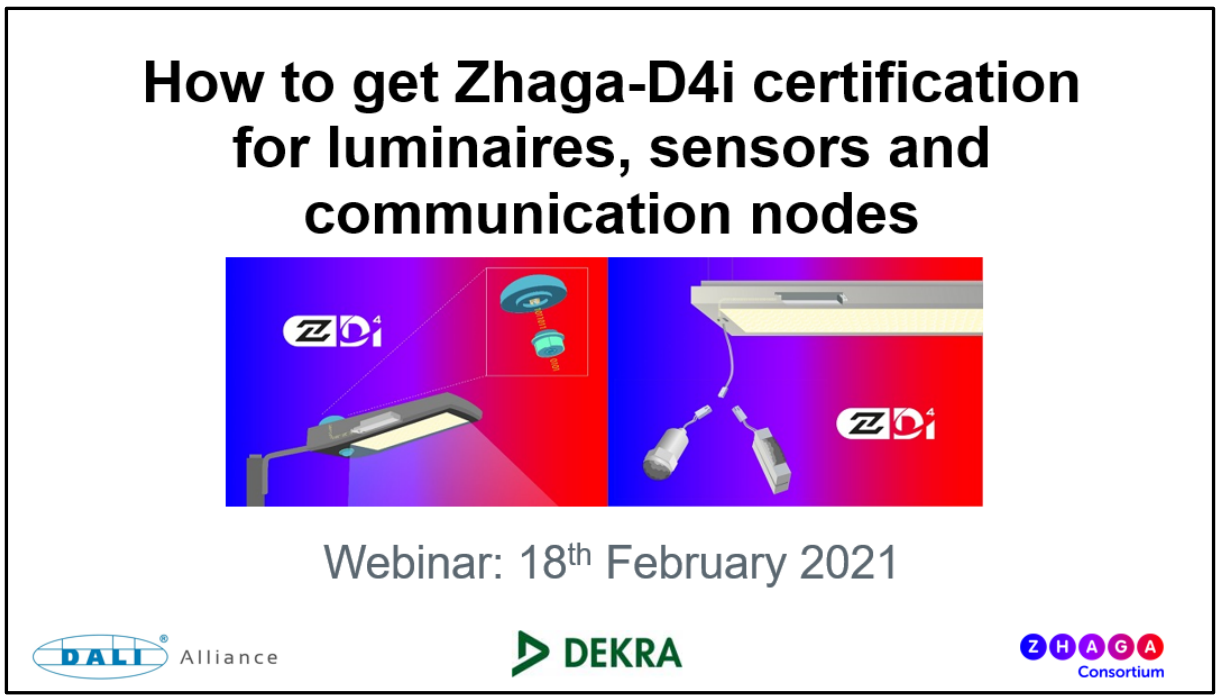
Webinar Q&A



Presentation materials and webinar recording:

- DALI Alliance website
- Zhaga website

When will the Zhaga Book 18 Ed3 (NEMA C136 merged with Zhaga) be published ?
Zhaga: Technically, Book 18 Ed. 3.0 has been completed and approved by our technical committees. As a next step, the Book was shared to our Associate and Regular Members and is undergoing IPR review. This is a 60-day process, it completes by mid-April. I would then expect (if all goes as expected) approval of the book by the Steering Committee in the next members meeting on April 16.

Our luminaires already have ENEC and EMC and we use components that isolated all are certified with D4i. So what kind of tests do you need to do in order to certificate the outdoor luminaire with Zhaga-D4i? Do we have to send a luminaire to test?
Zhaga: It is not needed to send out a luminaire; and the tests are carried out through verification of the documentation and a letter of confirmation. What is at least additionally needed is: the logo license agreements have been signed, the receptacle is Zhaga certified, that electrical wiring and construction diagrams are submitted to the test house for verification, and that the Letter of Conformation has been filled in to confirm that luminaires conforms to the D4i luminaire requirements. Full details can be found in the specifications.
DEKRA: A luminaire is not needed. Construction drawing are needed for verification of the keep-out zones and wiring diagrams are needed for verification of the correct connection of pin and drivers. For the rest we need declarations of the use of the D4i certified drivers.

