Title: A HOUSING FOR AN LED STREET LIGHT LUMINAIRE

Abstract: A housing (10) for an LED street light luminaire is disclosed, the housing comprising a base (12) that can be secured to a fixture (14), the base defining a first compartment (18). A cover (40) is hingedly fitted to the base (12), the cover defining a second compartment (42) to overlie the first compartment of the base. The cover (40) further defines a luminaire compartment (52) to accommodate an LED array (48), the luminaire compartment extending from the base. In an embodiment, the base (12) comprises a tubular receiver (20) to accommodate the end of the fixture, typically the end of a street pole, with an operatively upper surface of the tubular receiver comprising at least one securing formation to enable the base to be secured to the fixture. In an embodiment, the base is fitted with a first electrical connector (28) to facilitate an electrical connection from an electrical power source and the LED array.
as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(H))

— of inventorship (Rule 4.17(iv))

Published:

— with international search report (Art. 21(3))
A HOUSING FOR AN LED STREET LIGHT LUMINAIRE

FIELD OF THE INVENTION

This invention relates to a housing for a luminaire, and more particularly, but not exclusively, the invention relates to a housing for an LED street light.

BACKGROUND TO THE INVENTION

LED street light luminaires have gained in popularity over the last few years, primarily because of the efficiency and prolonged lifespan when compared to more traditional street light lamps. A typical LED street light luminaire comprises a housing that accommodates a plurality of LEDs, the housing being fitted to a lamp pole or mast. The housing in turn comprises the necessary compartments to accommodate the LED array and the electrical gear required to power and control the LED array.

Conventional LED street light luminaires suffer from two main disadvantages. The first disadvantage is that the housing is fixed to the lamp pole, from below, with screws, thereby making them accessible to people wishing to dismantle and/or remove the housing from the lamp pole. The second disadvantage is that any maintenance that is required to be carried out on or in the luminaire, such as upgrading and/or a general service, requires the entire luminaire to be removed from the lamp post, which is time consuming and cumbersome.

OBJECT OF THE INVENTION

It is an object of this invention to provide a housing for an LED street light luminaire, which at least partially addresses the abovementioned disadvantages.

SUMMARY OF THE INVENTION

According to a first aspect of the invention there is provided a housing for an LED street light luminaire, the housing comprising:
a base that can be secured to a fixture, the base defining a first compartment; and

a cover hingedly fitted to the base, the cover defining a second compartment to overlie the first compartment of the base, the cover further defining a luminaire compartment to accommodate an LED array, the luminaire compartment extending from the base.

In an embodiment, the base comprises a tubular receiver to accommodate the end of the fixture, typically the end of a street pole, with an operatively upper surface of the tubular receiver comprising at least one securing formation to enable the base to be secured to the fixture.

In an embodiment, the base is fitted with a first electrical connector to facilitate an electrical connection between an electrical power source and the LED array.

In an embodiment, a distal region of the base comprises at least one lug defining an L-shaped hinging recess.

In an embodiment, the second compartment of the cover comprises a hinge shaft, the hinge shaft being positioned adjacent or proximate the luminaire compartment, the hinge shaft being arranged to hinge within, and relative to, the hinging recess of the lug.

In use, the cover can move between a first position, in which the cover extends transversely relative to the base, and a second position, in which the cover is substantially aligned with the base.

In an embodiment, in the aforementioned first position, the cover hangs relative to the base, when the base is fitted to the fixture, with the hinge shaft resting within the L-shaped hinging recess.

In an embodiment, the second compartment of the cover comprises a second electrical connector that can register with the first electrical connector of the base, so that in the aforementioned second position, the first and second electrical connectors are in electrical contact with each other.
In an embodiment, the base and cover comprises a clipping arrangement to enable the cover to be securely clipped to the base, when in the second position.

In an embodiment, the second compartment of the cover accommodates the control gear for the LED array.

In an embodiment, the luminaire compartment comprises a board to carry the LED array, with a glass cover being fitted to cover the LED array.

