatible LED driver. The socket-based connector nodes (LLC727x, LLC7280) shall be combined with an SR dimmable LED driver. The connector node with screw thread (LLC725x) shall be combined with a DALI dimmable LED driver and require the auxiliary power unit (LLC7240). The auxiliary power unit provides the energy measurement and the low voltage power supply to the connector node.

The full list of compatible and supported LED drivers is described in Interact Ready supported drivers.

Note
If your luminaire does not meet these requirements, please contact your Signify representative of the Interact Ready program.

4 Interact Ready connector node with 20 mm screw thread interface

Applies to connector nodes LLC7252 (dark grey) and LLC7253 (light grey). These connector nodes require the auxiliary power unit (LLC7240).

Mechanical assembly

Connector node

- Mount the connector node on top of, or inside the luminaire, using a 20 mm hole (between 19.9 millimeter and 22 millimeter)
- Make sure the white rubber sealing ring ① is on the outside of the luminaire and the black rubber ring ② is on the inside of the luminaire
- To prevent water ingress or cracking of the screw thread, fix the connector node with the M20 nut ③ and a torque between 1.5 and 1.8 Nm
- To prevent damage to the internal wires due to rotation of the connector node it is advised to make use of the anti-rotation slot, present in the threaded part (refer to specification sheet of the Interact Ready connector node for detailed dimensions)

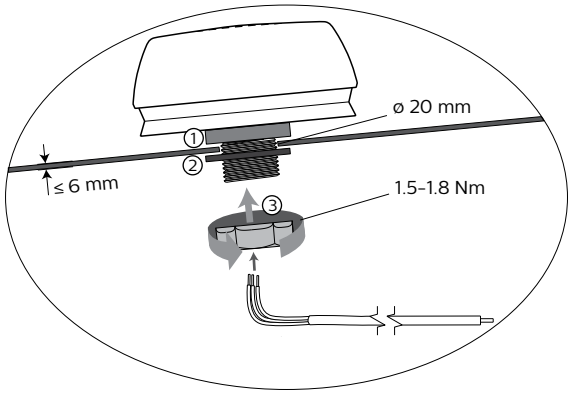


Figure 2 Installation instructions for Interact Ready connector node with screw thread

When the luminaire surface between the rubber rings is flat and smooth an IP66 rating is possible. When the radius of curvature near the connector node is 160 mm or higher, the flexible aesthetical ring compresses to visually close the gap between the connector node and the luminaire surface.

Auxiliary power unit

- Mount the power unit inside the luminaire
- Fix the power unit with the integrated M8 nut or with two M4 screws on opposite corners (refer to specification sheet of the auxiliary power unit for detailed dimensions

Electrical assembly

The Interact Ready connector node is suitable for both class I and class II luminaires.

Warning
Disconnect mains power, when changing wiring.
Do not touch any components and wires while power is on.

Wire the Interact Ready connector node, auxiliary power unit and DALI dimmable LED driver according to below wiring diagram.

- Use a solid-core or single-strand wire with a diameter between 0.5 and 1.5 mm
- Separate power lines from control lines where possible to minimize chance of EMC non-compliance
- Separate LED/lamp wires from all other internal wires.
- When the LED driver has DALI and 1-10V interface with one wire combined, this combined wire shall be connected to DA- terminal (grey) of the Interact Ready connector node
- Maximum wire length of DALI lines between Interact Ready connector node and auxiliary power unit is 2 meters
- Maximum wire length of DALI lines between auxiliary power unit and LED driver is 2 meters

