

# **DALI-2: The global standard for smart, digital, lighting control in the IoT era**

## **DALI-2: 物联网时代智能，数字，照明控制的全球标准**

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10<sup>th</sup> June 2019, Guangzhou International Lighting Exhibition



**guangzhou international  
lighting exhibition**  
广州国际照明展览会

**DiiA booth:  
Hall 11.2, H06**

# 目录 Agenda

- DALI 与 DiiA – Introduction
- 会员情况 Membership
- DALI – 特色与效益 Key facts & benefits
- 示例系统 Example systems
- D4i的新规格 New specifications for D4i
- 问答 Q & A

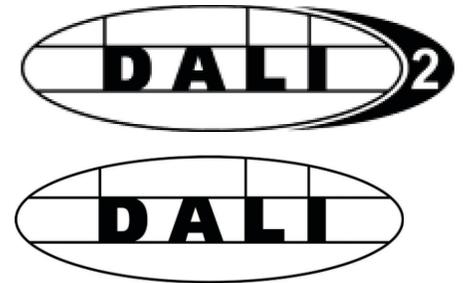
# DALI & DiiA



**D**igital **A**dressable **L**ighting **I**nterface  
数字 可寻址 照明 接口

- 全球照明控制通信标准 **World-wide standard** for lighting control communications
- 符合IEC 62386开放标准 Technically managed in the open standard **IEC 62386**
- 由 DiiA (数字照明接口联盟) 制定 Driven by Digital Illumination Interface Alliance (DiiA)
- 通过测试，认证和注册商标确保产品互操作性 Ensures **interoperability** through **testing, certification and registration with trademark use**
- 通过 DALI 通道进行控制，配置和查询设备 **Control, configuration & querying** of devices over a 2-wire bus
- 可对 DALI 装置进行单控，群控及广播 **Individual, group & broadcast addressing** to any DALI device
- DALI，DALI-2和D4i商标归DiiA所有 DALI, DALI-2 and D4i trademarks owned by

- 全球拥有**170个会员**(至2019.5), 并持续增加中 **170+ members world-wide**
- 会员可使用DALI商标: Membership allows DALI trademark use:
  - 多达**451个 DALI-2 认证产品** **451 DALI-2 certified products**
  - 1000+ 个 DALI 注册产品 **1000+ DALI version-1 registered products**
- **Membership types:**
  - 最高级别会员 **Regular**
  - 协会成员 **Associate**
  - 公司团体注册 灯具制造商 **Community registration** – for luminaire makers



	ASSOCIATE MEMBER	REGULAR MEMBER	COMMUNITY (note 2)
Access to DiiA test sequences	X	X	
Certification of DALI-2 products, use of DALI-2 logo on certified products	X	X	
Use of logos (DALI-2, DALI version-1) on luminaires containing DALI devices from DiiA members	X	X	X
Use of DALI version-1 logo on products other than luminaires	X	X	
Use of DiiA logo and DALI version-1 logo for marketing materials	X	X	X
Access to members-only website	X	X	
Participation in General Assembly meetings	X	X	
Receive membership communication	X	X	X
Access to draft deliverables (test sequences, specifications)		X	
Approval of final deliverables		X	
Participation and voting in working groups. Contribute to DiiA roadmap and development of test specifications.		X	
Participation in interoperability events (Plugfests)		X	
Eligible for Board of Directors membership		X	

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会员福利 Membership benefits:  
[www.dali2.org/membership/benefits.html](http://www.dali2.org/membership/benefits.html)

# 公司团体会员 Member companies

## Regular Members (24)



## Associate Members (141)



了解最新的会员名单  
**For the latest list of members:**  
[www.dali2.org](http://www.dali2.org)



# DALI – 主要特色与效益 Key facts & benefits (1)

- 技术限制 Technical limits
  - 最多64+64 DALI装置(短地址) max. 64+64 addresses per DALI subnet
    - 驱动器 64 drivers (control gear)
    - 控制装置 64 control devices
  - 最远设备距离不超过 300米 max. 300 m cabling (between furthest-apart devices)
  - 每个DALI通道提供最大电流 250 mA max. bus power supply



