



DiiA Specification

DALI Part 250 – Integrated Bus Power Supply

(Device Type 49)

Version 1.1

October 2019

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Document History

Publication Date	Status	Comments
August 2018		First publication.
22 October 2019	V1.1	Update: corrections/clarifications, formatting, new command.

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DALI Part 250 – Integrated Bus Power Supply

1 Scope

This standard specifies the characteristics of a DALI bus power supply integrated in a control gear. This standard builds on the Digital Addressable Lighting Interface as specified in the IEC62386 series of standards, by adding specific requirements to enable powering of an external device and addressing data exchange.

2 References

2.1 Normative references

The following normative documents are adopted, in whole or in part as indicated, in this Standards Publication. The latest edition of the publication applies (including amendments).

IEC 62386-101:2014, Digital addressable lighting interface – Part 101: General requirements – System components

IEC 62386-101:2014/AMD1:2018, Digital addressable lighting interface – Part 101: General requirements – System components

IEC 62386-102:2014, Digital addressable lighting interface – Part 102: General requirements – control gear

IEC 62386-102:2014/AMD1:2018, Digital addressable lighting interface – Part 102: General requirements – control gear

2.2 Informative references

This standard is intended to be used in conjunction with the following publications. The latest edition of the publication applies (including amendments).

DiiA Specification on AUX power supply

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62386-102:2014 and IEC 62386-102:2014/AMD1:2018, Clause 3 and the following apply.

3.1 AUX

Auxiliary

3.2 GND

Ground

3.3 NVM-RO

Non-Volatile Memory Read-Only (cannot be changed through DALI)

3.4 NVM-RW

Non-Volatile Memory Read-Write

3.5 ROM

Read Only Memory (cannot be changed by the control gear)

3.6 RAM-RO

Random Access Memory Read-Only (cannot be changed through DALI)

3.7 RAM-RW

Random Access Memory Read-Write

4 General

4.1 General

The requirements of IEC 62386-102:2014 and IEC 62386-102:2014/AMD1:2018, Clause 4 apply, with the restrictions, changes and additions identified below.

4.2 Version number

In Clause 4.2 of IEC 62386-102:2014 and IEC 62386-102:2014/AMD1:2018, “102” shall be replaced by “250”, “version number” shall be replaced by “extended version number” and “*versionNumber*” shall be replaced by “*extendedVersionNumber*”.

5 Electrical specification

The requirements of IEC 62386-102:2014 and IEC 62386-102:2014/AMD1:2018, Clause 5 apply.

6 Interface power supply

The requirements of IEC 62386-102:2014 and IEC 62386-102:2014/AMD1:2018, Clause 6 apply with the following additions and changes.

6.1 General

A bus power supply adhering to this specification shall have a guaranteed supply current of at least 50 mA when “DALI bus power supply status” is on (bank 201 location 0x06).

It shall be allowed to connect “DA-” to GND for the optional AUX power supply as specified in the DiiA specification on AUX power supply.

6.2 Marking of the bus power terminals

Appropriate additional marking in case the terminals (DA+/DA-) are UL class-2 or SELV. No additional marking in case of basic insulation.

6.3 Bus power supply status

Memory bank 201 location 0x06 is used to configure and indicate the bus power supply status. If a new value is written, then this new value shall be available immediately for memory reads or queries, and the bus power supply output on the interface shall be enabled or disabled no more than 500ms after the value has been changed.

7 Transmission protocol structure

The requirements of IEC 62386-102:2014 and IEC 62386-102:2014/AMD1:2018, Clause 7 apply.

8 Timing

The requirements of IEC 62386-102:2014 and IEC 62386-102:2014/AMD1:2018, Clause 8 apply.

9 Method of operation

9.1 Capabilities and configuration

The capabilities and configuration of the integrated bus power supply are given and set via parameters in memory bank 201, see 9.2.2.

9.2 Memory banks

The requirements of Clause 9.10 of IEC 62386-102:2014 and IEC 62386-102:2014/AMD1:2018 apply with the following additions and changes.

This standard adds Read-Only and Read-Write attributes to locations in a memory bank as per the following table.

Table 1 – Memory bank Read-Only and Read-Write attributes

Memory Type	Accessibility via DALI bus RO: Read-Only RW: Read-Write	V: volatile (reset at power down) NV: non-volatile	May be changed autonomously by the control gear during run time	Description
ROM	RO	NV	No	ROM as defined in IEC62386-102:2014. For all fixed value that will not change during run time of control gear. Note: ROM is RO by its nature. A ROM value may change if control gear is programmed during production.
RAM-RO	RO	V	Yes	For all measured values and flags that will be reset at power down.
RAM-RW	RW	V	Yes	For all input values that will be reset at power down.

NVM-RO	RO	NV	Yes	NVM as defined in IEC62386-102:2014 but with additional specification RO For all counter values. No reset at power down.
NVM-RW	RW	NV	Yes	NVM as defined in IEC62386-102:2014 For all input values that are non-volatile.

