WhitePaper Controls

DALI

Comparison between DALI & DALI-2

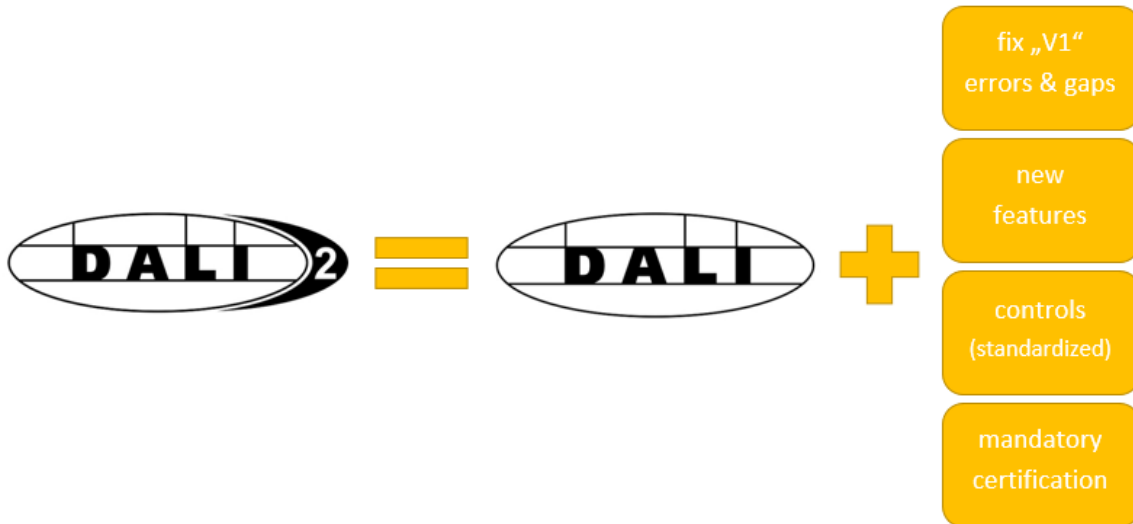**TRIDONIC**

Table of Contents

1. What is DALI-2

The idea behind DALI-2 is to solve existing issues and maintain backwards compatibility with the old bus system.

2. Changes from DALI to DALI-2

- Extension for control devices (IEC 62386, added part 103) The overview of the content of the IEC 62386 can be found on the Digital Illumination Interface Alliance (DiiA) Webpage: Click here

- New commands / features, including the new "extended fade-time"
  (Makes fades from 0.1 seconds up to 16 minutes possible)
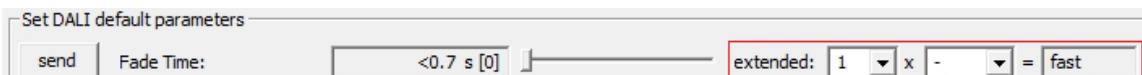
- Error corrections (especially in the test procedures)

- Higher quality and increase in the number of tests

- More precise specification of electrical tolerances, less risk for malfunctions

- More detailed specification, less risk for misinterpretations

- Restructuring of specification, dedicated system description

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3. Comparison between DALI and DALI-2

DALI:	DALI-2:	Note:
Input:		
eD command*	DA24, 24-Bit command	The DA24 command is the standardized replacement for eD.
Class 3 (Light sensor) Class 4 (Motion sensor) Class 5 (Manual control unit)	Instance type 4 (Light sensor, **IEC 62386-304**) Instance type 3 (Motion sensor, **IEC 62386-303**) Instance type 1 (Manual control unit, **IEC 62386-301**)	Input devices (sensors, switches, and so on…)
Central unit:		
Multi master system	Introduction of the **application controller**	The application controller is the "brain" of the communication.