If you want to have your complete luminaire "Zhaga-D4i" certified how much data is needed to be put on the driver?
DALI Alliance: The minimum requirement is to program memory bank 1 with the luminaire manufacturer GTIN. It is recommended to include further information, described in the "*D4i Certification and Trademark Use*" document, and DALI part 251.
Zhaga: There are no additional requirements beyond the requirements in the D4i specification.
DEKRA: None on the driver. The product should bear the Zhaga-D4i certification mark.

Why is Part 150 optional? Then, some drivers D4i might not be compatible with some D4i sensors as nodes or sensors.
DALI Alliance: The part 150 (AUX supply) is not optional in outdoor Zhaga-D4i luminaires. The option is to include it in the driver, or to include it as a standalone component that is installed in the luminaire.

Is DALI-150 part (bus power supply) a mandatory or optional functionality for LED driver (device type 207)?
DALI Alliance: Part 150 is not the bus power supply, but an AUX power supply. It is optional for all control gear, including D4i certified drivers.

I´m interested in external AUX-Power supplier. But I have no idea how to find a fitting AUX power supply. Do you know where to find one which fits DALI Part 150? Is there a similar D4i-sign for such?
DALI Alliance: Currently there are no stand-alone AUX power supplies that have been certified. All are currently integrated in D4i drivers. The entire list is here: Product database - Search Aux power supplies

Does the EL control gear counts as 1 of the 4 LED drivers?
DALI Alliance: No. This is in addition to the 4 LED drivers, so it is possible to have 4x D4i drivers, and one or more EL drivers.
If there was only one D4i driver in a luminaire, to keep the bus current available for other devices there should be no more than one EL driver on the bus.

As the standard will not set accuracy demands, couldn't it oblige manufacturers to provide this information in their datasheets? I've not been able to find any data on the measurement accuracy for energy or voltage peaks in datasheets of certified products.
DALI Alliance: For Parts 252 and 253, we specify how to report information - power, energy, voltage and so on - including the formats but deliberately we don't specify accuracy requirements, this is manufacturer specific. We don't currently have a requirement for this information to be in the datasheets, but it is a good point - we will check with our members and consider this for the next update.

Is there a requirement that defines the accuracy and long-term stability of the energy measurement?
DALI Alliance: No, this is not a requirement of Parts 252 or 253, but we will discuss adding a requirement for this information to be in the product datasheets.

Which manufacturers are currently on the market that produce Zhaga and NEMA connectors?
Zhaga: The manufacturers of Zhaga connectors are published on the Zhaga website (Amphenol, BJB, Longjoin, TE, Quicheng and Wenzhou). There is no separate certification for NEMA nodes and these are widely available from multiple suppliers.

Considering public tenders: What to ask for outdoor luminaires and how to verify?
Zhaga: The certification makes tendering very easy: one may request that luminaires have been Zhaga-D4i certified. Note that appropriate tender text can be found on the Zhaga website: https://www.zhagastandard.org/books/tender-documents.html
DEKRA: Requirement: See Zhaga website for texts. Verification: Look for Zhaga-D4i certification mark on the product and review the Zhaga database. If the product is not listed on the Zhaga website it is not certified. Request from the manufacturer the Zhaga-D4i certificate which can be generated on the Zhaga website.

For indoor luminaires (Book 20): why the restriction to only 1 node? This means that a sensor and a communication node must come from a single manufacturer.
Zhaga: Our committee decided that one node was sufficient to cover most of the use cases in consideration, also noting that one node may comprise multiple sensors. There is always a balance between the complexity of the specification and the number of uses cases covered. But if we later learn from the market that two interfaces are required, then we will definitely take on this challenge and look at other options.

Can one node/controller have combined functionality e.g. communication and motion detection? Is it somehow limited by DiiA?
DALI Alliance: This is allowed, and is not limited by DiiA. A single control device can include application controllers and input devices such as sensors, as well as a gateway or bridge for wireless communication.

For LED drivers only D4i certification is required, no Zhaga certification, is that correct?
DALI Alliance: Yes, correct. LED drivers require D4i certification only. Luminaires containing D4i drivers can be Zhaga-D4i certified.