According to a second aspect of the invention there is provided a base for an LED street light luminaire housing, the base defining a first compartment and comprising:

a tubular receiver to accommodate the end of a fixture, typically the end of a street pole; and

at least one lug defining an L-shaped hinging recess at a distal region of the base, the hinging recess being arranged to hingly receive a cover, the cover defining a second compartment to overlie the first compartment of the base, the cover further defining a luminaire compartment to accommodate an LED array, the luminaire compartment extending from the base.

In an embodiment, an operatively upper surface of the tubular receiver comprises at least one securing formation to enable the base to be secured to the fixture.

In an embodiment, the base is fitted with a first electrical connector to facilitate an electrical connection from an electrical power source and the LED array.

In an embodiment, the second compartment of the cover comprises a hinge shaft, the hinge shaft being positioned adjacent or proximate the luminaire compartment, the hinge shaft being arranged to hinge within, and relative to, the hinging recess of the lug.

According to a third aspect of the invention there is provided a cover for an LED street light luminaire housing, the cover comprising:
a second compartment to overlie a first compartment of a base to which the cover is hingedly fitted;

a luminaire compartment to accommodate an LED array, the luminaire compartment extending from the base when the cover is fitted to the base; and

a hinge shaft located within the second compartment of the cover, the hinge shaft being positioned adjacent or proximate the luminaire compartment, the hinge shaft being arranged to hinge within, and relative to, an L-shaped hinging recess provided in the base.

In use, the cover can move between a first position, in which the cover extends transversely relative to the base, and a second position, in which the cover is substantially aligned with the base.

In an embodiment, in the aforementioned first position, the cover hangs relative to the base, when the base is fitted to the fixture, with the hinge shaft resting within the L-shaped hinging recess.

In an embodiment, the second compartment of the cover comprises a second electrical connector that can register with a first electrical connector provided in the base, so that in the aforementioned second position, the first and second electrical connectors are in electrical contact with each other.

In an embodiment, the second compartment of the housing accommodates the control gear for the LED array.

In an embodiment, the luminaire compartment comprises a board to carry the LED array, with a glass cover being fitted to cover the LED array.

**BRIEF DESCRIPTION OF THE DRAWINGS**

One embodiment of the invention is described, by way of example, with reference to the accompanying drawings in which:
Figure 1 shows a perspective view of a housing for an LED street light luminaire according to an embodiment of the present invention, the housing being shown in a detached configuration in which a cover is detached, and separate, from a base;

Figure 2 shows a perspective view of the housing shown in Figure 1 in an attached, open configuration, in which the cover is hingedly fitted to the base;

Figure 3 shows a perspective view of the housing shown in Figures 1 and 2 in an attached, closed configuration; and

Figures 4 to 6 show side views of the detached, attached and open, and attached and closed configurations shown in Figures 1 to 3, respectively.

DETAILED DESCRIPTION OF THE DRAWINGS

Referring to the drawings, a housing 10 for an LED street light luminaire comprises a substantially square base 12 that can be secured to a fixture 14, typically the spigot end 16 of a street pole 14. The base 12 defines a first compartment 18 and comprises a tubular receiver 20 to accommodate the spigot end 16 of the fixture 14.

An operatively upper surface of the tubular receiver 20 comprises at least one securing formation 22 to enable the base 12 to be secured to the fixture 14. The securing formation 22 may comprise at least two stainless steel M8 hexagonal-head screws 24, 26, which is secured from the inside of the luminaire housing 10 so as to minimise the risk of vandalism and theft.

In an embodiment, the base 12 is fitted with a first electrical connector 28 to facilitate an electrical connection to an electrical power source (not shown).