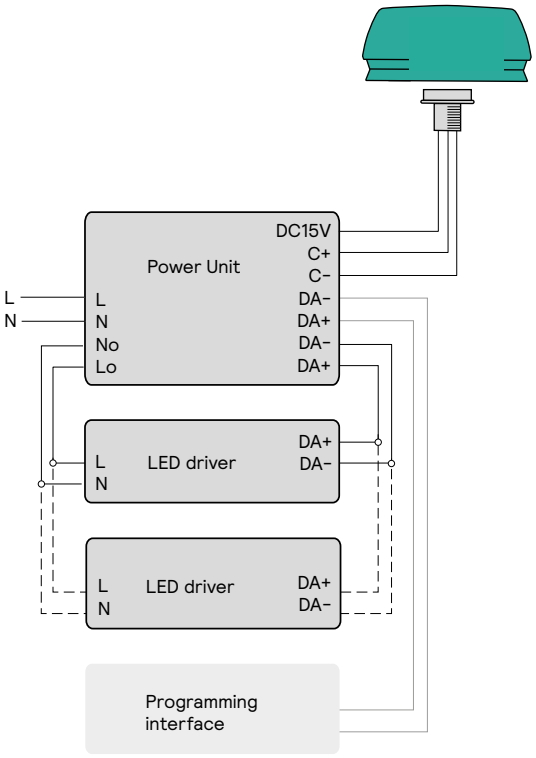


Figure 3 wiring diagram for Interact Ready luminaire fixed Interact Ready connector node

A maximum of 3 drivers of the same type can be connected in parallel to the power box. The total rated current of connected drivers shall not exceed 4A. The LED/lamp-types shall have identical dimming characteristics.

The interface connection wires from the Interact Ready connector node to the auxiliary power unit and to the driver(s) provide basic insulation from the mains voltage.

Caution
The Line-out (Lo) and Neutral-out (No) circuits are not protected from excessive current in case of a fault condition.

5 Interact Ready Connector node with 4-pin Zhaga interface

Applies to connector nodes LLC7270 (dark grey) and LLC7271 (light grey). These connector nodes have 4-pin metal contacts conform Zhaga book 18. The Interact Ready luminaire has the mating 4-pin socket conform Zhaga book 18 and a compatible SR dimmable LED driver.

Mechanical assembly

Refer to the supplier's application specification for the assembly of the Zhaga socket into the luminaire. If present, remove the sealing cap protecting the socket. Twist-lock the Interact Ready connector node onto the socket.

Electrical assembly

The Interact Ready connector node is suitable for both class I and class II luminaires.

Warning
Disconnect mains power, when changing wiring. Do not touch any components and wires while power is on.

Refer to the specification sheet of the socket and LED driver for the wire type and diameter.

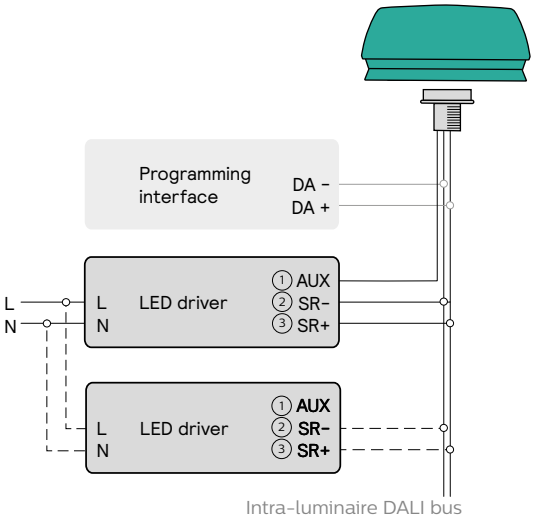


Figure 4 Wiring diagram for Interact Ready luminaire with 4-pin Zhaga socket.

Line switch
An Interact Ready luminaire with socket allows for the luminaire to be installed today and the Interact Ready connector node to be attached at a later date. As long as the connector node is not attached, the luminaire will operate in stand-alone mode.

SR dimmable LED drivers do not support the Line Switch feature. If a group of stand-alone luminaires need to be dimmed via pilot-line, a separate DALI control device with switching input for mains voltage shall be used. Interact Ready supports the Lunatone DALI MC1L device.

