

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

Robertson Transformer Co.)	
d/b/a/ Robertson Worldwide,)	
)	
Plaintiff,)	
)	
v.)	No. 12 C 8094
)	
General Electric Company, et)	
al.)	
)	
Defendants.)	
)	

MEMORANDUM OPINION AND ORDER

In this action, plaintiff asserts U.S. Patent Nos. 6,366,032 (the '032 Patent) and 6,420,838 (the '838 Patent) (collectively, the Asserted Patents). The patents claim improvements to electronic ballasts for fluorescent lamps to prevent end-of-life ballast or lamp destruction. The parties have submitted numerous disputes over the proper construction of certain claim terms, which I resolve as follows.

I.

Plaintiff's submission opens with a brief technology tutorial, factually grounded in the declaration of plaintiff's expert, that provides a basic explanation of how fluorescent lamps work, explains the development and evolution of the ballasts such lamps require to function, and summarizes the

features of the ballasts claimed in the Asserted Patents. Because defendants have indicated no dispute as to the general principles plaintiff sets forth in this tutorial, I restate them here by way of background.

Fluorescent lamps are part of a class of lamps called discharge lamps that have unusual electrical characteristics known as "negative incremental impedance," meaning that the operating voltage of a fluorescent lamp will decrease as the lamp current is increased. The practical consequence is that fluorescent lamps require a special power supply that controls the lamp current while allowing the lamp voltage to be set by the lamp. This special power supply is known in the lighting industry as a ballast.

Almost all fluorescent lamps use electrodes at each end of the lamp. The electrodes normally are made from coiled tungsten wires similar to the filaments in incandescent lamps. But unlike in incandescent lamps, which create light when the filaments are heated, the electrodes in fluorescent lamps do not provide light. Instead, they provide electrical voltage and current to the gas inside the fluorescent lamp, causing electrons to migrate through the gas, and setting off a series of reactions that results in the emission of visible light.

The earliest fluorescent lamps used magnetic ballasts, but over time these have been replaced with more efficient

electronic ballasts, which are at issue here. This type of ballast presents certain functional issues, however. Specifically, because most electronic ballasts use what are known as resonant converters to generate high frequency output power, they will self-destruct if they remain powered and operational in the absence of an attached, functional lamp load. To prevent electronic ballasts from destroying themselves when the lamps fail or are removed for replacement, electronic ballasts were designed to turn off shortly after they detected that an operational lamp was not attached. The Asserted Patents are directed to electronic ballasts with novel features including the ability to restart automatically after such a shut-down.

The '032 Patent was filed on January 28, 2000, and issued on April 2, 2002. The patent teaches a fluorescent lamp ballast using an integrated circuit (IC) that provides at least the following lamp and ballast protection features and embodiments:

- a. multiple attempts to start the lamp;
- b. ballast shutdown if the lamp does not start within a predetermined period of time;
- c. prevention of ballast operation if one or more lamps are missing; and
- d. automatic reset of a previously shutdown ballast when a lamp is removed and replaced.

The '838 Patent was filed on March 8, 2001, and issued on July 6, 2002. The patent teaches a fluorescent lamp ballast using an integrated circuit that provides at least the following additional lamp and ballast protection features and embodiments:

- a. protection against lamp rectification, otherwise known as EOL protection, which is caused by the failure of the electrodes in the lamp;
- b. multiple attempts to start the lamp;
- c. ballast shutdown if the lamp does not start in a predetermined period of time or continues to operate with an excessive voltage, which is indicative of a damaged lamp, for a predetermined period of time; and
- d. ballast shutdown if the power line voltage falls below a preset voltage for a predetermined period of time.

Plaintiffs assert that together, the '032 and '838 Patents provide a set of fluorescent lamp and ballast protection features that offer substantially improved operation of modern fluorescent lamp systems.

II.

"[T]he interpretation and construction of patent claims, which define the scope of the patentee's rights under the patent, is a matter of law exclusively for the court." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 970-71 (Fed. Cir. 1995). Claim terms "are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art when read in the context of the specification and

prosecution history." *Thorner v. Sony Computer Entertainment America LLC*, 669 F.3d 1362 (Fed. Cir. 2012) (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc)). "There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution." *Id.* (citing *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1580 (Fed. Cir. 1996)).

The Federal Circuit has since observed that the *Thorner* framework "reiterates the stringent standard for narrowing a claim term beyond its plain and ordinary meaning." *Aventis Pharma S.A. v. Hospira, Inc.*, 675 F.3d 1324, 1330 (Fed. Cir. 2012). Indeed, because the patentee "is free to choose a broad term and expect to obtain the full scope of its plain and ordinary meaning," the first exception applies only where the patentee has "clearly set forth a definition of the disputed claim term other than its plain and ordinary meaning." *Thorner*, 669 F.3d at 1367, 1365 (citation and internal quotation marks omitted). "It is not enough for a patentee to simply disclose a single embodiment or use a word in the same manner in all embodiments." *Id.* at 1365.