A distal region 30 of the base 12 comprises a pair of spaced apart lugs 32, 34 that each define an L-shaped hinging recess 36, 38, which will be referred to in more detail further on in the specification.
The luminaire housing 10 further comprises a substantially planar, rectangular cover 40 that is hingedly fitted to the base 12. The cover 40 defines a second compartment 42 to overlie the first compartment 18 of the base 12. The second compartment 42 of the cover 40 comprises a hinge shaft 44, the hinge shaft 44 being arranged to hinge within, and relative to, the hinging recesses 36, 38 of the lugs 32, 34, as best shown in Figures 2, 3, 5 and 6. The second compartment 42 of the housing 10 also accommodates the control gear 46 for an LED array 48, with the control gear 46 typically being fitted to a removable gear tray.

The second compartment 42 of the cover 40 comprises a second electrical connector 50 that can conveniently register with the first electrical connector 28 of the base 12, so that when secured together, as shown in Figures 3 and 6, the first and second electrical connectors 28, 50 are in electrical contact with each other.

The cover 40 further defines a luminaire compartment 52 to accommodate the LED array 48, the luminaire compartment 52 extending/protruding from the base 12, as best shown in Figures 3 and 6. In an embodiment, the luminaire compartment 52 comprises a PCB 54 to carry the LED array 48, with a glass cover 56 being fitted to cover the LED array 48. The opposite side of the luminaire compartment 52 comprises a plurality of cooling fins 58 that are designed to prevent the accumulation of dirt, thus ensuring continuous effective cooling. In an embodiment, the cooling rib height to width ratio does not exceed 0.7.

The PCB 54 of the LED array 48 comprises a temperature sensor that reduces the current to protect the LEDs at higher than rated ambient temperatures. The temperature sensor is typically not used to switch off the LEDs at high temperatures.

The base 12 and cover 40 comprises a clipping arrangement 60 to enable the cover 40 to be securely clipped to the base 12, when in the secured position as shown in Figures 3 and 6. The base 12 defines recesses 62 to accommodate clips 64 fitted to the cover 40, proximate the second compartment 42.

In use, the cover 40 can move between a first position, as shown in Figures 1, 2, 4 and 5, in which the cover 40 extends transversely relative to the base 12, and a second position, as shown in Figures 3 and 6, in which the cover 40 is substantially aligned with the base 12. In the first position, the cover 40 hangs relative to the base
12, when the base 12 is fitted to the fixture 14, with the hinge shaft 44 resting within the L-shaped hinging recesses 36, 38.

The present invention, and in particular the hinging arrangement between the cover and the base, thus allows the replacement, upgrading and servicing of the luminaire, and in particular the LED array and control gear, without having to remove the entire luminaire. The modular arrangement of the luminaire housing ensures that different light engines inside the same base can be easily and readily exchanged. It also allows on site replacement without tools, and fast and easy assembly.
CLAIMS:

1. A housing for an LED street light luminaire, the housing comprising:

   a base that can be secured to a fixture, the base defining a first compartment; and

   a cover hingedly fitted to the base, the cover defining a second compartment to overlie the first compartment of the base, the cover further defining a luminaire compartment to accommodate a light source, the luminaire compartment extending from the base.

2. The housing of claim 1, wherein the base comprises a tubular receiver to accommodate the end of the fixture, with an operatively upper surface of the tubular receiver comprising at least one securing formation to enable the base to be secured to the fixture.

3. The housing of either claim 1 or claim 2, wherein a distal region of the base comprises at least one lug defining an L-shaped hinging recess.

4. The housing of claim 3, wherein the second compartment of the cover comprises a hinge shaft, the hinge shaft being positioned adjacent or proximate the luminaire compartment, the hinge shaft being arranged to hinge within, and relative to, the hinging recess of the lug.

5. The housing of any one of the preceding claims, wherein the cover can move between a first position, in which the cover extends transversely relative to the base, and a second position, in which the cover is substantially aligned with the base.

6. The housing of claim 5, wherein, in the first position, the cover hangs relative to the base, when the base is fitted to the fixture, with the hinge shaft resting within the L-shaped hinging recess.