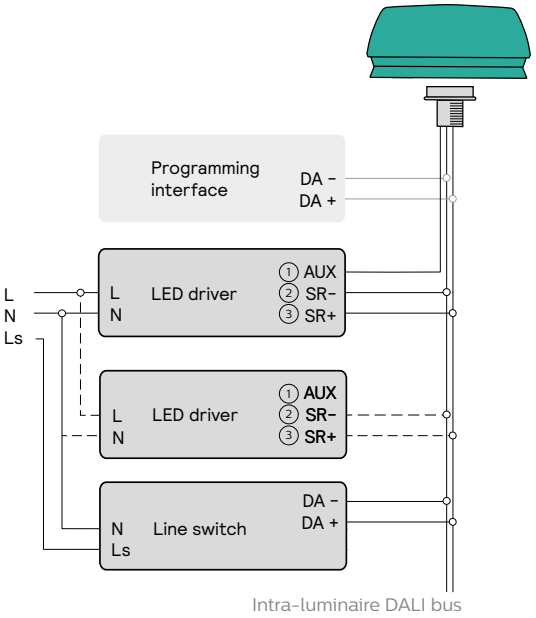


Figure 5 Wiring diagram for Interact Ready luminaire with separate line switch device

Sensors

An Interact Ready luminaire can have a second, downward looking Zhaga socket to enable in-the-field upgrade with sensors (e.g. presence, environmental). The downward looking socket is wired similar to the upward looking socket (Figure 6)

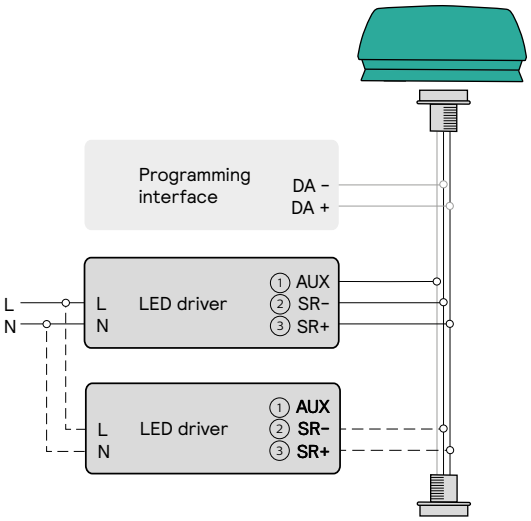


Figure 6 Wiring diagram for Interact Ready luminaire with two Zhaga sockets

A maximum of 4 SR dimmable LED drivers can be connected in parallel to the connector node. The same operating current shall be configured for alike LED drivers. The Interact Ready connector node shall be connected the low voltage power supply (AUX) of only 1 LED driver.

6 Interact Ready connector node with 7-pin NEMA interface

Applies to connector node LLC7280 (light grey). This connector node has 7-pin metal contacts conform ANSI C136.41. The Interact Ready luminaire has the mating 7-pin NEMA socket conform ANSI C136.41 and a compatible SR dimmable LED driver.

Mechanical assembly

Refer to the supplier's application specification for assembly of the socket into the luminaire. If present, remove the sealing cap protecting the socket. Twist-lock the Interact Ready connector node onto the socket

Electrical assembly

The Interact Ready connector node is suitable for both class I and class II luminaires.

Warning
Disconnect mains power, when changing wiring.
Do not touch any components and wires while power is on.

Refer to the specification sheet of the socket and LED driver for the wire type and diameter.

