

Freedom Node - external radiocommunication unit

Product code: see page 3

- Combined Freedom solution offering both Freedom LED driver and Freedom Node - radiocommunication unit for flexible and easy-to-install wireless luminaire control.
- Optimized mechanics to fit especially in linear luminaires with optimal radio performance.
- Connect a Freedom Sense luminaire-based sensor into the solution, if supported by the control system
- Wide LED driver offering of compact and linear shape LED drivers for flexible luminaire solutions.
- Extensive wireless lighting control systems support to ensure all-around system specification needs.
- For the current system availability, see page 3.



Technical data - Freedom Node

Input characteristics

Input voltage	3.0 – 3.6 V
Max. power consumption	< 53 mW
Data communication (LED driver to Freedom Node)	Freedom Interface

Wireless connectivity

Frequency range	2.402 – 2.480 GHz
Wireless network compability	Bluetooth LE / Mymesh / Wirepas
Control system compability	ActiveAhead, Casambi, Mount Kelvin, Mymesh by Chess, Pulse Systems, Ingy*
Working range from Node to Node	30 m**
Antenna design	Omnidirectional pattern

*For the control system availability, see page 3 product ordering information

**The working distance varies greatly based on the installation environment and surroundings. Please see page 2 for more information

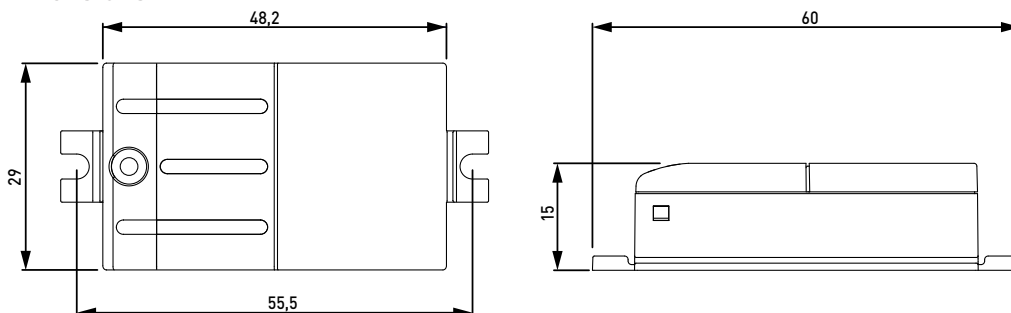
Operating Conditions and Characteristics

Tp point (performance measurements)	Tc = 65 °C
Max. temperature at Tc point	65 °C
Ambient temperature range	-25...+50 °C
Storage temperature	-40...+80 °C
Humidity	No condensation
Lifetime (90 % survival rate)	50 000 h, at t _c = 65 °C

Mechanical Data

Material	Fire-retardant polycarbonate
Driver to Node cable lengths available	15 cm / 30 cm / 45 cm / 90 cm / 150 cm
Weight	12 g
Colour	White
IP rating	IP20

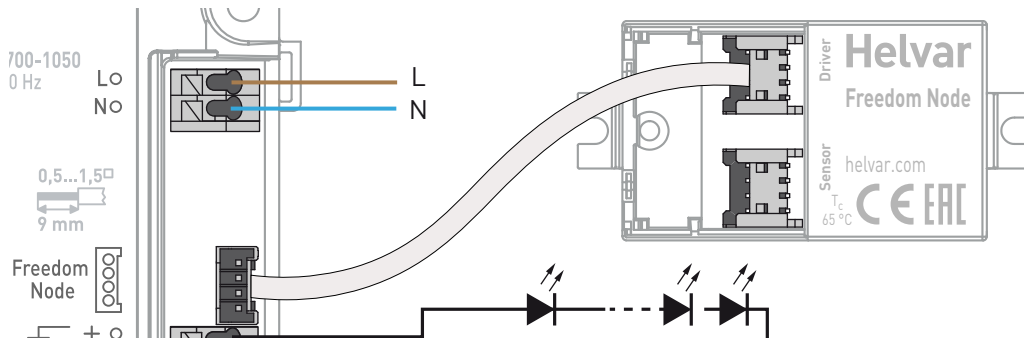
Dimensions



- The mounting tabs can be removed in case they are not needed.
- The integrated strain-relief is needed in independent installation. In built-in use it is not required to be connected.