7. The housing of either claim 5 or claim 6, wherein the base is fitted with a first electrical connector to facilitate an electrical connection from an electrical power source and the light source.
8. The housing of claim 7, wherein the second compartment of the cover comprises a second electrical connector that can register with the first electrical connector of the base, so that in the aforementioned second position, the first and second electrical connectors are in electrical contact with each other.

9. The housing of any one of preceding claims 5 to 8, wherein the base and cover comprises a clipping arrangement to enable the cover to be securely clipped to the base, when in the second position.

10. The housing of any one of the preceding claims, wherein the second compartment of the cover accommodates the control gear for the light source.

11. The housing of any one of the preceding claims, wherein the light source comprises an LED array.

12. The housing of claim 11, wherein the luminaire compartment comprises a board to carry the LED array, with a glass cover being fitted to cover the LED array.

13. A base for an LED street light luminaire housing, the base defining a first compartment and comprising:

   a tubular receiver to accommodate the end of a fixture; and

   at least one lug defining an L-shaped hinging recess at a distal region of the base, the hinging recess being arranged to hingedly receive a cover, the cover defining a second compartment to overlie the first compartment of the base, the cover further defining a luminaire compartment to accommodate a light source, the luminaire compartment extending from the base.

14. The base of claim 13, wherein an operatively upper surface of the tubular receiver comprises at least one securing formation to enable the base to be secured to the fixture.
15. The base of either claim 13 or claim 14, wherein the base is fitted with a first electrical connector to facilitate an electrical connection from an electrical power source and the light source.

16. The base of any one of claims 13 to 15, wherein the second compartment of the cover comprises a hinge shaft, the hinge shaft being positioned adjacent or proximate the luminaire compartment, the hinge shaft being arranged to hinge within, and relative to, the hinging recess of the lug.

17. A cover for an LED street light luminaire housing, the cover comprising:

   a second compartment to overlie a first compartment of a base to which the cover is hingedly fitted;

   a luminaire compartment to accommodate an LED array, the luminaire compartment extending from the base when the cover is fitted to the base; and

   a hinge shaft located within the second compartment of the cover, the hinge shaft being positioned adjacent or proximate the luminaire compartment, the hinge shaft being arranged to hinge within, and relative to, an L-shaped hinging recess provided in the base.

18. The cover of claim 17, wherein the cover can move between a first position, in which the cover extends transversely relative to the base, and a second position, in which the cover is substantially aligned with the base.

19. The cover of claim 18, wherein, in the first position, the cover hangs relative to the base, when the base is fitted to the fixture, with the hinge shaft resting within the L-shaped hinging recess.

20. The cover of either claim 18 or claim 19, wherein the second compartment of the cover comprises a second electrical connector that can register with a first electrical connector provided in the base, so that in the aforementioned second position, the first and second electrical connectors are in electrical contact with each other.
21. The cover of any one of the preceding claims 18 to 20, wherein the second compartment of the housing accommodates the control gear for the light source.

22. The cover of any one of the preceding claims 18 to 21, wherein the light source comprises an LED array.

23. The cover of claim 22, wherein the luminaire compartment comprises a board to carry the LED array, with a glass cover being fitted to cover the LED array.
**INTERNATIONAL SEARCH REPORT**

**International application No**

PCT/IB2012/053287

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### A. CLASSIFICATION OF SUBJECT MATTER

**INV.** F21S8/Q8 F21V17/10

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### B. FIELDS SEARCHED

**Minimum documentation searched (classification system followed by classification symbols)**

F21S   F21V

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**Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched**

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**Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)**

EPO-Internal, WPI Data

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### C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C.

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See patent family annex.

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* Special categories of cited documents:

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**Date of the actual completion of the international search**

28 September 2012

**Date of mailing of the international search report**

09/10/2012

**Name and mailing address of the ISA/**

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel: (+31-70) 340-2040, Fax: (+31-70) 340-3016

**Authorized officer**

Arboreanu, Antoniu
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