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**Datasheet for the decision
of 6 December 2021**

Case Number: T 1519/16 - 3.4.01

Application Number: 11838748.9

Publication Number: 2636284

IPC: H05B37/02, G05F3/08

Language of the proceedings: EN

Title of invention:

WIRELESS ADAPTATION OF LIGHTING POWER SUPPLY

Applicant:

Daintree Networks Pty. Ltd.

Headword:

Wireless lighting control / Daintree Networks

Relevant legal provisions:

EPC Art. 51(1), 56, 84, 123(2)

RPBA 2020 Art. 13(1), 13(2)

Keyword:

Inventive step - main and first to third auxiliary requests
(no)

Claims - clarity - main and first to third auxiliary requests
(no)

Amendments - added subject-matter - main and first to third
auxiliary requests (yes)

Amendment after summons - exceptional circumstances (yes)

Amendment to appeal case - suitability for resolving issues
raised (no) - amendment gives rise to new objections (yes) -
justification by party (no)



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Case Number: T 1519/16 - 3.4.01

D E C I S I O N
of Technical Board of Appeal 3.4.01
of 6 December 2021

Appellant:
(Applicant)

Daintree Networks Pty. Ltd.
1 Dalmore Drive, Carribbean Park
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Representative:

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Decision under appeal:

**Decision of the Examining Division of the
European Patent Office posted on 8 February 2016
refusing European patent application No.
11838748.9 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman P. Scriven
Members: T. Petelski
R. Winkelhofer

Summary of Facts and Submissions

- I. The applicant appealed the Examining Division's decision to refuse the European patent application.
- II. In its decision, the Examining Division cited documents

D1: WO/043384 A1
D2: US 6761470 B2
D3: US 2009/278472 A1, and
D3a: US 5933340 A;

and found that the independent claims of the main and of the auxiliary request lacked an inventive step in view of a combination of D1 and D3; or of D1, D2, and D3. Further, it found claims 1, 9, and 12 of the auxiliary request to be unclear.

- III. In its statement of grounds, the appellant requested that the decision be set aside and that a patent be granted on the basis of one of a main request, or a first to third auxiliary request. All four were filed, for the first time, with the statement of grounds.

- IV. The appellant submitted the following documents:

- (a) *Lessons in Electric Circuits, Vol.I - DC* by T. Kuphaldt (5th Edition, October 18, 2006), page 79
- (b) Wikipedia entries for "electrical ballast", for "rectifier", and for "voltage regulator"

- V. Oral proceedings were originally arranged for 19 April 2021. A summons was sent, and a communication setting out the Board's preliminary opinion that none of the proprietor's requests was allowable:
- (a) The subject-matter of claim 1 of the main and of first to third auxiliary requests lacked an inventive step in view of the prior art described in D1 in relation with Figure 3.
 - (b) The expression "digital serial interface" had no basis in the application as filed.
 - (c) Dependent claims 2 - 9 and 12 of the main request, the corresponding claims of the first and second auxiliary requests, and claims 5 and 11 of the third auxiliary request were unclear.
- VI. In response to the Board's summons and communication, the appellant filed a fourth and fifth auxiliary request. The appellant also informed the Board that it were unable to attend on 19 April 2021 and did not consent to oral proceedings being held by video link.
- VII. A new date for oral proceedings was set for 6 December 2021.
- VIII. The appellant acknowledged receipt of the notice setting the new date. On that date, however, no-one appeared for the appellant.

IX. The appellant did not notify the Board that it would not attend oral proceedings and has not subsequently given the Board any explanation.