Because the claims of a patent "delineate the patentee's right to exclude, the patent statute requires that the scope of

the claims be sufficiently definite to inform the public of the bounds of the protected invention, *i.e.*, what subject matter is covered by the exclusive rights of the patent." *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008). A patent whose claims fail to meet this test is invalid. Yet because patents are presumed valid under 35 U.S.C. § 282, to prove that a claim is indefinite, "an accused infringer must demonstrate by clear and convincing evidence that one skilled in the relevant art could not discern the boundaries of the claim based on the claim language, the specification, the prosecution history, and the knowledge in the relevant art." *Teva Pharms USA, Inc. v. Sandoz, Inc.*, 723 F.3d 1363, 1368 (Fed. Cir. 2013).

II.

Eight claim terms are at issue here. Plaintiff argues that each of these terms has a plain and ordinary meaning that is readily apparent to a person of ordinary skill in the art who reads the patent. Accordingly, plaintiff asserts that no construction of these terms is required "because a person of ordinary skill would understand [the] term[s], as written, to be the best expression of the concept being expressed." Pl.'s Resp. at 19 (DN 89). Alternatively, however, plaintiff offers constructions that it asserts likewise convey the plain and ordinary meaning of the terms.

Defendants propose competing constructions for two of the terms in dispute. For the remainder, defendants argue that each term is indefinite and does not reasonably enable a person of ordinary skill in the art to ascertain the scope of the claim in which it appears.

I begin my analysis with the terms for which the parties offer competing constructions, then turn to the terms defendants assert are ambiguous or not susceptible to any construction.

Driver

Plaintiff's position:	Requires no construction, but if construed, "an[electric/electronic] circuit that supplies input to another [electric/electronic] circuit." ¹
Defendants' position:	Should be construed as, "a circuit that turns on and off transistors in a switching arrangement."

Plaintiff asserts that this term, like all of the others in dispute, requires no construction at all because a skilled artisan "would understand this term, as written, to be the best expression of the concept being expressed." Pl.'s Memo. at 23. Indeed, "district courts are not (and should not be) required to construe every limitation present in a patent's asserted claims." *O2 Micro Intern. Ltd. v. Beyond Innovation Technology*

¹ Plaintiff's claim construction submissions propose inconsistent constructions that alternate between the bracketed words, as discussed below. Compare the formulations in 1) plaintiff's responsive brief, DN 89 at 24; 2) Exh. H to the declaration of plaintiff's expert, DN 89-3 at 35; and 3) plaintiff's L.P.R. 4.2(f) submission, DN 108 at 2.

Co., Ltd., 521 F.3d 1351, 1362 (Fed. Cir. 2008) (citing, *inter alia*, *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) (claim construction “is not an obligatory exercise in redundancy.”). Nevertheless, even terms commonly used in the art may require construction when they are susceptible to more than one meaning. Indeed, in *O2 Micro Intern.*, the court concluded that the lower court erred in declining to construe the term “only if,” despite the parties’ agreement that it “is a ‘common term’ with a ‘common meaning.’” 521 F.3d at 1360. As the court explained, “[a] determination that a claim term ‘needs no construction’ or has the ‘plain and ordinary meaning’ may be inadequate when a term has more than one ‘ordinary’ meaning...” *Id.* at 1361. That appears to be the case here.

To begin, plaintiff’s primary argument that the term requires no construction is difficult to square with plaintiff’s alternative construction(s), as well as with the evidence plaintiff cites in support of its alternative argument. Indeed, plaintiff articulates three distinct alternatives to convey what it claims is *the* (presumably singular) plain and ordinary meaning of the term. First, in its claim construction memorandum, plaintiff states that the term means “an electric circuit that supplies input to another electronic circuit,” parroting the construction its expert articulates. Pl.’s Mem.