# DALI – 主要特色与效益 Key facts & benefits (2)

- **优点 Digital benefits**

- 强大的通讯能力 Robust communication
- (64+64)短地址, 群组 (16/32), 可广播 Addressing: individual (64+64), groups (16/32) and broadcast (all)
- 灵活：通过软件进行修正 Flexible: Changes can be made via software
- 灵活：开箱即用的操作 Flexible: Simple operation “out-of-box”
- 双向通讯 (反馈) Two-way communication (feedback)



- **布线效益 Cabling benefits**

- 标准两芯电缆 (1.5mm<sup>2</sup>) Standard 2-core cable
- 无极性与网路布线架构有弹性 Polarity-free & free wiring topology
- DALI通道可提供电源, 通讯信号及控制 DALI power and data on same pair of wires



# DALI 主要特色: 基本配置 Basic types of devices (1)

三种基本配置如下： Currently, the standard describes **three basic types** of devices:

- 驱动器 Control gear



- 直接连接灯具并为灯具提供电源 These are normally directly connected to the lamp, providing it with power
- 示例：LED驱动器 Example: LED driver

# DALI 主要特色: 基本配置 Basic types of devices (2)

- 控制装置包含两种基本类型: **Control devices** (two basic types)



- **应用控制器** (做出决定并向控制装置发送命令) **Application controllers** (make decisions and send commands to the control gear)

- **输入设备** (向系统提供信息) **Input devices** (provide information to the system)

- 按按钮 301 Push-buttons
- 绝对输入 (开关, 滑块) 302 Absolute inputs (switches, sliders)
- 占用传感器 303 Occupancy sensors
- 光传感器 304 Light sensors
- 这些测试和认证于5月20日开始。 Tests and certification for these started on 20<sup>th</sup> May.



# DALI 主要特色: 基本配置 Basic types of devices (3)

- 电源供应 Bus power supplies



- 提供16 V，最高250 mA电源供电 Provide typically 16 V, up to 250 mA to power the bus.
- 通常内置于应用控制器或控制装置中 Often built into an application controller or control gear
- 传感器和按钮等设备可以通过总线供电 Devices such as sensors and push-buttons can be powered from the bus

*DALI快速啟動指南*

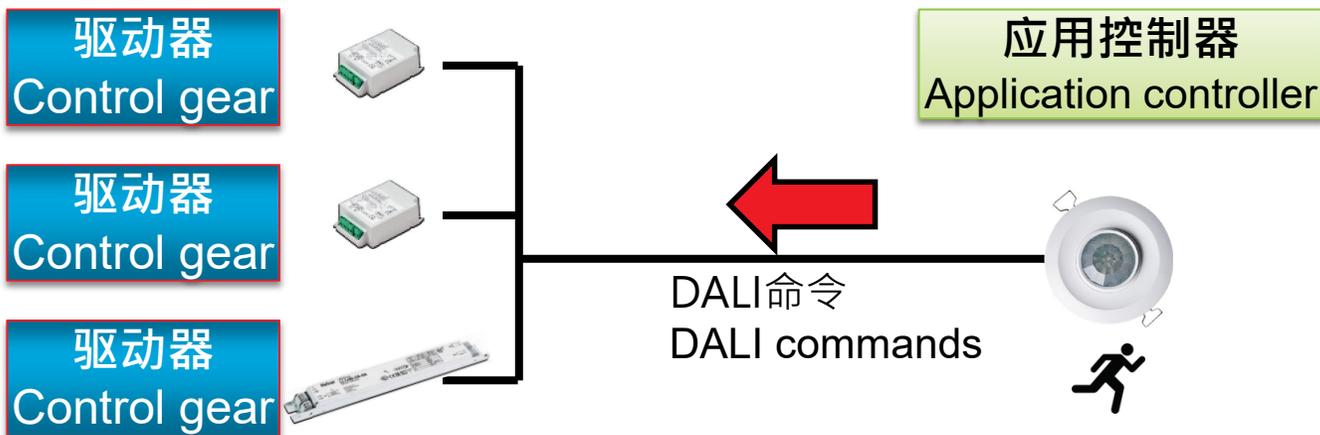
*DALI Quick Start Guide:*

[www.dali2.org/downloads](http://www.dali2.org/downloads)