If you use only D4i-listed products in a luminaire can you automatically call the luminaire D4i or is re-certification needed?
DALI Alliance: Yes, the D4i trademarks can be used on luminaires that contain D4i components. However, this applies only to companies that are members (Regular, Associate, Community) of the DALI Alliance. Full details are available in the document "D4i Certification and Trademark Use" (www.dali-alliance.org/specifications/download.html).

Is there a separate AUX power supply (DALI Part 150) on the market so that a Zhaga Book 18 connector can also be operated on indoor luminaire ECGs?
DALI Alliance: There are currently no stand-alone AUX power supplies that are certified, but such products are already allowed.

Is it necessary for the Zhaga-D4i certification of an outdoor luminaire that it has two Zhaga receptacles?
DEKRA: For certification, you only need one Zhaga receptacle, but you can have two.

What about "independent LED drivers" that have a housing for outdoor usage, and are connected to luminaire with LED panel with cable. Is Zhaga certification required or only D4i certification?
DALI Alliance: Such LED drivers can be D4i certified.
Zhaga: Luminaires can only be Zhaga-D4i certified if they incorporate a D4i driver. The Zhaga-D4i certification program does not include certification of the described architecture.

Does the Zhaga-D4i test include the correct value of the asset registers in the D4i driver?
DALI Alliance: Zhaga-D4i requires that at least the luminaire GTIN in memory bank 1 is programmed. Other luminaire data is optional.

My understanding is that DALI-2 drivers do not need Parts 251, 252 & 253 (these are optional) but these are mandatory for D4i. Is there not a danger that a project mixing DALI-2 devices and D4i devices does not give consistent reporting?
DALI Alliance: If you are designing an installation, you select the drivers or luminaires that provide the features you need. In our product database you can see which Parts of the standard are implemented, so it should be clear which features are provided by different drivers.
The situation is similar to "standard" LED drivers and colour controllable LED drivers. They are frequently used together in systems, but you wouldn't expect to be able to control colour with the standard LED drivers.

What wireless protocols are being used with D4i ?
DALI Alliance: Within the DALI Alliance we are looking at wireless gateways and also DALI over wireless based on Part 104 of IEC 62386. The relevant protocols are Bluetooth mesh, Thread and Zigbee. But for outdoor applications (Book 18), other protocols are likely to be used to enable city-wide communication, and these are not currently standardized as part of D4i or Zhaga-D4i, so you have a choice.
Zhaga: In Zhaga we focus on the interface between the nodes and the luminaires, and one of the strengths of this approach is that we are agnostic on the communication technology, so this can be decided by the customer.

I often get the question from outdoor luminaires OEMs whether extra- and inter-luminaire applications are supported by drivers having only the D4i approval mark but not the DALI-2 approval mark. Does D4i support extra- and inter-luminaire applications?
DALI Alliance: Yes, D4i drivers can be used in both applications, but care needs to be taken that sufficient integrated bus power supplies are disabled to ensure the maximum current supplied to the bus does not exceed 250mA.
Also check with your supplier - there may be manufacturer-specific restrictions on the applications for their control gear.

Are the D4i test specification defined for application controllers?
DALI Alliance: Yes, D4i certification is available for all control devices including application controllers.

Which directives that apply to get certification for luminaires? EMC & LVD or RED?
DEKRA: EMC, ErP, RoHS and LVD are applicable, and RED may also apply depending on what you are doing for the rest of the luminaire. RED is applicable to a node containing a radio device. But this is separate from the D4i and Zhaga certification. The legal requirements in Europe are not taken into account for Zhaga-D4i, which is a global scheme.

Please let me know if the luminaire that will be D4i certified must have NTC?
DALI Alliance: Luminaires can be Zhaga-D4i certified, not simply D4i certified. An NTC is not a requirement for this certification.
DEKRA: No

So there is no guarantee then when I replace a node in the future the luminaire is still RED compliant?
Zhaga: RED is outside the scope of the Zhaga certification, and is a separate property of the nodes.
DEKRA: The node must be RED compliant. It is an add-on to the luminaire and outside of the luminaire.

Do DiiA and Zhaga have the relevant TRF (test report format) for your relevant specification/book (like IEC TRF)?
DALI Alliance: DiiA does not use an IEC TRF. These are mainly for IEC safety-related standards.
DEKRA: There is no IEC TRF. Zhaga has defined its own reporting format.