at 24, citing Roberts Decl. ¶ 58. But plaintiff's expert relies on a dictionary definition that reads, "an electronic circuit that supplies input to another electronic circuit." Roberts' Decl., Exh. H (DN 89-3). Meanwhile, in its Local Patent Rule 4.2(f) submission and at oral argument, plaintiff proposed a third alternative, "an electric circuit that supplies input to another electric circuit" (DN 108 at 2). Maybe these are distinctions without a difference; maybe not. The record does not speak to the variations in plaintiff's alternative constructions. But even if I assume that the differences among them are immaterial—possibly a series of clerical errors—and that plaintiff intended to propose the definition it points to in the IEEE Standard Dictionary of Electrical and Electronics Terms (the "IEEE Dictionary"), the dictionary itself offers four, facially distinct definitions. And, as defendants point out, the one plaintiff identifies as conveying the plain and ordinary meaning to an electronic ballast engineer reading the Asserted Patents is prefaced with the qualifier "(communication practice)." Plaintiff fails to explain why that definition, expressly directed to a different field from the one at issue, nevertheless conveys how a person of skill in the art would understand the term "driver" in the present context. Moreover, plaintiff's reliance on a dictionary entry offering four different definitions for "driver" detracts from plaintiff's

primary contention that no construction is needed, since it underscores the fact that the term has multiple plain and ordinary meanings. See *O2 Micro Intern.* 521 F.3d at 1361. Under these circumstances, I agree with defendants that if I decline to construe the term, the jury will be faced with "dueling arguments as to what the plain and ordinary meaning is...by the experts at trial." Tr. at 34.² As the *O2 Micro Intern.* court explained, that outcome produces a legal error by "effectively submitt[ing] a legal question to the jury." *Id.* at 1360. For these reasons, neither of plaintiff's proposals is satisfactory.

Nor, however, is defendants' proposed construction correct, as it plainly violates the fundamental proscription against reading limitations from the specification into the claims. See *Thorner*, 669 F.3d at 1366 ("[w]e do not read limitations from the specification into claims; we do not redefine words."). Defendants do not dispute that the term "driver," as understood by a skilled artisan, generally has a broader meaning than the one they propose. Yet their construction, "a circuit that turns on and off transistors in a switching arrangement," rests wholly on descriptions of the driver's functions in specific embodiments, which the *Thorner* court made clear do not amount to

² References to "Tr." refer to the transcript of claim construction proceedings held on April 2, 2014 (DN 135).

"a clear and unmistakable disclaimer" of claim scope. Moreover, defendants acknowledge that "the purpose of the driver may be different between claims 1 and 10 of the '032 Patent." Indeed, claim 10 recites "a driver for supplying current to the load circuit," and says nothing about a "switching arrangement". Finally, defendants offer no basis for introducing the term "transistor," which defendants do not contend appears anywhere in the record, and which does not obviously clarify the meaning or scope of "driver."

Although I am dissatisfied with both sides' proposed constructions of "driver," plaintiff's submissions support a viable alternative: "A program, circuit or device used to power or control other programs, circuits or devices." This definition likewise appears in the IEEE Dictionary, and unlike the one plaintiff proposes, it is not preceded with any limiting qualifier. This definition is broader than, but consistent with, the one plaintiff identifies as reflecting the plain and ordinary meaning of "driver." Indeed, plaintiff highlights this definition in its citation to *SuperSpeed Software, Inc., v. Oracle Corp.*, 447 F. Supp. 2d 672 (S.D. Tex. 2006), describing it as "precisely in line with" plaintiff's own interpretation. Pl.'s CC Presentation at 49.

I am not troubled by plaintiff's reliance on dictionary definitions to support their view of the plain and ordinary

meaning of "driver." The Federal Circuit has consistently held that "[d]ictionaries or comparable sources are often useful to assist in understanding the commonly understood meaning of words," *Phillips*, 415 F.3d at 1322, with only the caveat that a dictionary definition may not contradict the meaning set forth in the patent. *Id.* citing *Vitronics*, 90 F.3d at 1585. Defendants decry plaintiff's citation to technical dictionaries, but they do not dispute that "driver" does, indeed, have several commonly understood meanings to skilled artisans in various technical fields. The dispute on this issue instead surrounds which of these common meanings an electronic ballast engineer reading the patent would understand as the claimed "driver." Because, as noted above, defendants' references to the intrinsic record do not satisfy *Thorner's* "stringent" test for establishing that the patentees narrowed or otherwise departed from an ordinary meaning of the term "driver," I conclude that the broad, non-industry-specific, IEEE Dictionary definition above best reflects the common meaning a skilled artisan would attribute to the term as it is used in the patent.

Shut-down latch

Plaintiff's position:	Requires no construction, but if construed, "a circuit that is set in one state by a signal on a control input, and remains in that state after the signal has been removed."
Defendants' position:	Should be construed as, "a circuit that detects a signal and, in

	response, shuts down a driver of a switching arrangement."
--	--

The parties agree that a "shut-down latch" is, at bottom, "a circuit," but they disagree about how broadly to interpret the circuit's function, and they dispute whether the construction of the term should reflect certain features. Plaintiff argues that the term requires no construction because "latch" is broadly understood by a skilled artisan as a circuit with binary states, and the remaining language of the claim clearly explains what the claimed latch is for: shutting down the driver. Defendants agree that a "shut-down latch" is, indeed, for shutting down the driver, and their proposal explicitly incorporates that function. Both sides point to the same portion of the specification: "[t]his pin applies the capacitor voltage to a shutdown latch (not shown) inside the IC having a threshold level. If the voltage on the capacitor reaches the threshold level, the latch will be set and the ballast will be shut down until reset." According to plaintiffs, however, defendants' construction fails to acknowledge the import of the words *until reset*: that a "latch" inherently requires two states. This is critical, plaintiff argues, because a definition that fails to recognize a latch's two-state requirement broadens the claim scope and is "technically wrong."