X. Claim 1 of the main request reads:

A wireless adapter device (120) adapted for wirelessly controlling a power supply device (110) that controls a load, comprising:

a wireless communication device (122) adapted to receive transmissions from a wireless controller (108), the transmissions including control signals specifying digital control commands for the power supply device (110), and to output the control signals;

characterized in that the wireless adapter device (120) is packaged in a packaging that is separate from the power supply device (110) and that is configured to be mounted separately from the power supply device (110); and

the wireless adapter device (120) further comprises:

a digital serial interface (126) adapted for a digital serial data connection to a power supply (110) processing device integrated in the power supply device (110);

an adapter processing device (124) in data communication with the wireless communication device (122) and adapted to receive the control signals the wireless communication device (122) outputs, to generate the digital control commands from the control signals, and to output the digital control commands to the digital serial interface (126), wherein the digital control commands cause the power supply processing device (114) to control power provided to the load in a manner specified by the digital control commands; and

an adapter power circuit (128) adapted to receive regulated direct current power from the power supply device (110) and be powered from the regulated direct current power received, and to provide power to the wireless communication device (122) and the adapter processing device (124).

- XI. Claim 1 of the first auxiliary request further defines the direct current power, which the adapter power circuit is adapted to receive, as "low voltage" direct current power.
- XII. Claim 1 of the second auxiliary request defines, further to the main request, that the direct current power, which the adapter power circuit is adapted to receive, is direct current power "of 5 volts or less".

XIII. Claim 1 of the third auxiliary request begins:

A lighting system (100) comprising:

a lighting power supply (110) that includes

*a power supply processing device (114)
integrated in the lighting power supply
(110),*

*a power subsystem (112) that receives AC
power input and generates a regulated
direct current power supply signal for the
power supply processing device (114), and*

a power supply for a lighting load (118),

*wherein the power supply processing device
(114) generates control signals that can
instruct the power supply power subsystem
to adjust a power signal to the lighting
load (118),*

*wherein the power supply processing device
(114) is in data communication with a power
supply serial interface (116) that is
connected to a serial interface (126) of a
wireless adapter device (120) by at least
one conductor (132), the power supply
processing device (114) receiving control
commands from the wireless adapter (120)
which, in turn, cause the power supply
processing device (114) to control power
provided to the lighting load (118); and*

a wireless adapter device (120) ...

The claim goes on to define the wireless adapter device as in claim 1 of the main request.

- XIV. Claim 1 of the fourth auxiliary request is based on claim 1 of the main request. It adds, to the feature defining the packaging,

... wherein the power supply device (110) is recessed within a ceiling and the wireless adapter device (120) is mounted on the surface of the ceiling to optimize reception and transmission of radio signals to and from the wireless communication device (122)

It also adds, at the end,

... wherein the load controlled by the power supply device (110) is a fluorescent lighting load; and the power supply device (110) is a fluorescent ballast.

- XV. Claim 1 of the fifth auxiliary request is based on claim 1 of the fourth auxiliary request. It further defines the digital serial interface as "first digital serial interface (126)" and adds, after the feature defining the first digital serial interface,

... wherein the power supply (110) processing device (114) is in data communication with a second digital serial interface (116) that is connected to the first digital serial interface (126) by at least one conductor (132) without any

intermediary electrical components between the first digital serial interface (126) and the second digital serial interface (116)

XVI. The appellant's arguments, in so far as relevant to this decision, are set out in the Reasons, below.

Reasons for the Decision

Technical field of the application

1. Lights, for example fluorescent lamps in an office building, are typically supplied with power by respective power supplies (or "ballasts" in the case of fluorescent lamps). Such power supplies can be controlled by commands to turn the lights on or off, or to dim the light, for example.
2. The application is about an adapter that transmits control commands by wire to a power supply. The control commands are derived from control signals, which the adapter device receives wirelessly from a controller.
3. It is proposed that the adapter use digital control commands instead of a 0-10V dimming signal. According to the application, digital transmission allowed two-way communication, and could use low voltages. It is proposed that the power required by the circuitry of the adapter be supplied by the power supply that

controls the light, so that the adapter device does not require a separate power supply.