How wide is an Zhaga-D4i certification lumen packages/CCT/RA/mounting /driver?
Zhaga: The Zhaga interface specifications are purposely designed so that they specify what is needed for interoperability only, to leave as much room as possible for differentiation and innovation. So the Zhaga-D4i specifications Book 18 and 20 specify the interface between sensor and node only and the test that must be passed. There are no further Zhaga restrictions on lumen packages/CCT etc.

What happens when one customer places a node on a luminaire, how does this affect the RED directive for the "new" luminaire.
DEKRA: These are two products. This does not become one new product. The case is therefore not different than operating 2 separate products that are RED compliant. The case would be different if the component would be internally hardwired integrated into the luminaire. On a similar issue; a CE-compliant luminaire with a separate CE-compliant driver does not need new approbation however when the driver is built in it needs approbation as a combination.

D4i certification of a control device is only for Part 351 and Zhaga conformity - correct? It doesn't say anything about the functionality and available data in the control system?
DALI Alliance: Control devices also need to implement Parts 101 and 103 as well as Part 351. It's optional whether or not the manufacturer builds in sensor technology. One example of a control device for outdoor luminaires without a sensor might be a time clock, and this is permitted.

Regarding D4i self-testing, option 1 of the certification process, is this feasible with a ProbitLab2 only?
DALI Alliance: Yes, DiiA members can self-test control gear and control devices using the ProbitLab2 and the official test sequences. Alternatively, a test-house can be used.
After this, the product information and test results need to be submitted to DiiA for D4i certification.

For Zhaga-D4i certification of luminaires: Company must be in the Zhaga consortium and then we have to certify the luminaire/family with Dekra, and then send the certificate to Zhaga – is that correct? How long is the process to certify an outdoor luminaire?
Zhaga: Yes, the company must be a Regular or Associate member of Zhaga to do Zhaga-D4i certification. Other test houses are available for certification, not only Dekra.
DEKRA: The customer does not have to send the certificate to Zhaga, because the test house will take care of the full certification process, and ensure that the luminaire is listed on the Zhaga website. For lead times, please discuss with the test house of your choice.

Today, when specifying nodes and fixtures for a city, should I spec both DALI-2 and D4i? And also specify all part numbers used?
DALI Alliance: D4i is an extension of DALI-2, so simply specifying D4i will result in drivers or luminaires that include the capabilities for luminaire data, energy/power and diagnostics. Specifying D4i for the control devices (nodes) ensures that they are marked appropriately (type A-D), and meet the power and arbitration requirements to allow two such nodes to be used on a Zhaga-D4i outdoor luminaire.
Specifying DALI-2 on its own will also allow drivers/luminaires/nodes that may not have these capabilities - it would be necessary to give more detail in the specification if these other capabilities are required.
DEKRA: Specify Zhaga-D4i and you will have the interoperability promise.

Did you say that you were making an adjustment to the Zhaga Book 18 connector for nodes on top?
Zhaga: For Book 18, the Zhaga connector remains unchanged, but we are adding a different option which is to use an ANSI C136.41 connector in combination with a Zhaga connector. This will allow luminaire makers to include an on/off controller with the ANSI connector, combined with additional functionality using the Zhaga-D4i system.

What parts from IEC 62386-103 are mandatory for a control device (master application controller)?
DALI Alliance: Multi-master control devices (D4i types A-C) must implement part 101 and almost all content in part 103. The content in part 103 that is specific to single-masters is not applicable.

What if a product fails a test scenario which is very rare to occur on the actual system. Can we get waivers for that and proceed for certification? If yes what is the procedure and how the applicability of waivers are determined ?
DALI Alliance: Test waivers are only available where there is a fault with the tests themselves. DALI testing is very complicated and typically takes several days depending on the product type. If you believe there is a problem with the tests then please contact us, emailing the output from the problematic test.