Curiously, both sides insist that the *Phillips* court's "steel baffles" analysis (i.e., its explanation that the term "steel baffles" strongly implies that the term "baffles" does not inherently mean objects made of steel, see 415 F.3d at 1314) supports their respective constructions and undercuts their adversary's. According to plaintiff, *Phillips* teaches that because the claims explicitly recite that the shut-down latch is "for shutting down the driver," it would be redundant to define the "shut-down latch" as inherently a circuit that "shuts down a driver." If "shut-down latch" were defined in that way, plaintiff observes, there would be no need to recite the limitation "for shutting down the driver." Meanwhile, defendants insist that plaintiff's focus on the meaning of "latch" renders the qualifier "shut-down" superfluous, violating *Phillips'* requirement that claims be read "in the context of the claim language itself."

Plaintiff further argues that defendants' construction is "technically wrong" because a "latch," as that term is understood in the art, necessarily requires two states, and that defendants' construction fails to capture this essential feature. Plaintiff identifies intrinsic and extrinsic evidence to support the argument that any construction of "shut-down latch" must account for this inherent feature: first, the specification's reference to two states ("if the voltage on the

capacitor reaches the threshold level, the latch will be set and the ballast will shut down until reset"), and second, extrinsic evidence in the form of two dictionary definitions, one of which is from the Microsoft Dictionary of Computing and defines "latch" with reference to binary states "such as on or off, or logical true or false." Roberts Decl., Exh. G (DN 89-3 at 30). According to plaintiff, this evidence establishes that "a circuit where the output changes when the input changes alone is not a latch," so defendants' construction is overly broad. See Tr. at 30,

In this instance, I agree with plaintiff that no construction of the term is required. Defendants do not dispute that a person of ordinary skill in the relevant art would readily understand the term "latch" consistently with the definitions plaintiff extracts from the IEEE and Microsoft Dictionaries, nor do defendants assert that any variations in those definitions is material to the meaning or scope of the asserted claims. In other words, the record here does not evince a dispute over the plain and ordinary meaning of the term "latch," but rather reflects a disagreement over whether the patentees' use of the term in conjunction with the qualifier "shut-down" in the claims, and references to the "latch" or "shut-down latch" in the specification, establishes their intent to depart from or disclaim the term's undisputed, plain and

ordinary meaning. Because nothing in the claims or specification conflicts with that meaning, I conclude that they do not.

Moreover, although defendants criticize plaintiff for focusing on the definition of "latch," defendants concede that by "inspect[ing] the rest of claim 1 of the '838 and '032 Patents," a skilled artisan is able "to determine exactly what a 'shut-down latch' is or does." Def.'s Reply, at 4 (DN 97). See also Tr. at 43 ("we believe that shut-down latch is readily apparent from the claims"). Accordingly, I conclude that a person of ordinary skill in the art, informed by the claim language and the specifications, possesses all of the information necessary to understand the meaning of the term "shut-down latch" as used in the Asserted Patents.

I now proceed to examine the terms that defendants contend are indefinite. At the outset, I note that defendants' formulation of the issue is peculiar, as the question of indefiniteness proceeds at the level of the *claims*, taken as a whole, not at the level of individual terms. See *Biosig Instruments, Inc. v. Nautilus, Inc.*, 715 F.3d 891, 898 (Fed. Cir. 2013) ("A claim is indefinite only when it is 'not amenable to construction' or 'insolubly ambiguous'")(citing *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005)). These two tests are not coextensive, since a claim can

be "amenable to construction" but nevertheless "insolubly ambiguous," if "reasonable efforts at claim construction result in a definition that does not provide sufficient particularity and clarity to inform skilled artisans of the bounds of the claim." *Biosig*, 715 F.3d at 898. I apply "[g]eneral principles of claim construction" to determine indefiniteness, i.e., I "primarily consider the intrinsic evidence consisting of the claim language, the specification, and the prosecution history," but I may also consider extrinsic evidence. *Id.*

Load

Plaintiff's position:	Requires no construction, but if construed, "lamp."
Defendants' position:	Indefinite.