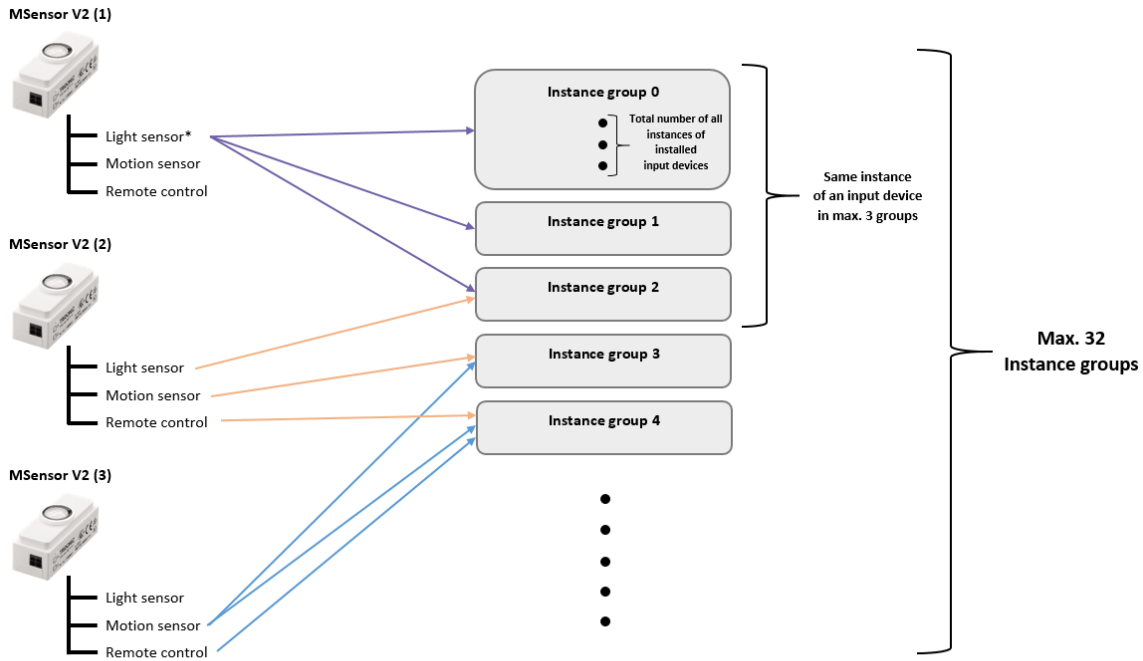* 25-Bit Tridonic internal specification

DALI:	DALI-2:	Info:
Output (gear):		
	New commands/features:	
	SAVE PERSISTENT VARIABLES	Persistent variables are stored in a non-volatile memory / storage area.
	SET OPERATING MODE (DTR0)	Allows configuring the operating mode.
	RESET MEMORY BANK (DTR0)	Resets the memory bank to its default values.
	IDENTIFY DEVICE	Identifies (localizes) a device.
New commands not supported	SET EXTENDED FADE TIME (DTR0)	Allows to set the "extended fade-time".
	GO TO LAST ACTIVE LEVEL	IAP (Indirect Arc Power command), Last active level will be called.
	QUERY OPERATING MODE	Query of the operating mode
	QUERY LIGHT SOURCE TYPE	Information to the connected light source
	QUERY NEXT DEVICE TYPE	Readout of the supported device types / functions
	QUERY EXTENDED FADE TIME	Readout of the extended fade-time
	QUERY CONTROL GEAR FAILURE	Detailed error inquiry

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4. Addresses, Groups and Scenes

	DALI:	DALI-2:
Addresses for control gear	64	64
Addresses for control devices	64	64
Scenes for control gear	16	16
Groups for control gear	16	16
Groups for control devices	16	32
Groups for instances of input devices	–	32

With DALI-2, each control device can be a member of any combination of 32 groups.

5. Instances and Grouping possibilities

MSensor V2 (1)

- Light sensor*
- Motion sensor
- Remote control

MSensor V2 (2)

- Light sensor
- Motion sensor
- Remote control

MSensor V2 (3)

- Light sensor
- Motion sensor
- Remote control

Instance group 0
- • Total number of all
- • instances of
- • installed
input devices