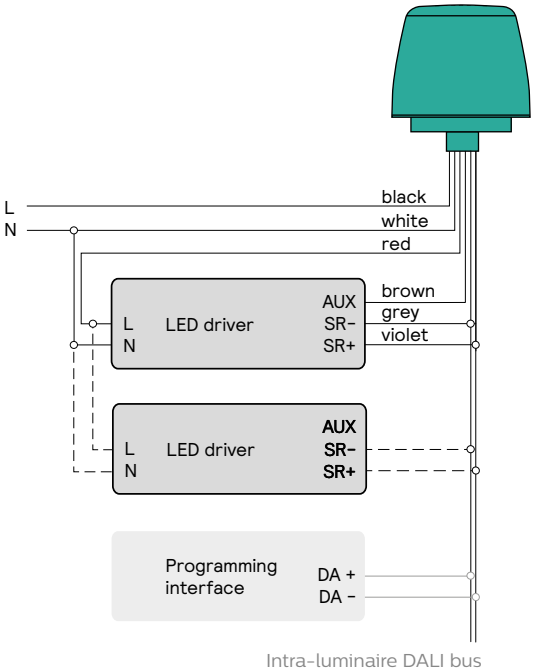


Figure 7 Wiring diagram for Interact Ready luminaire with 7-pin NEMA socket

Sensors
An Interact Ready luminaire can have a second, downward looking Zhaga socket to enable field upgrade with sensors (e.g. presence, environmental). The downward looking socket is wired like the upward looking socket (Figure 7).

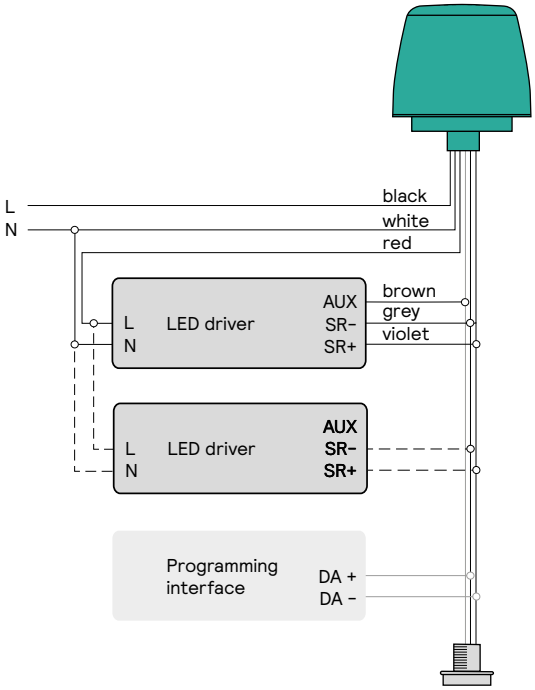


Figure 8 Wiring diagram for Interact Ready luminaire with NEMA socket for the connector node and Zhaga socket for sensor

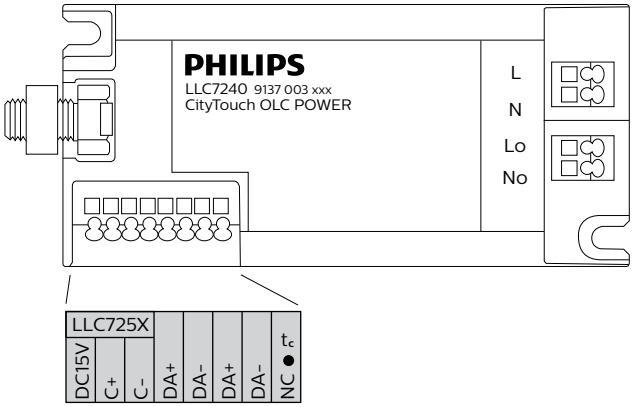
A maximum of 4 SR dimmable LED drivers can be connected in parallel to the connector node. The same operating current shall be configured for alike LED drivers. The Interact Ready connector node shall be connected the low voltage power supply (AUX) of only 1 LED driver.

7 Thermal limitation

To achieve optimal lifetime and reliability, it is critical that the temperature of the components in the Interact Ready connector node remain within its rating. The ambient temperature is a reference for temperatures of the critical internal components.

For the auxiliary power unit, the case temperature (Tc) is a reference for the temperatures of the critical internal components. The location of the Tc point is identified on the product label.

Refer to the specification sheet of the Interact Ready connector node for the temperature ratings.



8 Certificates

The Interact Ready connector node is CE and ENEC certified. It meets the requirements of EMC and GSM/GPRS spurious emissions:

- IP66, as specified in IEC60529
- Radio spectrum according ETSI EN 301 511
- EMC according CISPR22

These certificates can be re-used and will be provided on request.

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