DiiA Specification

DALI Part 150 – AUX Power Supply

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For any further explanation of the contents of this document, or in case of any perceived inconsistency or ambiguity of interpretation, please contact the DiiA:

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Document History

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DALI Part 150 – AUX Power Supply

1 Scope

This standard specifies the minimum requirements for an auxiliary (AUX) power supply that can be used to power a load, such as a sensor or communication device if the power provided by the DALI bus is not sufficient.

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 normative document applies (including amendments).

DiiA specification on DALI Part 250 – Power supply

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).

None

3 Terms and definitions

The following abbreviations are used within this document:

AUX Auxiliary
GND Ground

4 AUX power supply

4.1 Introduction

An AUX supply as specified in this standard provides 24 V DC to power e.g. a controller, an occupancy sensor, a photo sensor or other device. It can eliminate the need for an AC/DC supply and the associated need for surge suppression and an EMI filter in such devices.

Overview of the features of an AUX power supply (informative):

- The AUX power supply can provide an **average power** of 3 W and a **pulse power** of 6 W.
- **Average output voltage**: The level of 24 V +/-10 % will be held for loads between 0.1 W and 6 W peak.
- **Maximum output voltage** does not exceed 30 V under permitted load conditions including open circuit.
- **Start-up time**: The AUX supply will reach 90% of the nominal specified voltage level within 600 ms after applying mains power.

4.2 Marking of the interface

The interface shall be marked with +24V and GND. In case the AUX power supply is integrated with a DALI bus power supply, then the DA- common node shall be shared with GND.

4.3 Electrical specification of AUX power supply

Table 1 specifies the relevant characteristics for the AUX power supply.

Table 1 Electrical characteristics of an AUX power supply

Description	Rated value	Min. value	Max. value	Conditions
Operating voltage, V_{Aux_nom}	24.0 V	21.6 V	26.4 V	0.1 W ≤ P_{Load} ≤ 6.0 W; Including load steps
High frequency ripple of operating voltage, $V_{Aux\_pk\text{-}pk}$			1.0 V_{pp}	21.6 V ≤ V_{Aux} ≤ 26.4 V; f_{ripple} > 10 kHz
Voltage in no-load condition, V_{Aux_max}			30.0 V	P_{Load} < 0.1 W
Average output power capability of the power source, P_{Supply_avg}		3.0 W		21.6 V ≤ V_{Aux} ≤ 26.4 V; averaging period ≥ 6 ms
Pulsed output power capability of the power source, P_{Supply_pk}		6.0 W		21.6 V ≤ V_{Aux} ≤ 26.4 V; t_{pulse} ≤ 2.2 ms; repetitive, see [1]
Start-up time, t_s			0.6 s	V_{Aux} to reach 21.6 V; I_{Load} ≤ 0.16 A; Mains applied at any phase angle
Supply interruption time with output maintained, $t_{interrupt}$		10 ms		21.6 V ≤ V_{Aux} ≤ 26.4 V Average output power ≤ P_{Load_avg} Pulsed output power ≤ P_{Load_pk}; See [2]

[1] Note: Possible duty-cycle and peak value for such pulsed power supply are limited by the specified average power P_{Supply_avg}.

[2] V_{Aux} shall not fall below 21.6 V or exceed 26.4 V during or after interruptions of the external supply that are shorter than or equal to 10 ms.

Where: V_{Aux} = output voltage; I_{Load} = output current; P_{Load} = output power; P_{Load_avg} = average output power; P_{Load_pk} = peak output power; f_{ripple} = ripple frequency; t_{pulse} = pulse time

4.4 Safety rating

- The insulation system between the AUX connections and the mains supply shall provide at least the same level of protection as the insulation system specified for the bus power connection (DA+/DA-) in DiiA specification on DALI Part 250.
  Note: The load should provide supplementary insulation as defined in IEC 60598-1 between its touchable parts and its interface contacts.
- Note: Mains protection: The AUX supply does not need to be protected against accidental connection to mains voltage.
- Note: No additional insulation is required between the AUX supply and the “DA+” and “DA-“ of any integrated bus power supply.

4.5 Output overload and short circuit protection

When the output of the AUX power supply is subjected to an abnormal overload or short circuit condition, it is permissible for the power supply to de-energize the output. Upon removal of the abnormal condition the AUX power supply shall return to normal operation within 15 seconds.

Note: There is no requirement that the +24V output connections of multiple AUX power supplies can be connected together.