Defendants argue that this term is indefinite because it lacks an antecedent basis and is ambiguous. Defendants observe that several claims in both patents refer first to "a load circuit" and then refer to "the load," then argue that it is not clear whether the patentees meant "the load" to refer to: 1) the antecedent "load circuit" (but omitted the word "circuit"); 2) "a load"; or 3) "the lamp." On a natural reading of the claim, however, "the load" plainly refers to the "load" that is part of the antecedent "load circuit." The first of the competing interpretations defendants raise is implausible: defendants offer no basis for concluding that the patentees inadvertently (but consistently) omitted the word "circuit" in

four separate claims, across two different patents with distinct inventors, each time they recited the term "the load."

The second competing interpretation is likewise flawed. The antecedent reference in the claims to "lamp" actually recites "at least one lamp," so simply replacing "load" with "lamp" would result in ambiguity because the claims expressly contemplate the possibility of a plurality of lamps. As I read the claims as written, "the load" naturally refers to the "power-consuming portion of the system," which the claims make clear is the "one or more lamps" powered by the ballast. See Exh. C to Exh. 1 of Def.'s Reply (defining "load circuit" as "[t]he circuit that forms the load, or power-consuming portion, of a system.")

In view of this straightforward reading, defendants' indefiniteness argument is unpersuasive. Defendants acknowledge that lack of an explicit antecedent "does not always render a claim indefinite," but assert, without further explanation, that "it does so here." Defendants cite *Halliburton Energy Services, Inc. v. M-I LLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008), but their undeveloped citation does not support their conclusion. The *Halliburton* court observed that "a claim could be indefinite if a term does not have proper antecedent basis where such basis is not otherwise present by implication or the meaning is not reasonably ascertainable." *Id.* (citing *Energizer Holdings, Inc.*

v. *Int'l Trade Comm'n*, 435 F.3d 1366, 1370-71 (Fed. Cir. 2006)). Defendants do not explain why, in this case, the required antecedent basis is not "present by implication," or why its meaning cannot be reasonably ascertained with reference to the antecedents, "the load circuit" and "at least one lamp." In short, far from finding the term "the load" insolubly ambiguous, I find its meaning so clear as to render any construction unnecessary.

Representing

Plaintiff's position:	Requires no construction, but if construed, "proportional to."
Defendants' position:	Indefinite.

I agree with plaintiff that the meaning of this term is a matter of common sense and is apparent from the context in which it is used in the Asserted Patents. The term appears in claims 1 and 10 of the '838 Patent. Element (d) of claim 1 recites, "a protection circuit for comparing a first voltage representing an average voltage on the midpoint node with a second voltage representing the voltage of the DC blocking capacitor..." while element (b) of claim 10 recites, "a signal representing the current spikes."

In their opening memorandum, defendants offered no evidence of whether or how a skilled artisan would understand "representing" in these claims, but state that the term's use suggests that the patentees intended to refer to something other

than the actual quantities of interest (i.e., the "average voltage" and "voltage" of claim 1 and the "current spike" of claim 10). Defendants go on to observe that "neither the claims nor the specification...defines the scope [of] the term 'representing,'" Def.'s Mem. at 13 (DN 86), and to argue that the term is indefinite because it "could mean any and all correlations." Def.'s Reply at 11 (DN 97).

Plaintiff's response to this argument is sensible.

Plaintiff observes that:

[p]ersons skilled in the art of ballast design typically work with physical quantities such as current, power, resistance inductance, and capacitance that they cannot see, feel, or smell. They cannot physically feel low voltages, and using feel to measure high voltages would be dangerous. Instead, persons skilled in the art rely on instruments designed to measure physical quantities and that provide them with a *representation* of the quantity being measured."

Pl.'s Resp. at 18 (original emphasis) (DN 89). Neither side contends that "representing" has a specialized meaning in the art. And a natural reading of the claims suggests that "representing" conveys a meaning along the lines of, "which is," and is intended simply to identify the respective voltage quantities the "protection circuit" is "comparing" in claim 1, and the nature of the "signal" that is subject to "amplifying" in claim 10.

With respect to this term, defendants seek to inject ambiguity where none exists. Their conclusory argument falls far short of their heavy burden to establish that "representing" is "insolubly ambiguous." *Datamize*, 417 F.3d at 1347. The patentees' use of the term is straightforward, and it requires no construction.

Substantially excessive lamp voltage

Plaintiff's position:	Requires no construction, but if construed, "the difference between the starting voltage applied to the lamp by the ballast and the operating voltage of the lamp."
Defendants' position:	Indefinite.

This term appears in element (a) of claim 10 of the '838 Patent, which is directed to a method for shutting off the ballast if excessive lamp voltage is detected. The disputed phrase appears in the limitation, "detecting a brief period of substantially excessive lamp voltage when a lamp has not yet started..."