## 示例 - 开箱即用的系统操作 Example – Out-of-box system operation

- 产品连接在一起，工作方式与0-10V系统类似，无需任何编程。 **Products are wired together**, and work in a similar way to 0-10V systems, without needing any programming.
- 通常称为“广播”系统，因为命令只是广播到所有设备。 Often called a “**broadcast**” **system** because commands are simply broadcast to all devices.
- 不需要地址，场景，组和其他配置。 Addresses, scenes, groups and other **configuration is not required**.
- 总线接线可用于将操作分成多组灯，其方式与0-10V相同。 Bus wiring can be used to divide the operation into groups of lights, in the same way as with 0-10V.
- 以下示例演示了这一点 The following example demonstrates this:

# 示例 - 开箱即用的系统操作 Example – Out-of-box system operation



- 驱动器 Control gear
  - 应用控制器 Application controller
- 注意：Note:
- 需要总线电源，与现有设备分开或集成。
  - A bus power supply is required, either separate or integrated with an existing device.
  - 允许多个应用程序控制器。
  - More than one application controller is allowed.

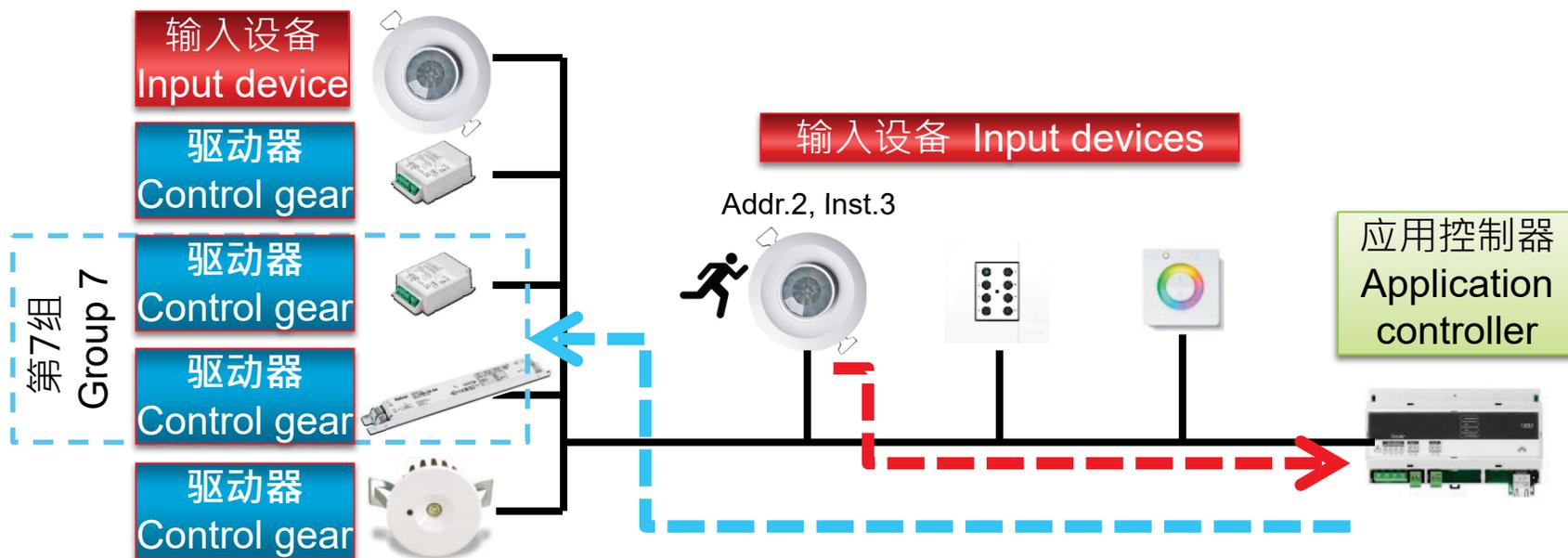
## 操作示例：Example of operation:

- 运动触发传感器 Movement triggers the sensor
- 传感器可以自动广播几个命令： Sensor may automatically broadcast several commands:
  - **DTR0 (2)** [数据传输寄存器 = Data transfer register = 2]
  - **SET FADE TIME (DTR0)** [将淡入淡出时间设置为1秒 Set fade time to 1s]
  - **DAPC (254)** [转到100% Go to 100%]
- 所有的灯都通过100%反应在一起。 All lights react together by going to 100%.