9.2.1 Vendor-specific protection

Requirements of Clause 9.11.2 “Memory map” of IEC 62386-102:2014 and IEC 62386-102:2014/AMD1:2018 apply with the following additions and changes.

A manufacturer may provide a vendor-specific means to prevent read and/or write access to individual memory locations. Locations featuring this vendor-specific protection mechanism are marked as: “(protectable)”.

The read/write properties of such (protectable) locations are set by the vendor-specific protection mechanism and are specified with each location.

9.2.2 Memory bank writing

All writable memory locations other than location 0x02 shall be lockable.

For writable memory locations, unless specified otherwise in the memory bank table, if any of the following conditions are true when attempting to write to a location, the result shall be the same behaviour as if the memory location is not implemented:

- an attempt to write a value outside of the permitted range, or
- an attempt to write a value to a lockable memory location other than the lock byte, when the value of the lock byte is not 0x55, or
- an attempt to write a value to a protectable writable memory location that is currently protected.

Note: This means that when any of the above conditions apply, there will be no reply to the WRITE MEMORY LOCATION command.

9.2.3 Memory bank 201, device identification (Mandatory)

Address	Description	Default value (factory)	RESET value ^a	Memory type
0x00	Address of last addressable memory location	0x06	No change	ROM
0x01	Indicator byte	Manufacturer specific	Manufacturer specific	Manufacturer specific
0x02	Lock byte Lockable bytes in the memory bank shall be read-only while the lock byte has a value different from 0x55.	0xFF	0xFF ^b	RAM-RW
0x03	Version of the memory bank	0x01	No change	ROM
0x04	Guaranteed supply current of integrated DALI bus power supply (in mA); Range: [0x32, maximum supply current]	Manufacturer specific	No change	ROM
0x05	Maximum supply current of integrated DALI bus power supply (in mA); Range [Guaranteed supply current, 0xFA]	Manufacturer specific	No change	ROM
0x06	DALI bus power supply status (on = 0x01, off = 0x00)	Manufacturer specific	No change	NVM-RW (protectable) ^c
^a Reset value after "RESET MEMORY BANK". ^b Also used as power on value. ^c This field is write protectable.				

Note: To ensure that all configuration data is written as expected, it is recommended that a mechanism is implemented to safely disable or enable an integrated DALI bus power supply. For example, a configuration tool could include a DALI bus power supply and/or the configuration tool could determine when to disable the integrated DALI bus power supply after all configuration data has been written.

10 Declaration of variables

The requirements of IEC 62386-102:2014 and IEC 62386-102:2014/AMD1:2018, Clause 10 apply, with the following additional variables for this device type, as indicated in following Table.

Table 2 – Declaration of variables

VARIABLE	DEFAULT VALUE (factory)	RESET VALUE	POWER ON VALUE	RANGE OF VALIDITY	MEMORY TYPE
"extendedversionNumber"	2.0	no change	no change	00001000b	ROM
"deviceType"	49	no change	no change	49	ROM

11 Definition of commands

11.1 General

The requirements of IEC 62386-102:2014 and IEC 62386-102:2014/AMD1:2018, Clause 11, apply with the following additions.

11.2 Overview sheets

Following Table gives an overview of the application extended commands for this device type.

Unused opcodes of application extended commands shall be reserved for future needs.

Table 3 – Definition of commands

Command name	Address byte		Opcode byte	Ed. 1 cmd number	DTR0	DTR1	DTR2	Answer	Send twice	References	Command reference
	See: IEC 62386-102, sub-clause 7.2.2	Selector bit									
QUERY ACTIVE POWER SUPPLY	<i>Device</i>	1	0xFE	-				✓			11.3.2.1
QUERY EXTENDED VERSION NUMBER	<i>Device</i>	1	0xFF	-				✓			11.3.2.2
ENABLE DEVICE TYPE	0xC1		0x31								11.4.2

11.3 Application extended commands

11.3.1 General

Application extended commands as defined in this document shall be preceded by “ENABLE DEVICE TYPE (data)” where data equals “*deviceType*”. For device types other than “*deviceType*” these commands may be used in a different way.

11.3.2 Queries

11.3.2.1 QUERY ACTIVE POWER SUPPLY

The answer shall be:

- If the integrated Bus Power Supply is Off: NO
- If the integrated Bus Power Supply is On and “*shortAddress*” is MASK: YES
- If the integrated Bus Power Supply is On and “*shortAddress*” is not MASK: 0AAAAAA1b

11.3.2.2 QUERY EXTENDED VERSION NUMBER

The answer shall be “*extendedVersionNumber*”.

11.4 Special commands

11.4.1 General

The requirements of IEC 62386-102:2014 and IEC 62386-102:2014/AMD1:2018, Clause 11.7 apply with the following additions.

11.4.2 ENABLE DEVICE TYPE (data)

To enable the command set as defined in this document, “*data*” shall be “*deviceType*”.