Connections

Picture below presents how a Freedom Node is connected to a Freedom driver.



*The label of the Freedom Node will always represent the operating control system.

*ActiveAhead / Freedom Sense sensor may be connected to Freedom Node if supported by the control system.

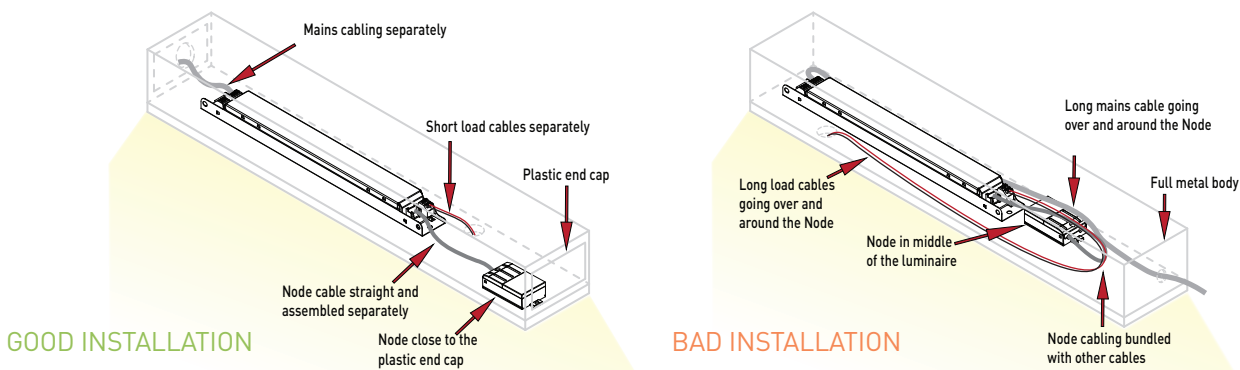
*See mechanical considerations regarding the connection on page 3.

Installation

Freedom Node can be installed both in and outside of the luminaire.

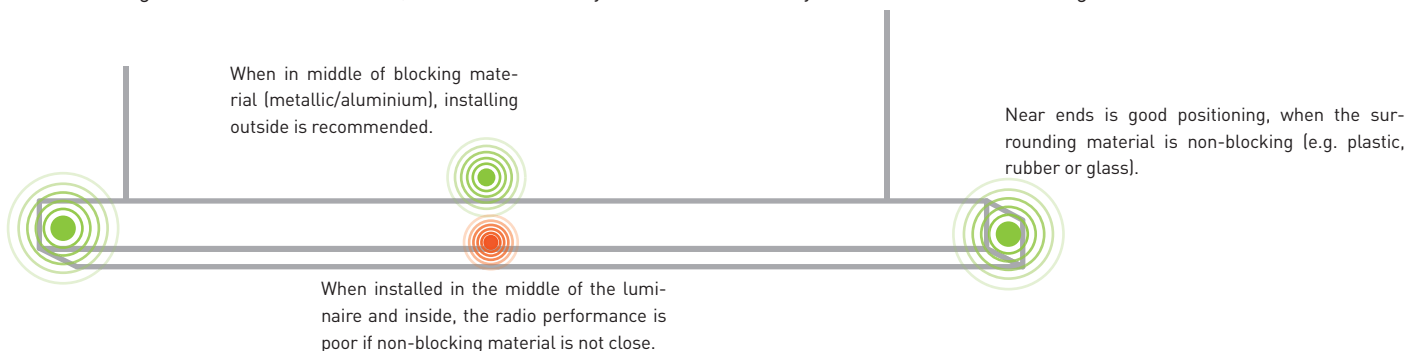
In general, the following things is good to be considered:

- The best radio performance is achieved, when the Freedom Node is placed on top of non-blocking material (in regard of radiocommunication signals), e.g. on top of plastic.
- It is recommended not to place any wiring over the Freedom Node.
- Freedom Node to LED Driver interconnecting cable is advised not to be bundled together with other wiring inside the luminaire; for example mains or load.