## 示例 - 委托 (编程) 系统 Example - Commissioned (programmed) system

- 产品在同一DALI总线上连接在一起 (无需划分总线接线)。
- **Products are wired together on the same DALI bus** (no need to divide the bus wiring).
- **工具**用于设置系统。 **A tool** is used to set-up the system.
  - 笔记本电脑，平板电脑，手机，红外线手机，液晶触摸屏甚至壁挂式按钮都是编程工具的例子。  
Laptops, tablets, phones, IR handsets, LCD touch-panels or even wall-mounted push-buttons are examples of programming tools.
- 主要的编程步骤是 **Main programming steps are:**
  - **分配地址** **Assign addresses**
  - 对设备进行**分组** **Group** the devices
  - 根据需要设置场景，淡入淡出时间和其他参数。 **Set-up scenes, fade-times and other parameters as required.**
- 以下示例演示了这一点： **The following example demonstrates this:**

# 示例 - 委托 (编程) 系统 Example - Commissioned (programmed) system



- 驱动器 Control gear
- 输入设备 Input devices
- 应用控制器 Application controller

注意：Note:

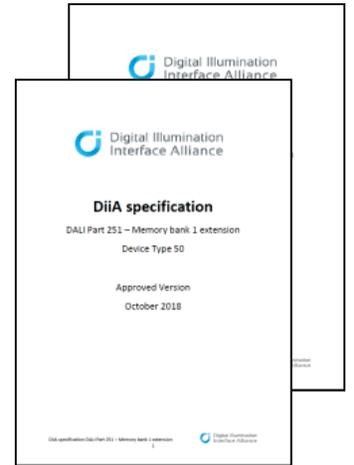
- 需要总线电源，与现有设备分开或集成。
- A bus power supply is required, either separate or integrated with an existing device.
- 允许多个应用程序控制器。
- More than one application controller is allowed.

## 操作示例：Example of operation:

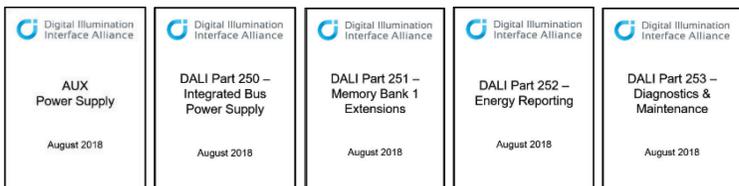
- 运动触发传感器 Movement triggers the sensor
- 占用传感器自动发送通知：The occupancy sensor automatically transmits a notification:  
`<address 2><instance 3> INPUT NOTIFICATION (0x009) [检测到运动 Movement detected]`
- 应用程序控制器接收到此信息，并决定调用组7灯光中的场景5：  
The application controller receives this, and decides to recall scene 5 in the group 7 lights:  
`<group 7> GO TO SCENE 5 [根据场景5改变等级 Change level according to scene 5]`
- 组7中的灯光淡入场景5中的预编程级别。Lights in group 7 fade to the pre-programmed levels in scene 5.