Is the cost of the certification is that individual for each test house, and is there a yearly fee ?
DALI Alliance: D4i or DALI-2 certification requires DiiA membership. Each product to be certified requires 1 certification credit. These can be bought singly, or in larger packs. Details are on the DiiA website. Members can self-test the products, or use a test-house. Contact the test-houses directly for pricing information.
Zhaga: This is different for Zhaga and DiiA. For Zhaga, the certification fee is negotiated with the test house. For certification and continued inclusion in the Zhaga database a Zhaga membership is required. Details are on the DiiA website.
DEKRA: Testing charges are test house dependent. Annual fees etc are not charged by the test houses but are in the form of the appropriate membership fee of the respective organisation (DiiA/Zhaga).

A control device that respect Part 103 and 101 must implement commissioning at application level, if for example it uses only broadcast addressing?
DALI Alliance: If broadcast addressing is used, it is likely the control device has been designed so that no commissioning is necessary.

Can the power measuring system be MID certified?
DALI Alliance: This is not a requirement, and not in scope of D4i or DALI-2 certification.

Is D4i extended to emergency lighting?
DALI Alliance: We are in the final stage of developing the DALI-2 tests for emergency lighting (Part 202). Once released, this will permit both DALI-2 and D4i certification of this type of control gear. The existing D4i requirements will also apply.

Could any manufacturer who is member do the test by himself? What are the preconditions?
DALI Alliance: Yes, most manufacturers will do the DALI-2/D4i tests themselves, and then submit the results to DiiA for verification and certification. If not self-testing, then a DiiA accredited test-house must be used to do the testing.
DEKRA: Aside from the DALI and D4i part also Zhaga allows self-testing under supervision of the test house. CTF procedures as in IEC are used for the witness testing.

Does DiiA still exist or now it's called DALI Alliance?
DALI Alliance: Yes, DiiA still exists, this is the official name of the organization, we use DALI Alliance mainly for marketing (it's easier to say, and has "DALI" in the name, so easier for people to understand what we do).

Are Zhaga books 22 to 25 required for control gear inside Zhaga-D4i luminaire?
Zhaga: No, the Zhaga-D4i certification looks into the interface between the luminaire and the node only; for this interface Books 22-25 are not relevant.

We buy drivers Certified by DiiA such as DALI-2 but we very often find installations that have operational problems and the customer always blames the manufacturer of the luminaire. We have purchased the Probilab2 test equipment and will shortly begin to carry out checks in our laboratory with luminaires and DALI-2 drivers to ensure the correct operation of the product with the DALI-2 drivers from our suppliers. I would like to know if there are portable equipment to verify the correct installation of lighting installations under the DALI-2 protocol
DALI Alliance: Our members may offer portable test equipment, or sometimes build the tests into the installed DALI products. DiiA is also starting to work on a "diagnostic tool" for use on-site. Your suggestions for this would be appreciated!

Is NEMA C136 compliant with Zhaga-D4i certification ?
Zhaga: A product is only Zhaga-D4i compliant when it has been Zhaga-D4i certified, there is no substitute for this. However, it is indeed the case that some of the C136 subgroups have also included the Zhaga receptacle.

About Luminaire Data Part 251 containing pre-stored luminaire information: Does the specification indicate how to manage these information when multiple control gear are inside the same luminaire? Does the test specs cover this part?
DALI Alliance: The control gear is supplied to the luminaire manufacturer with the memory bank empty. In our D4i requirements there is a minimum set of information that needs to be put into memory bank 1 by the luminaire maker. The GTIN is the absolute minimum, but it is recommended to add more information about the luminaire and the lamp(s).
With more than one driver, there is a D4i requirement that most of the luminaire data is identical across the drivers. Details are in the document, "*D4i certification and Trademark use*". This is self-declared by the luminaire manufacturer and the declaration checked during Zhaga-D4i certification of the luminaire.

Can you better detail the relationship between Zhaga and ANSI 136.41? Is it expected a certification program also for this?
Zhaga: We are in the process of including in our specification an architecture that includes C136.41. This is currently in its final stage, and I expect ratification of this spec in April. Yes, we will also announce a certification program to allow certification of luminaires with an ANSI interface on the top and an additional Zhaga interface. The program will also enable certification of corresponding Zhaga-D4i control devices.