Instance group 1

Instance group 2

Instance group 3

Instance group 4

Same instance
of an input device
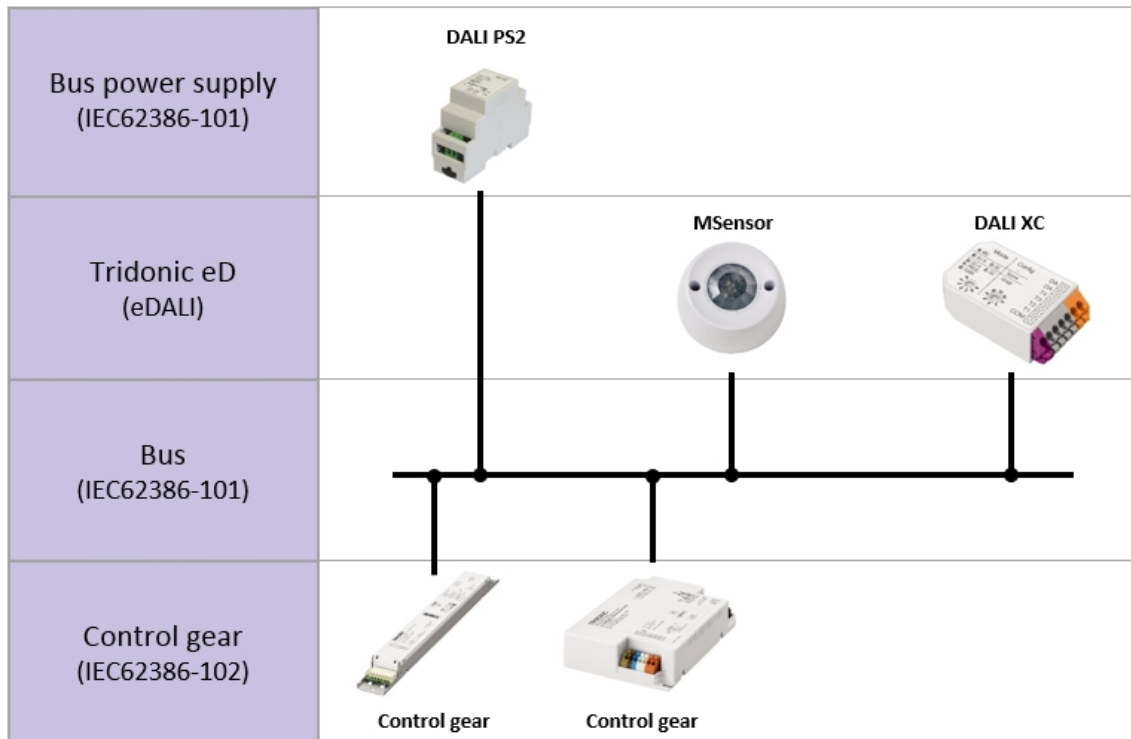in max. 3 groups

Max. 32
Instance groups

Instance

An instance is a "subcategory" of an input device. As an example, an MSensor V2 includes 3 of them: A **light sensor**, **motion sensor** and **remote control**.

- Each input device can include up to 32 different instance types (i.e. Instance type 4: Light sensor; Instance type 3: Motion sensor; and so on…).

- Instances of input devices can be assigned to 32 instance groups. Here, it must be considered, that one instance of an input device can only be part of a maximum of 3 instance groups.

- Instances of different input devices can be assigned to the same instance group.

- The maximum size of an instance group is determined by the total number of all instances of installed input devices.
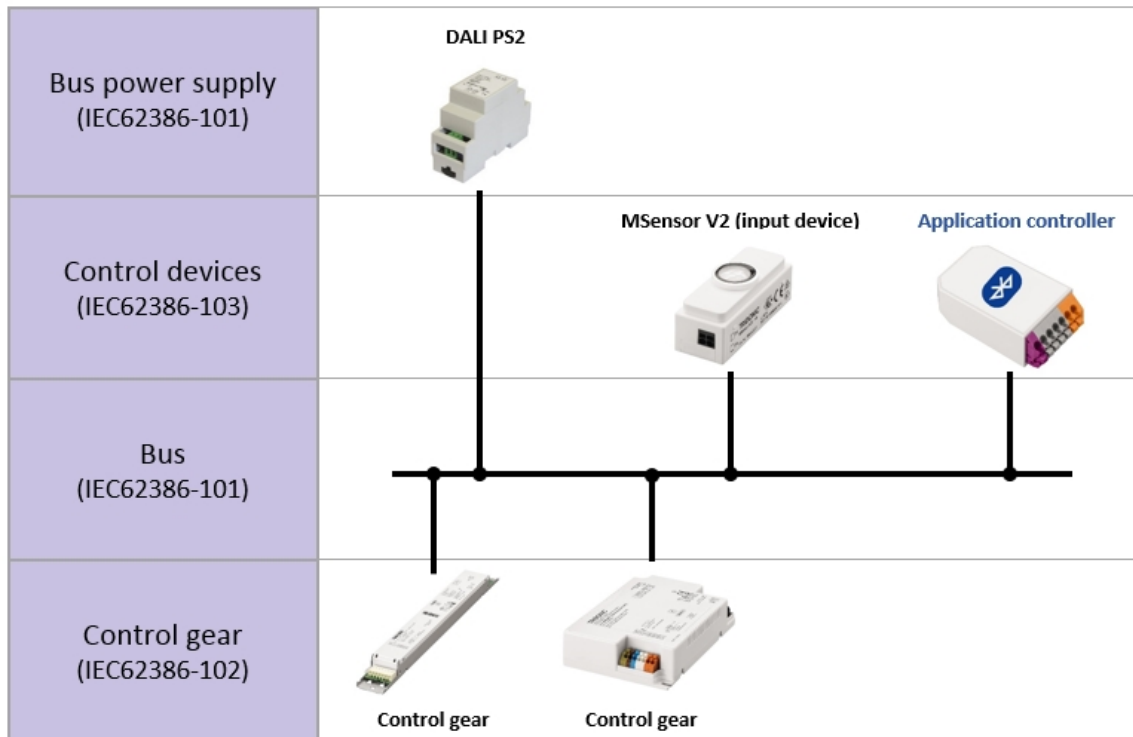
6. System structures