Defendants argue that the phrase is insolubly ambiguous because the specification does not provide a standard for either "substantially" or "excessive." As the Federal Circuit explained, however, in the very case defendants cite, *Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116 (Fed. Cir. 2002),

the patentee is not required to include in the specification information readily understood by practitioners, lest every patent be required to be written as a comprehensive tutorial and treatise for

the generalist, instead of a concise statement for persons in the field. ... The question is not whether the word "substantially" has a fixed meaning as applied to "constant wall thickness," but how the phrase would be understood by persons experienced in this field of mechanics, upon reading the patent documents.

Id. at 1119-20 (reversing lower court's ruling that use of the term "substantially constant wall thickness" rendered claim indefinite). In this case, the parties agree that an ordinarily skilled electronic ballast engineer would understand that the voltage required to start a fluorescent lamp is significantly higher than the lamp's normal operating voltage. They further agree that the difference between the starting voltage and the operating voltage varies from lamp to lamp. Defendants urge me to conclude that plaintiff's construction is indefinite because it "does not account for all lamp types, all ballast types, and all combinations of lamps in ballasts." Def.'s CC Pres., 27. But it is precisely the variables inherent in the technology that support the patentees' use of their chosen language.

As the court explained in *Ecolab Inc. v. Envirochem, Inc.*, 264 F.3d 1358, 1367 (Fed. Cir. 2001), "the term 'substantially' is a descriptive term commonly used in patent claims to 'avoid a strict numerical boundary to the specified parameter.'" (Citation omitted). Indeed, the Federal Circuit "has repeatedly confirmed that relative terms such as 'substantially' do not render patent claims so unclear as to prevent a person of skill

in the art from ascertaining the scope of the claim." *Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1359 (Fed. Cir. 2012) (citing cases). Courts in this district have acknowledged that terms such as "substantial" may be "as accurate as the subject matter permits and provide[] sufficient guidance to one skilled in the art." *Pave Tech, Inc., et al. v. Snap Edge Corp.*, 952 F. Supp. 1284 (N.D. 1996).

Defendants cite *Halliburton*, but their reliance is misplaced. As the court explained in *Biosig*, the term "fragile gel" at issue in *Halliburton* rendered the claims in that case indefinite because the patent failed to disclose "how the claimed 'fragile gel' performed differently than the disclosed prior art." *Biosig*, 716 F.3d at 903. The patent failed, for example, to quantify "the degree of improved speed." *Id.* Accordingly, the *Halliburton* court concluded "it was unclear whether a skilled artisan would have interpreted this claim as having an upper bound of fragility." *Biosig*, 715 F.3d at 902.

But the *Biosig* court distinguished *Halliburton*, explaining:

Here, the claimed apparatus has inherent parameters where the 'spaced relationship' cannot be larger than the width of a user's hand. Additionally, it has been shown that skilled artisans can readily ascertain the bounds of the 'spaced relationship' through tests using standard equipment. Thus, the 'upper bound' that was lacking in *Halliburton* is found here."

Id. Similarly in this case, while the "ratio of the starting voltage to the operating voltage is different for different lamp

types," a skilled artisan can readily ascertain the bounds of the claimed "substantially excessive lamp voltage" with reference to "published standards for each lamp type." Roberts Decl. ¶ 53 (DN 89-2). For these reasons, I conclude that the claim is not indefinite and construe it to mean, "the difference between the starting voltage applied by the lamp ballast and the operating voltage of the lamp."

Substantially longer than the brief period

Plaintiff's position:	Requires no construction, but if construed, "a time far longer than the starting time of the lamp."
Defendants' position:	Indefinite.

Like the previous term, this phrase appears in Claim 10 of the '838 Patent. Element (b) of that claim recites: "detecting a longer period of less excessive lamp voltage by amplifying, with a response time substantially longer than the brief period..." Defendants assert that this term, like the previous one, is indefinite because the specification does not provide a standard for either 'substantially' or 'brief period,' nor does it provide any "metric or formula that would allow a person of ordinary skill in the art to evaluate whether 'a brief period' is more or less than, for example, 1 second, ¼ second, 10 microseconds, or 100 microseconds." Def.'s Memo. at 15 (DN 86). Accordingly, defendants argue, one skilled in the art is not

reasonably apprised of the claim scope, citing the declaration of their expert, Bryce Henderson.

In response, plaintiff argues that the term is not indefinite because a person skilled in the art "would understand that the gas discharge used to produce light in a fluorescent lamp must be initiated or started by the ballast by application of the starting voltage," and that the process of initiating the discharge takes a "small, but finite amount of time, so that if the starting voltage is present for substantially longer than this brief period, the lamp has not started and the protection circuit in the ballast should shut down or reinitiate the starting sequence." Roberts Decl. ¶ 55. Plaintiff's expert also explains—and defendants do not dispute—that a person skilled in the art would know that "the ionization time of a mercury rare gas discharge of the type used in fluorescent lamps is substantially less than 100 microseconds, and the time required to fully establish the discharge is less than 1 millisecond." *Id.* at ¶ 56. By comparison, the specification exemplifies the period of time claimed in the limitation "substantially longer than the brief period" by explaining that it "may be on the order of half a minute."