# DiiA 新规范 New DiiA Specifications

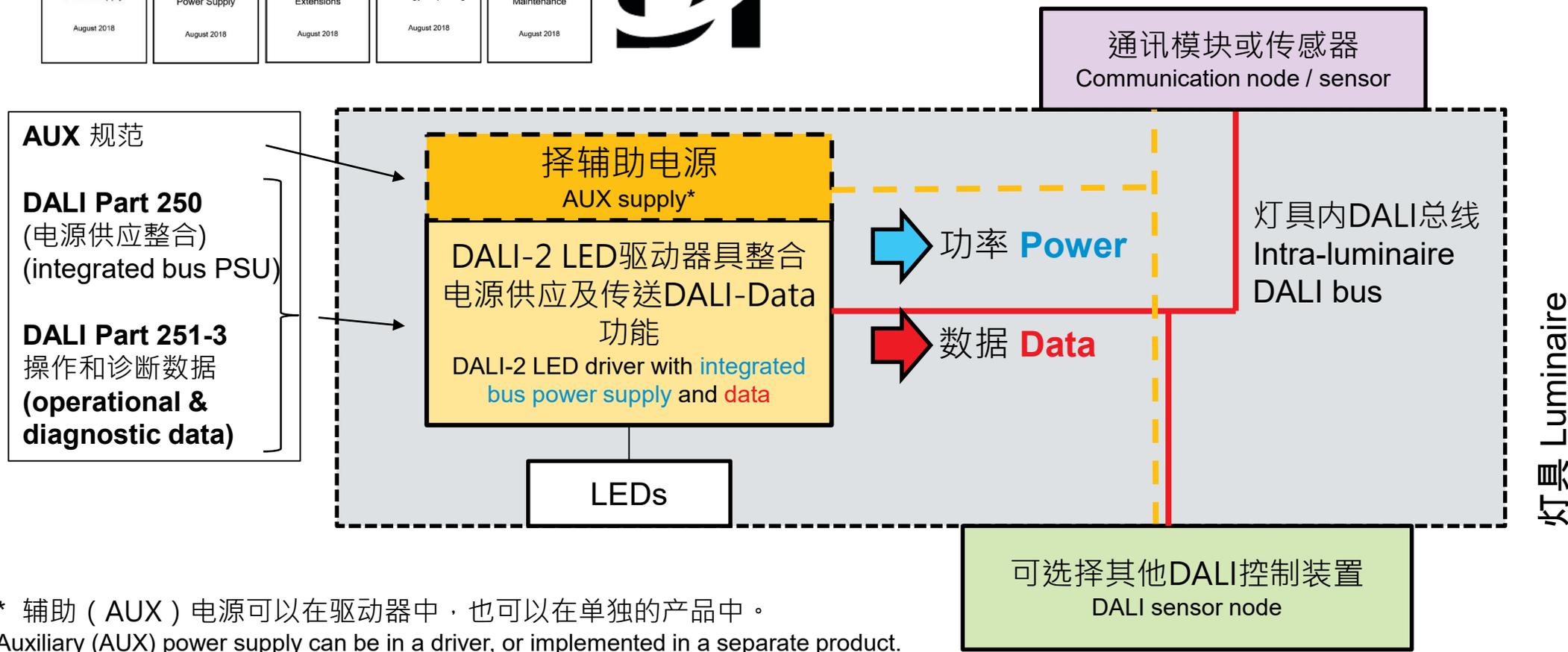
- **DiiA 建立新规范 DiiA has developed several new specifications**
  - 新规范适用于智能灯具, 以及灯具附带的产品 For use in smart luminaires, and products attached to smart luminaires
- **规范: Specifications ([www.dali2.org/specifications/download.html](http://www.dali2.org/specifications/download.html)):**
  - DiiA part 250 – 集成总线电源 Integrated Bus Power supply
  - DiiA part 251 – 存储条1 扩展(灯具数据) Memory Bank 1 Extension (Luminaire Data)
  - DiiA part 252 – 能源报告 Energy Reporting
  - DiiA part 253 – 诊断与维护 Diagnostics and Maintenance
  - DiiA AUX – 辅助电源 Auxiliary Power Supply
  - DiiA part 351 – 灯具安装控制设备 (正在开发中) Luminaire mounted control devices (under development)
- **合作伙伴: Collaborations with:**
  - IEC TC34/WG11 工作小组, Zhaga and ANSI C137.