6.1. DALI

Bus power supply (IEC62386-101)	DALI PS2
Tridonic eD (eDALI)	MSensor DALI XC
Bus (IEC62386-101)	
Control gear (IEC62386-102)	Control gear Control gear

In the old DALI system, the commands from sensors and controllers (such as DALI XC) are processed directly by the control gear.

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6.2. DALI-2

In the new DALI-2 system, the input devices do not communicate with the control gear directly anymore. Instead, the commands are first processed by the new application controller and then sent to the drivers. The application controller is responsible for the data communication between input devices (sensors, switches, and so on...) and the control gear. Input devices can already have a built-in application controller. In this case, no additional external control unit is needed. The advantage of DALI-2 is the newly implemented collision detection. With this, a command can be sent again if it was lost by a collision. The "application controller" monitors the process.
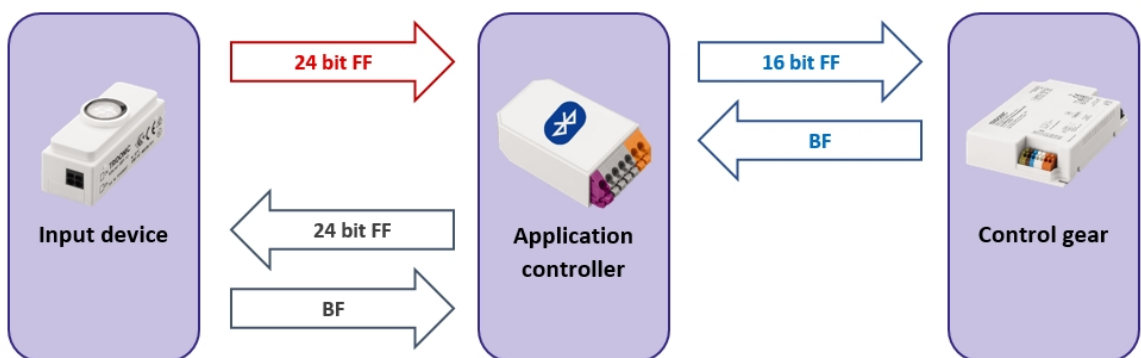
BF: Backward Frame
FF: Forward Frame

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7. Compatibility

	DALI drivers	DALI-2 drivers	eD controls	DALI-2 controls
DALI	X	X	X	-
DALI-2	(X)	X	-	X

As can be seen from the table above, DALI and DALI-2 devices can be used together.
If this is the case, it must be taken into account that the functionality of DALI-2 is limited when operating with a DALI driver.
The reason for this is that DALI-2 has new commands (listed under "Comparison between DALI & DALI-2") that are not recognized by DALI drivers.

> ⚠ CAUTION
>
> DALI-2 controls and eD controls must **under no circumstances** be mixed on the same DALI line, because DALI sensors (eD controls) are not specified and will not be recognized by the application controller.

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