Main request - Inventive step

4. The claims of the main request have been redrafted but define the same subject-matter as that underlying the Examining Division's decision.
5. With reference to Figure 3, D1 describes a lighting system, parts of which are described by reference to Figures 1 and 2 (see page 1, lines 10 - 28 and page 3, lines 13 - 29). According to Figure 3, lighting control signals that were previously transmitted by a wired network (Figure 1), are transmitted wirelessly from a "network interface 24" (wireless controller) to a "control box 28" (wireless adapter device). The network interface is shown in Figure 2. It is omitted from Figure 3, but is still part of the system.
6. The control box of D1 receives the control signals through wireless "receiver 26" (the wireless communication device of claim 1), which forwards the signals to a microprocessor (18 in Figure 1, but without reference sign in Figures 2 and 3; it is the adapter processing device of claim 1). A circuit (adapter power circuit) is required to deliver the DC power from a source to the receiver and microprocessor, though none is shown. As the "control box is ... outside of the ballast" (D1, page 1, lines 19 - 20; page 3, line 23), these must be separately packaged (see page 2, line 4 in its context). The control commands are sent to the ballast 30 (lighting power supply) as "low frequency digital signals" (D1, page 3, line 28) via the conductors labelled "INTERFACE" in

Figure 3. Regardless of this labelling, there must be separate interfaces at the control box and at the ballast to connect with the conductors. In the ballast, the signals are decoded and forwarded to the power stage control of the lamp driver 34 (power supply processing device), which controls the AC power output to the lamp (lighting load). The digital decoder and the analogue IC of the ballast require a DC power supply.

7. Hence, the subject-matters of claims 1 and 13 differ from the disclosure of this prior art in that:
 - (a) the interface at the control box is a serial interface, and
 - (b) the DC power circuit in the control box receives a regulated DC power supply signal from the ballast.

8. D1 is silent on the nature of the interface and on the power source for the control box. Hence, the problems related to the two differences can be seen in:
 - (a) selecting a suitable interface and
 - (b) finding a convenient power source for the control box.

9. The question of whether the data are transmitted serially or in parallel is not related to the question of where power is taken from. No synergistic effect is apparent, which means the two problems need to be treated independently.

10. Regarding (a), the skilled person would have had the choice between serial and parallel interfaces. The selection from a list of two commonly-used options cannot introduce an inventive step. In this case, a

serial interface would even have been preferred over a parallel one, as in the commonly-used lighting protocols DSI, DALI, KNX, and DMX512.

11. Regarding (b), the skilled person would have considered two options. Either, the control box could have been equipped with its own power module, or a power module could be foreseen common to the receiver and microcontroller of the control box, and to the digital decoder and analogue IC of the ballast can. The second solution beats the first in terms of weight, complexity and cost, all of which are inherent goals for such devices (regarding cost, see D1, page 2, lines 3 - 7). Considering, further, that the ballast already comprises a power stage for powering the lamp, it would have been obvious also to generate the DC power in the ballast, and to deliver this power to the control box. The isolation of the digital signal transmission line has no influence on the question of whether the skilled person would have transmitted the DC supply voltage from the ballast to the control box.
12. Further evidence that it was known and preferable to use the DC-voltage generated in one device to power an external device is provided by D2, column 8, line 9 - 27, according to which an adapter device 100 is supplied with the DC power generated by the power module 300 of a ballast device 20, which, similarly to D1, also powers a fluorescent lamp.
13. Consequently, the skilled person would have arrived at the subject-matter of claim 1 starting from the prior art as described in D1 in relation to Figure 3, using common general knowledge.

14. In their response to the Board's preliminary opinion, the appellant provided no arguments regarding inventive step of the main request. However, the arguments with respect to the first auxiliary request apply directly to the main request, because they do not rely on the feature that distinguishes the two (see point 25., below).
15. According to the appellant, the control box and the ballast can in Figure 3 of D1 were not separately mountable. The corresponding problem of optimizing reception and transmission in a cost-effective way was not solved in D1. In addition, the isolator in the form of a transformer or opto-isolator was the only interface in Figure 3, and it was not a serial interface of the adapter device, as in the claim.
16. These arguments are not persuasive. The control box in D1 is separately packaged from - and wired to - the ballast can (page 3, lines 13 - 14, 23, and 25 - 26), and in this, the appellant agrees. However, the separate packaging and wired connection implies that the control box is also separately mountable. The claim defines no restriction on the mechanical configuration of the adapter device (the control box in D1). The separate packaging also implies that the control box and the ballast can must each have an interface with the wired connection that transmits the digital signals. The argument regarding the serial nature of the interface is not to the point, because it does not address the question of whether serial or parallel transmission (or both) would have been obvious.
17. The appellant also argued that it was not obvious to supply the control box with DC-power from the ballast. The control box required a conditioning and converter