# 内部灯具DALI的D4i规格 D4i specifications for intra-luminaire DALI

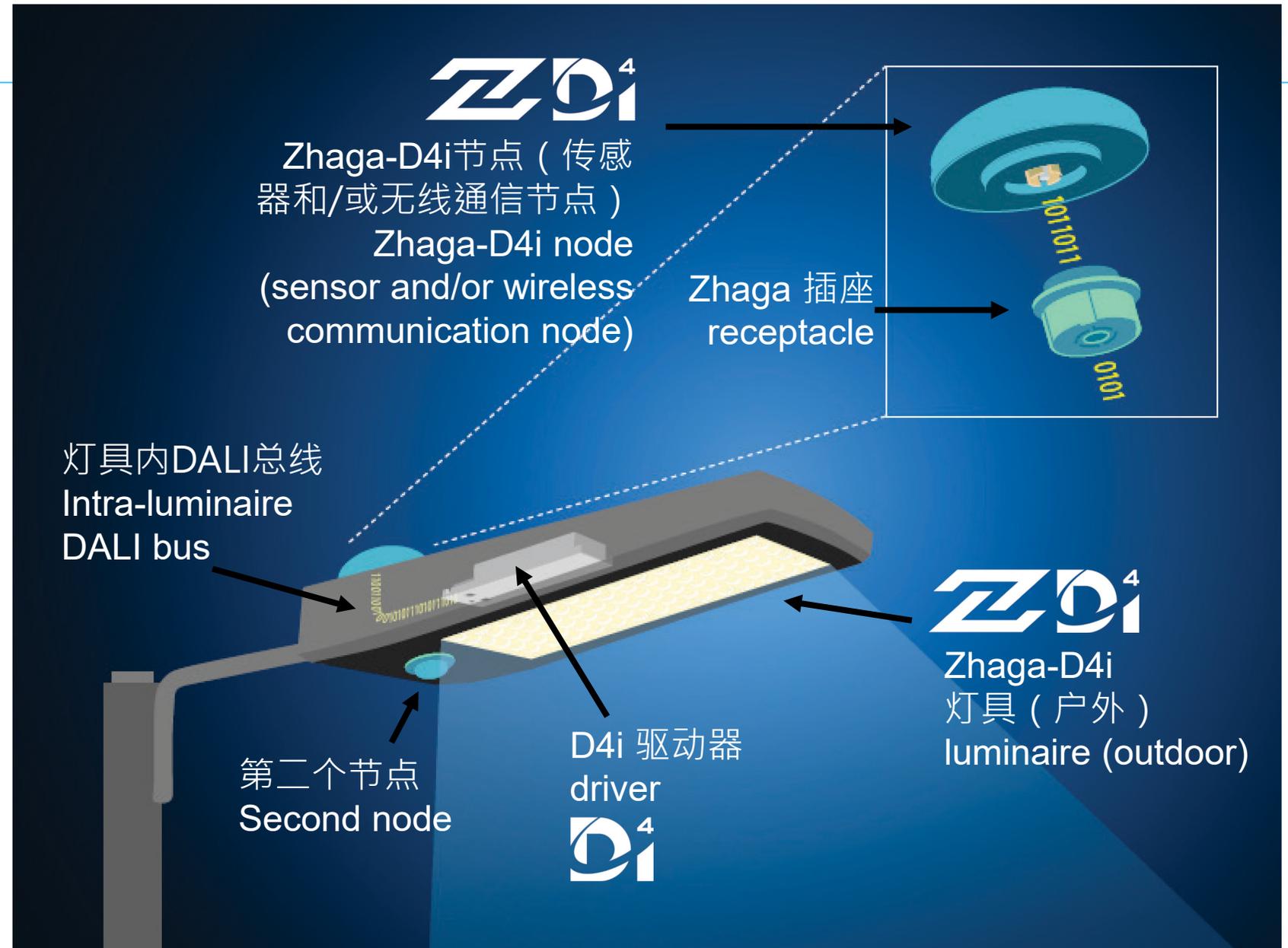


远程照明控制网络  
Remote lighting-control network



\* 辅助 (AUX) 电源可以在驱动器中，也可以在单独的产品中。  
Auxiliary (AUX) power supply can be in a driver, or implemented in a separate product.

# Zhaga – D4i



# DiiA 新规范 – 应用 Applications

- 新规范主要应用于户外照明，如路灯：
- **A primary application for these new specifications is outdoor lighting, such as streetlights:**
  - 每个路灯都是一个小型DALI系统 Each streetlight is a small DALI system
  - 传感器或无线通信模块可连接DALI通道 A sensor or wireless communications module is often connected to the DALI bus
  - DiiA - Zhaga 合作进行标准化: DiiA-Zhaga collaboration is standardising:
    - 连接器/插座 The connector/receptacles (Zhaga book 18)
    - 可经过DALI通道通讯, 并由辅助电源向 DALI 通道供电 The use of DALI for communications, and the bus and auxiliary power supplies.
- **为何选择 DALI : Some reasons that DALI was chosen:**
  - 行业标准 Industry standard
  - 照明控制专用 Specifically for lighting control
  - 可连接驱动器 Direct connection to control gear
  - 标准化调光曲线 Standardised dimming curve
  - 双向通信 Bi-directional communication



# 其他信息 Further information

- 官网 DiiA website:
  - DALI快速入门指南 *DALI Quick Start Guide*:  
<http://www.dali2.org/downloads/>
  - 产品信息 **Product database**:  
<http://www.dali2.org/products>
  - 会员信息 **Membership benefits**:  
<http://www.dali2.org/membership/benefits.html>
  - Email 联系 **Contact us**:  
[info@digitalilluminationinterface.org](mailto:info@digitalilluminationinterface.org)

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