Even assuming the correctness of defendants' argument that a person of ordinary skill in the art could not ascertain "whether 'a brief period' is more or less than, for example, 1

second, ¼ second, 10 microseconds, or 100 microseconds" (though I note that plaintiff's expert reads the '838 disclosures as teaching, in the preferred embodiment, a brief period of less than 18 microseconds, leading me to question whether a skilled artisan would believe 1 second or even ¼ second—both of which are several orders of magnitude greater than 18 microseconds—as falling within the scope of the "brief period"), the specification contrasts this "brief period" with a period "on the order of half a minute" to which the "substantially longer" limitation refers. Accordingly, even if a skilled artisan would understand the "substantially longer" period to include periods shorter or longer than thirty seconds, any period reasonably close to thirty seconds is still "substantially longer" than the "brief period" required to start the lamp. I am satisfied that taken in context, the phrase "substantially longer than the brief period" is not indefinite, and that a skilled artisan would have no trouble understanding it, based on the language of the patent, as an amount of time well beyond the period required for a lamp to start fully. The term requires no construction.

Substantial portion of its normal level

Plaintiff's position:	Does not require construction, but if construed, "about 80%-90% of the normal operating current."
Defendants' position:	Indefinite.

This term appears in element (e) of Claim 1 of the '032 Patent, which recites, "end-of-life circuitry for providing to the shut-down pin a second signal exceeding the second threshold level if lamp current fails to reach a substantial portion of its normal level within a predetermined period of time." Defendants argue this term is indefinite because the specification does not provide a standard for "substantial portion," and because the "80%-90% of the normal operating current" that plaintiff proposes as an alternative construction is arbitrary and, if adopted, would violate the principle that dependent claims must further limit the claims from which they depend.

As discussed above, "[t]he term 'substantial' is a meaningful modifier implying 'approximate,' rather than 'perfect.'" *Liquid Dynamics Corp.* 355 F.3d 1361 at 1368 (Fed. Cir. 2004). Although I am inclined to agree that the 80%-90% range plaintiff's expert proposes is incorrect for the reasons defendants assert, defendants fail to persuade me that the claim, as written, is insolubly ambiguous to an ordinarily skilled artisan. The claim element in which the term appears is directed to the invention's end-of-life circuitry, the purpose of which is to protect the ballast from damage caused by a defective lamp. There is no dispute that a skilled artisan would understand both that a defective lamp would have a higher

than normal operating voltage, and thus a lower than normal operating current, and also that some variations in the lamp's operating current are normal, do not indicate a defect in the lamp, and should not trigger a ballast shut down. In context, then, a skilled artisan would understand the "substantial portion of its normal level" as distinguishing ordinary current fluctuations from low levels that, when occurring for longer than "a predetermined period of time," signal the presence of lamp voltage high enough to damage the ballast, and should trigger shut down.

In short, while defendants' objections to plaintiff's alternative construction may have merit, they have not carried their burden of establishing that the claim, as written, is insolubly ambiguous and does not inform a skilled artisan of its scope. I decline to construe this term.

Control Means

Plaintiff's position:	This term is not governed by 35 U.S.C. § 112 ¶ 6. Alternatively, the patent provides sufficient structure for one skilled in the art to avoid a finding of indefiniteness.
Defendants' position:	This term is claim indefinite because it is expressed in means-plus-function form governed by 35 U.S.C. § 112 ¶ 6, and the '032 Patent fails to disclose the necessary structure.

The construction of this term requires a unique analysis as compared to the others because defendants argue that this is a

"means-plus-function" term. That is, in defendants' view, the claim is governed by 35 U.S.C. § 112 ¶ 6, which provides,

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof. that is indefinite because of insufficient disclosure of structure.³

If this provision applies, the patentee "must indicate in the specification what structure constitutes the means," and "such structure must be clearly linked or associated with the claimed function." *Ergo Licensing, LLC v. CareFusion 303, Inc.*, 673 F.3d 1361, 1363 (Fed. Cir. 2012) (citations omitted). "If an applicant does not disclose structure for a means-plus-function term, the claim is indefinite." *Id.*