circuit, to convert the mains power into regulated DC power for generating the analogue control signals transmitted to the analogue dimmable ballast. Therefore, the control box in Figure 3 of D1 was connected to the mains supply similarly to the control boxes in Figures 1 and 2. Also, such a DC line would foil the isolation of the control box from the high-frequency and high-voltage supply signals generated in the ballast can.

18. The appellant's assertion that the control box was powered from the mains line might be correct for the prior art described in Figures 1 and 2 of D1. These figures explicitly show that the control box delivers an analogue dimming control signal to an analogue ballast. The power requirements of the analogue control signal and the fact that the ballast might not produce suitable DC voltages does not favour supplying a DC voltage from the ballast to the control box (see also page 2, lines 5 - 7).
19. However, Figure 3 shows significant differences from Figures 1 and 2. According to Figure 3, the control box does not generate an analogue control signal but transmits digital control commands. The digital commands are decoded in the ballast by a "digital decoder", which "can be a microprocessor" (D1, page 1, lines 25 - 26). The ballast further comprises an analogue IC to process the control commands. Hence, in contrast to Figures 1 and 2, the ballast according to Figure 3 comprises active electronic elements, implying in turn the presence of an appropriate DC supply signal.
20. Figure 3 leaves open where the DC supply-voltage for the microprocessor of the control box is generated.

Although a similar supply as in Figures 1 and 2 would be possible, a common supply from a DC-voltage source in the ballast would also be possible. Reduced cost and complexity give the skilled person reasons to choose it.

21. Contrary to the appellant's assertion, the isolation 32 of the digital signal line is provided to protect the electronic components from charges that might be picked up by the antenna (see page 1, lines 21 - 24 and page 3, lines 25 - 28; in particular page 4, lines 12 - 21). Hence, the isolation of the signal line has no influence on the question of whether the skilled person would transmit the DC supply voltage from the ballast to the control box.

Main Request - Added subject-matter

22. Claims 1 and 13 introduce the expression "digital serial interface". This term, generally abbreviated as DSI, has a well-defined technical meaning. It designates a particular 8-bit protocol used for controlling lighting in buildings. This protocol has no basis in the application as filed, which merely discloses "a digital communication interface, such as a serial interface" (p.5, 1.30-31).
23. Hence, Article 123(2) EPC is infringed.
24. This argument was part of the Board's communication annexed to the summons to oral proceedings. The appellant has not commented on it.

First and second auxiliary requests

25. The claims of the first and second auxiliary requests are, for the most part, identical to those of the main request. The only differences lie in the power received by the adapter power circuit being defined as "low-voltage" direct current power in claim 1 of the first auxiliary request; and "of 5 volts or less" in claim 1 of the second auxiliary request.
26. The inventive step assessment with respect to the main request applies in full. It was part of the common technical knowledge that microprocessors were powered with low-voltages (e.g. 12V, 5V, 3.5V, or 3.3V) in the years 2000 - 2010, in which D1, D2, D3 and the application were filed. Hence, selecting a DC-voltage of 5 volts or less would have been an obvious choice for the skilled person, especially considering that lower supply voltage processors usually have a lower power consumption, which is an intrinsic goal in lighting applications.
27. Hence, the additional features of the first and second auxiliary requests do not contribute to an inventive step.
28. The appellant's arguments regarding inventive step have already been considered (points 14. to 21., above). The appellant's arguments do not mention the feature that distinguishes claim 1 of the first auxiliary request from claim 1 of the main request; and the appellant has not commented on the second auxiliary request.
29. The findings regarding added subject-matter of the main request also apply to the first and second auxiliary

requests. No arguments regarding added matter were put forward by the appellant.