What is the lead time for getting the test reports & certification from the test lab & DiiA respectively?
DALI Alliance: If all product information and test results are good, then D4i and DALI-2 product certification typically takes 2-3 working days, but can take longer during exhibitions or holidays.
DEKRA: Testing times depends on test houses. Please ask the test house you want to work with for the actual testing times.

What is needed if we would like to test/certify our own control devices by ourselves?
DALI Alliance: For self-testing: DiiA membership is required, together with the ProbitLab2 test platform and the test sequence software supplied with DiiA membership.
Certification is carried out by DiiA. This requires members to submit their product information and test results for verification by DiiA. Products are not sent to DiiA.
DEKRA: The Zhaga part of the certification is only possible through an accredited test house.

How do I correctly connect the Zhaga book 18 with the control node to a Zhaga book with a sensor? We just power it and connect the "4" of each receptacle?
Zhaga: The interfaces supports plug-and-play interoperability and the interface is mechanically keyed so that the nodes can be mounted in only one way.

Do you have any guideline to design Zhaga-D4i luminaries？
DALI Alliance: For D4i requirements for luminaires, see the document, "D4i certification and Trademark use".
Zhaga: The Zhaga interface specifications are purposely designed so that they specify what is needed for interoperability only, to leave as much room as possible for differentiation and innovation. So the Zhaga-D4i specifications Book 18 and 20 specify the interface between sensor and node only and the test that must be passed. There are no further Zhaga guidelines on the luminaire design.

In book 20. The dimensions for each sensor has a dimension for the cut out, the size. But are these maximum dimensions, minimum values? And more specifically, does the height of the node need to be as per the specifications or is this a max delimitation?
Zhaga: For the luminaire cut-out, these are the minimum dimensions that allow the node to fit. For the mode demarcation, these are maximum dimensions. The protrusion limits have also been set, but there is still some debate about these in relation to NEMA specifications. For full details, please consult the specs.

Are you aware about having delivered certifications for lighting used in railway industry?
Zhaga: The Zhaga specifications are delivered as a service to the lighting industry, to enable business where multi-vendor interoperability is important. It is primarily the companies that interact with potential customers rather than Zhaga. Still, Zhaga is approached and consulted by end customers from time to time for questions and feedback. Also organizations active in the railway industry have shown interest in the Zhaga-D4i specifications and certification.

What are the differences between D4i and DALI-2 certification for single-master control devices (only Part 351 or something else)?
DALI Alliance: Yes, D4i requires that part 351 is included. For DALI-2, this is optional.

Why up to 4 control gear inside an luminaire? Why not 5 or 3?
DALI Alliance: This requirement is determined from the maximum bus current of 250mA for any DALI bus, and the maximum bus power supply current of a D4i driver, which is 62.5mA.

Is it possible to connect Zhaga to a different standard, like KNX?
DALI Alliance: There are already DALI-2 certified products that interface with KNX.
Zhaga: The Zhaga-D4i specifications define the interface between the node and the luminaire only; there is no specific reference to the connectivity solution included in the nodes. Thus it is viable that any connectivity solution is included in the node, or that the connectivity solution included into the node is connected via a bridge to another connectivity solution. This applies in principle to KNX, but no specific solutions for KNX are currently known to me.

You said that only type A or type B control devices can be Zhaga-D4i certified. However, I understand that the only mandatory power supply on the Zhaga socket is the integrated bus power supply of the control gear? It means that there's a risk of Type A control device may not fit on a Zhaga-D4i luminaire, I would expect either type B or type C to comply with Zhaga-D4i certification …can you clarify please ?
DALI Alliance: D4i luminaires allow sensors of any type A-D. Zhaga book 18 (outdoor applications) restricts this to part 351 type A and B. The socket is supplied with sufficient power to operate both a type A and B simultaneously. It is not mandatory to have the DALI bus power supply integrated in the control gear (drivers), although this is the more common approach. D4i control gear have this integrated bus power supply. Alternatively, it is also allowed to use suitable DALI-2 control gear and use a separate DALI bus power supply inside the luminaire.
The outdoor luminaires that have a socket with a terminal for a 24V supply, such as the Zhaga book 18 socket, also need to include an AUX supply inside the luminaire. This provides the power to the 24V pin of the sockets. The AUX supply can be integrated in the control gear, or can be a separate product. Both solutions are common.