Plaintiff argues that the referenced "control means" is a component of the "integrated circuit" element, and that use of the word "circuit" suggests a structure to persons of ordinary skill, citing *Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311 (Fed. Cir. 2004), and *Mass. Inst. of Tech. v. Abacus Software*, 462 F.3d 1344, 1355 (Fed. Cir. 2006). Plaintiff asserts: "[t]he 'control means' is a circuit structurally defined by its function, and therefore is not governed by 35 U.S.C. § 112(6) at all." Pl.'s Resp. at 14 (citing *Linear*

³ This language now appears in 35 U.S.C. § 112 (f)

Tech.). But the claim in *Linear Tech.* did not use the term "means." The court explained that a limitation "that actually uses the word 'means' will invoke a rebuttable presumption that § 112 ¶ 6 applies. By contrast, a claim term that does not use 'means' will trigger" the opposite presumption, i.e., that it does not apply. The court concluded that "the district court legally erred by failing to apply the rebuttable presumption" that the provision did not apply. 379 F.3d at 1319-1320. Here, of course, the "circuit" limitation is not the term in dispute, but rather the "control means" limitation, which, on its face, triggers the presumption that Section 112 (6) applies.

Defendants invoke *Ergo Licensing, LLC v. CareFusion 303, Inc.*, 673 F.3d 1361 (Fed. Cir. 2012), in which the court held that "control means" was a means-plus-function limitation and rejected the patentee's argument that the "control device" disclosed, which the patentee likened to a general-purpose computer-disclosed structure for the function of "controlling the adjusted means," which was the agreed function of the "control means." The court distinguished the situation from those in which the record established that an ordinary artisan would have recognized the term as providing structure. Further, it was not enough that "one of skill in the art may have been able to find a structure that would work... Under § 112 ¶ 6, a patentee is only entitled to 'corresponding structure...described

in the specification and equivalents thereof,' not any device capable of performing the function." 673 F.3d at 1364 (original emphasis).

Plaintiff's citations to *Linear Tech.* and to *Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364 (Fed. Cir. 2003) (which similarly did not construe a term using the word "means), do not support plaintiff's argument that the "control means" limitation is not a means-plus-function limitation. I am satisfied, however, that the specification's reference to "a widely used IC such as chip no. L6574 manufactured by ST Microelectronics of Italy" discloses adequate structure corresponding to the function performed by the "control means." '032 Pat. col.3 ll.

The parties agree that the function of the "control means" is "to create a frequency sweep from a pre-heat frequency, through a substantially lower, resonant frequency, to a still lower operating frequency." Moreover, defendants acknowledge that the specification's reference to the "widely used IC such as chip no. L6574..." discloses "means...for performing this function. Defendants argue that this disclosure is not adequate because it "does not disclose how the IC creates a frequency sweep as required by the function of the control means or any other meaningful structural or operational details about this chip." Def.'s Memo. at 8 (DN 86). But "[a]ll one needs to do in order to obtain the benefit of that claiming device [§ 112

¶ 6] is to recite some structure corresponding to the means in the specification, as the statute states, so that one can readily ascertain what the claim means and comply with the particularity requirement of ¶ 2." *Elcommerce.com, Inc. v. SAP AG*, 745 F.3d 490 (Fed. Cir. 2014) (citation omitted, alteration in original).


In their presentation, defendants asserted that the "integrated circuit as a whole cannot be structure of control means." Def.'s CC Pres. at 37. Defendants went on to argue that plaintiff's expert's reference to extrinsic evidence—data sheets and applications notes for the IC disclosed in the specification—to point out the specific component of the IC that performs the recited function proves that the '032 Patent itself lacks the required disclosure. But in *Elcommerce.com*, the court explained that "[t]he amount of detail that must be included in the specification depends on the subject matter that is described and its role in the invention as a whole, in view of the existing knowledge in the field of the invention." *Id.* (citation omitted). The court further held that its precedent "does not require the drafter 'to encumber the specification' with information known to a person of skill in the field of the invention; nor does section 112 require that the specification reproduce information routinely possessed by persons in the field of the invention." *Id.* (citing *Creo Prods., Inc. v.*

Presstek, Inc., 305 F.3d 1337, 1347 (Fed. Cir. 2002). Plaintiff's expert stated in his declaration that "[a] person skilled in the art for electronic ballast design regularly refers to data sheets and applications notes for circuit structure." Defendants have not controverted this statement or otherwise proffered any evidence about whether a skilled artisan would know and understand from the specification's disclosure of "a widely used IC such as chip no. L6574 manufactured by ST Microelectronics of Italy" what structure corresponds to the function performed by the "control means" recited in Claim 1 of the '032 Patent.

III.

For the foregoing reasons, I construe the disputed claim terms as set forth above.

ENTER ORDER:

A handwritten signature in cursive script, reading "Elaine E. Bucklo", written over a horizontal line.

Elaine E. Bucklo

United States District Judge

Dated: April 28, 2014