When the Freedom Node is installed inside luminaire with the driver, the following things needs to be taken in consideration regarding the communication:

- To ensure good connectivity between Freedom Nodes, the Node shall never be fully surrounded with metallic parts. The radiocommunication signals can't pass through metal.
- The Freedom Node should be positioned close to such non-blocking materials that bypass radio frequency signals (e.g. plastic, rubber and glass). When inside metallic linear luminaire, there should always be holes (can be either open or spots with non-blocking material) bigger than 2 cm diameter / length close to the Freedom Node, to allow the radiocommunication flow out of the luminaire.
- If placed on top of metal, inside the luminaire, e.g. metallic luminaire, the luminaire design should have non-blocking material close to the Node. Optimal case is that on the opposite side of metallic material, where the node lays, is non-blocking material.
- The connectivity distance between two Nodes is greatly affected, if there is a lot of wireless communication around (WiFi, other bluetooth devices).
- When installed to a long chained linear aluminium / metallic luminaire, the Node should not be installed inside the luminaire e.g. in middle of it.
- When doing the luminaire installation, it is critical to always test the connectivity beforehand due to the things mentioned above.



When the Freedom Node is outside the luminaire

- Currently there are five cable length options (15 cm / 30 cm / 45 cm / 90 cm / 150 cm) to allow flexible positioning of the Freedom Node outside the luminaire.
- The surrounding material and the available space around the Node should always be considered when the Node is installed outside the luminaire to e.g. dropped ceiling. If the space around is metallic without holes, it will disturb the radiocommunication.
- The strain relief must always be used when the Freedom Node is placed outside the luminaire structure.

Order codes

Freedom Drivers to be used with Freedom Node

Helvar Model	Order code	Helvar Model	Order code
LC25-FD-350-700	5815000	LL50SE-FD-100-1400	5776000
LC35-FD-700-1050	5814000	LL23-80-FD-150-350	5812000
LC50-FD-900-1400	5816000	LL80-FD-350-700	5813000
LL10-42-FD-120-350	5810000	LL110-FD-350-700	5811000
LL50iC-FD-100-1200	5778000		

Freedom Nodes

Helvar Model	Order code	Helvar Model	Order code
Freedom Node - ActiveAhead	5652	Freedom Node - Casambi	56511
Freedom Node - Mount Kelvin	56512	Freedom Node - Pulse Systems	56516
Freedom Node - Mymesh by Chess	56513	Freedom Node - Ingy	Coming soon

Freedom cables

Helvar Model	Order code
Connection cable 15 cm	58090
Connection cable 30 cm	58091
Connection cable 45 cm	58092
Connection cable 90 cm	58093
Connection cable 150 cm	58094

Electrical, mechanical and chemical considerations

- The protection class of the final installation must be adequate for the application.
- The voltage rating of the Freedom Node is always same as the operating LED driver. E.g if the LED driver is 400 V maximum voltage output, the Freedom Node is classed as 400 V device.
- While handling the Freedom Node avoid excess mechanical stress or pressure applied to it. Also do not bend the connectors and the Node to a pressured direction.
- Freedom Node should not be dropped.
- Mechanical modifications (drilling, milling, sawing or cutting of the strain reliefs) are not permitted

Chemical substances may cause damage to the Freedom Node.

Avoid materials and substances containing:

- Acetone, ketones, ethers, and aromatic and chlorinated hydrocarbons
- Aqueous or alcoholic alkaline solutions, ammonia gas and its solutions and amines
- Do not expose Freedom Node to humid environments.

Conformity & standards

Particular requirements for miscellaneous electronic circuits used with luminaires	EN 61347-2-11
Equipment for general lighting purposes - EMC immunity requirements	EN 61547
Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment	EN 55015
EMC standard for radio equipment and services; Specific conditions for Broadband Data Transmission Systems	EN 301489-17
Data transmission equipment operating in the 2,4 GHz band; Harmonised Standard for access to radio spectrum	EN 300328
Compliant with relevant EU directives	
RoHS/REACH compliant	
CE / UKCA marked	