Third auxiliary request

30. The third auxiliary request is roughly based on the request filed as first auxiliary request during oral proceedings before the Examining Division. Claim 1 is directed to a lighting system that is a combination of a lighting power supply and the wireless adapter device as defined by claim 1 of the main request.
31. In the device shown in Figure 3 of D1, the ballast can 30 (the "lighting power supply" of claim 1) receives digital control commands from the control box 28 (the "adapter device"). The signals are decoded and forwarded to the power stage control (the "processing device"), which controls the power stage (the "power subsystem"), which in turn supplies the fluorescent lamp (the "load") with the desired power.
32. Figure 3 illustrates a conductor that provides the wired connection between the control box and the ballast. Hence, there must be an interface at the control box and another at the ballast, each connecting the internal electronics to the conductor.
33. The subject-matter of claim 1 differs from this description of the prior art in D1 by the same features as claim 1 of the main request. Hence, the inventive-step assessment with respect to the main request applies in full.
34. The finding on added subject-matter of the main request also applies to the third auxiliary request.

35. The appellant has not commented on any of these arguments, which were laid out in the Board's communication.

Fourth and fifth auxiliary requests

36. The fourth and fifth auxiliary requests are not considered in the proceedings under Article 13(1) RPBA 2020 for the following reasons.
37. They were filed in response to the communication annexed to the summons for oral proceedings. In this communication, the Board raised new objections, which might constitute exceptional circumstances in the sense of Article 13(2) RPBA 2020. The criteria of Article 13(1) RPBA 2020 apply.
38. The requests are not convergent with the higher-ranking requests. They neither further define the DC power supply of the adapter device, as in auxiliary requests 1 and 2, nor the lighting power supply, as in auxiliary request 3. Rather, they introduce unrelated features that define the nature of the load, and the way in which the adapter device and the power supply are mounted. The fifth auxiliary request further defines the (also unrelated) feature of how the adapter device is connected to the power supply.
39. The appellant did not present any argumentation as to why the requests overcame the objection of added subject-matter that was raised against the higher-ranking requests. The appellant also failed to present any argumentation on why the amended claims changed the situation regarding inventive step. The inventive-step argumentation regarding the fourth auxiliary request is

a copy of the argumentation regarding the first auxiliary request. No arguments at all were presented concerning the fifth auxiliary request. In the light of the appellant's arguments, therefore, all the same objections raised against the higher-ranking requests still apply, *prima facie*.

40. The requests give rise to new objections under Article 84 EPC. In both versions of claim 1, it is unclear which structural limitations of the adapter device result from the definition that it "is mounted on the surface of the ceiling to optimize reception and transmission of radio signals to and from the wireless communication device". It is also unclear in how far the claimed adapter is restricted by the power supply being recessed within a ceiling, or by the nature of the load. Neither the power supply nor the load is part of the claimed device. In the fifth auxiliary request, it is unclear how two interfaces can be connected "without any intermediary electrical components", considering that the same feature defines the connection is realized with an electrical component in the form of a conductor.

Conclusion

41. The main request is not allowable, because the subject-matter of claim 1 does not involve an inventive step (Articles 52(1) and 56 EPC); and because claims 1, 12, and 13 comprise subject-matter that was not in the application as filed (Article 123(2) EPC).
42. The first, second, and third auxiliary requests are not allowable for similar reasons (Articles 52(1), 56, and 123(2) EPC).

43. The fourth and fifth auxiliary requests are not considered in the proceedings, under Article 13(1) RPBA 2020, because

- the requests do not converge;
- the appellant did not provide full reasoning;
- the amendments are, *prima facie*, not suitable for resolving the issues of inventive step and added subject-matter, and
- the requests give rise to new clarity objections.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



D. Meyfarth

P. Scriven

Decision electronically authenticated